

UTAH RETIREMENT SYSTEMS
ACTUARIAL VALUATION REPORT
AS OF JANUARY 1, 2016

August 26, 2016

Utah State Retirement Board
540 East 200 South
Salt Lake City, UT 84102

Dear Members of the Board:

Subject: Actuarial Valuation as of January 1, 2016

This report describes the current actuarial condition of the Utah Retirement Systems (URS), determines the calculated employer contribution rates, and analyzes changes in these contribution rates. In addition, the report provides various summaries of the data. A separate report is issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67 and 68. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of January 1, the first day of the URS plan year. This report was prepared at the request of the Board and is intended for use by the URS staff and those designated or approved by the Board. This report may be provided to parties other than URS staff only in its entirety and only with the permission of the Board.

Under URS statutes, the Board of Trustees must certify employer contribution rates annually. These rates are determined actuarially, based on the Board's funding policy, although, as discussed below, the Board may choose to maintain the current rate if it is greater than the actuarially calculated rate. Contribution rates determined by a given actuarial valuation become effective eighteen months after the valuation date. In other words, the rates determined by this January 1, 2016 actuarial valuation will be used by the Board when certifying the employer contribution rates for the 12-month period beginning July 1, 2017 and ending June 30, 2018. If new legislation is enacted between the valuation date and the date the contribution rates become effective, the Board may adjust the calculated rates before certifying them in order to reflect this new legislation. Such adjustments are based on information supplied by the actuary.

FINANCING OBJECTIVES AND FUNDING POLICY

In setting contribution rates, the Board's principal objectives are:

- To set rates so that the unfunded actuarial accrued liability (UAAL) will be amortized over a reasonable period from the current valuation date
- To set rates so that they remain relatively level over time.

To accomplish this, the Board's funding policy requires that the employer contribution rate be at least equal to the sum of the employer normal cost rate (which pays the current year's cost) and

an amortization rate which results in the amortization of the UAAL over 20 years in installments that increase at the assumed rate of growth in payroll for URS.

Under this policy, the objective of maintaining a relatively level contribution rate over time is achieved in normal conditions such as consistent financial markets.

Section 49-11-301(5) of the Utah Code allows the Board to set the employer contribution rate at the prior year's rate, if the rate otherwise would decrease and if the funded ratio is less than 110%. In such a case, the rate set by the Board would be higher than the actuarially determined contribution rate. The purpose of this legislation is to enhance the Board's ability to maintain more level contribution rates while targeting a 100% - 110% funded level. The Board has historically followed this policy, so the recommended contribution rate may be greater than the actuarially determined rate.

PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements, it should increase over time, until it reaches at least 100%.

The funded ratio on a combined basis slightly decreased from 85.5% to 85.2%. The most significant cause of the change in funded ratio was due to a change in economic assumptions. Absent unfavorable actuarial experience, we expect the funded ratio to gradually increase in future years.

If market value had been used in the calculation instead of actuarial value, the aggregate funded ratio for all funds combined would have been 83.8% compared to 89.1% in the prior year. The decrease in the funded ratio on a market value basis is attributable to a change in the economic assumptions and the 1.7% return on the market value of assets during the prior year being less than the 7.50% assumed rate of return.

BENEFIT PROVISIONS

The benefit provisions reflected in this valuation are those which were in effect on January 1, 2016, or which were adopted by the end of the 2015 legislative session and are effective on or before July 1, 2016. House Bill 347 (HB 347), "Retirement Window Amendments", which amended Section 49-13-205 of Utah government code, allowed for a "six-month window for employers of certain entities to elect to participate in the Public Employees' Noncontributory Retirement System and for eligible employees to elect to participate in that system." This legislation affected funds 11 and 15 of the System, and is described in greater detail in Section II of this report.

There were no other legislative changes enacted since the previous valuation that had a measurable effect on the current valuation.

ASSUMPTIONS AND METHODS

The demographic assumptions and actuarial methods used to perform this valuation remain unchanged from the prior valuation. The actuary reviews the investment return assumption each year and provides consultation to the Board regarding its appropriateness. The Board has the authority to change this assumption each year. This year, the Board chose to decrease the assumed nominal rate of investment return from 7.50% to 7.20% and also decrease the assumed inflation rate from 2.75% to 2.60%. It is our opinion that a 7.20% investment return assumption is appropriate for performing the January 1, 2016 actuarial valuation. In conjunction with the change to the assumed rate of inflation, both the payroll growth and the wage inflation assumptions were decreased by 0.15% from the prior year's assumption.

The demographic assumptions are reviewed in detail every three years. The next experience analysis to review the demographic assumptions is scheduled for 2017.

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 and calculated contribution rates.

It is our opinion that the assumptions used to perform this valuation are internally consistent and are reasonable based on past and anticipated future experience of the System.

DATA

Member data for retired, active and inactive members was supplied as of December 31, 2015 by the URS staff. The staff also supplied asset information as of December 31, 2015. We did not audit this data, but we did apply a number of tests to the data and concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by URS.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of URS as of January 1, 2016.

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

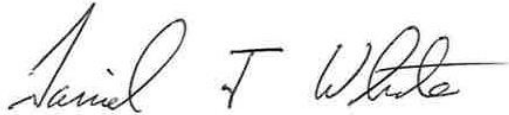
Utah State Retirement Board

August 26, 2016


Page 4

The undersigned are independent actuaries and consultants. Mr. White is an Enrolled Actuary and a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. Both consultants below are experienced in performing valuations for large public retirement systems.

Sincerely,

Handwritten signature of Daniel J. White in cursive script.

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

Handwritten signature of Lewis Ward in cursive script.

Lewis Ward
Consultant

	Page
COVER LETTER	
SECTION I	
EXECUTIVE SUMMARY	
EXECUTIVE SUMMARY AND CONTRIBUTION REQUIREMENTS	2
SECTION II	
DISCUSSION	
DETERMINATION OF CALCULATED CONTRIBUTION RATES	5
FINANCIAL DATA AND EXPERIENCE	7
MEMBER DATA	9
BENEFIT PROVISIONS	10
ACTUARIAL METHODS AND ASSUMPTIONS	11
GOVERNORS AND LEGISLATIVE PLAN	12
FIREFIGHTERS AND JUDGES OFFSETS	13
3% SUBSTANTIAL SUBSTITUTE	14
RESTORATION OF PURCHASING POWER (ROPP)	15
SECTION III	
SUPPORTING EXHIBITS	
EXHIBIT 1(A) — RECOMMENDED TIER I CONTRIBUTION RATES	17
EXHIBIT 1(B) — RECOMMENDED TIER II CONTRIBUTION RATES	18
EXHIBIT 1(C) — DEVELOPMENT OF TIER I CONTRIBUTION RATES	19
EXHIBIT 1(D) — DEVELOPMENT OF TIER II CONTRIBUTION RATES	20
EXHIBIT 2(A) — COMPONENTS OF ACTUARIALLY CALCULATED CONTRIBUTION RATES	21
EXHIBIT 2(B) — DETERMINATION OF CONTRIBUTION RATE OFFSETS FOR FIREFIGHTERS AND JUDGES	22
EXHIBIT 3(A) — SCHEDULE OF FUNDING PROCESS	23
EXHIBIT 3(B) — COMPARISON OF FUNDED RATIOS	24
EXHIBIT 4(A) — ANALYSIS OF CHANGES IN CALCULATED CONTRIBUTION RATES	25
EXHIBIT 4(B) — ANALYSIS OF CHANGES IN UAAL	26
EXHIBIT 5(A) — ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS BY FUND AND STATUS	27
EXHIBIT 5(B) — ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS DETAILS FOR RETIREES AND BENEFICIARIES, BY STATUS	28
EXHIBIT 5(C) — ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS DETAILS FOR INACTIVE MEMBERS, BY STATUS	29
EXHIBIT 5(D) — ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS DETAILS FOR ACTIVE MEMBERS, BY BENEFIT	30

EXHIBIT 5(E)	—	ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS DETAILS FOR MEMBERS RECEIVING BENEFITS, BY BENEFIT	31
EXHIBIT 6(A)	—	NORMAL COST	32
EXHIBIT 6(B)	—	NET EMPLOYER NORMAL COST	33
EXHIBIT 7(A)	—	DETERMINATION OF ACTUARIAL ACCRUED LIABILITY	34
EXHIBIT 7(B)	—	ACTUARIAL ACCRUED LIABILITY DETAILS OF MEMBER AND EMPLOYER FINANCING	35
EXHIBIT 8	—	NUMBER OF MEMBERS	36
EXHIBIT 9	—	ACTIVE MEMBERSHIP STATISTICS	37
EXHIBIT 10	—	RETIRED MEMBER STATISTICS	38
EXHIBIT 11(A)	—	MARKET VALUE OF ASSETS (ALL RETIREMENT SYSTEMS COMBINED)	39
EXHIBIT 11(B)	—	RECONCILIATION OF MARKET VALUE OF ASSETS (MVA)	40
EXHIBIT 12(A)	—	INVESTMENT RETURN RATES FOR PRIOR YEAR	41
EXHIBIT 12(B)	—	SUMMARY OF INVESTMENT RETURN RATES	42
EXHIBIT 13	—	CALCULATION OF ACTUARIAL VALUE OF ASSETS (ALL RETIREMENT SYSTEMS COMBINED)	43
EXHIBIT 14	—	TRANSFER ADJUSTMENTS TO ASSET VALUES	44
EXHIBIT 15(A)	—	CONTRIBUTION RATE FOR 3% SUBSTANTIAL SUBSTITUTE	45
EXHIBIT 15(B)	—	LIABILITIES FOR 3% SUBSTANTIAL SUBSTITUTE	46
EXHIBIT 16	—	LEG\GOV DETERMINATION OF CONTRIBUTION	47
EXHIBIT 17(A)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - PUBLIC EMPLOYEES RETIREMENT SYSTEM (CONTRIBUTORY)	48
EXHIBIT 17(B)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - PUBLIC EMPLOYEES' RETIREMENT SYSTEM (NONCONTRIBUTORY)	49
EXHIBIT 17(C)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - PUBLIC SAFETY RETIREMENT SYSTEM (CONTRIBUTORY)	50
EXHIBIT 17(D)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - PUBLIC SAFETY RETIREMENT SYSTEM (NONCONTRIBUTORY)	51
EXHIBIT 17(E)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - FIREFIGHTERS RETIREMENT SYSTEM	52
EXHIBIT 17(F)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - JUDGES RETIREMENT SYSTEM	53
EXHIBIT 17(G)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - GOVERNORS AND LEGISLATIVE RETIREMENT SYSTEM	54
EXHIBIT 17(H)	—	HISTORICAL SUMMARY OF STATISTICAL DATA - TIER II PUBLIC EMPLOYEES' RETIREMENT SYSTEM	55

	EXHIBIT 17(I) —	HISTORICAL SUMMARY OF STATISTICAL DATA - TIER II PUBLIC SAFETY AND FIREFIGHTER HYBRID RETIREMENT SYSTEM	56
	SUPP EXHIBIT 1(A) —	RETIREMENT CONTRIBUTION RATE GUIDE	57
	SUPP EXHIBIT 1(B) —	TIER I RETIREMENT CONTRIBUTION RATES	58
	SUPP EXHIBIT 1(C) —	TIER II RETIREMENT CONTRIBUTION RATES	59
APPENDIX 1		STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS	60
APPENDIX 2		SUMMARY OF PRINCIPAL PLAN PROVISIONS	
		PUBLIC EMPLOYEES' RETIREMENT SYSTEMS (CONTRIBUTORY AND NONCONTRIBUTORY)	87
		PUBLIC SAFETY RETIREMENT SYSTEMS (CONTRIBUTORY AND NONCONTRIBUTORY)	92
		FIREFIGHTERS RETIREMENT SYSTEM	97
		JUDGES' RETIREMENT SYSTEM	101
		GOVERNORS AND LEGISLATIVE PENSION PLAN	104
		TIER II PUBLIC EMPLOYEES' HYBRID RETIREMENT SYSTEM	107
		TIER II PUBLIC SAFETY AND FIREFIGHTERS HYBRID RETIREMENT SYSTEM	111
APPENDIX 3		GLOSSARY	115

SECTION I
EXECUTIVE SUMMARY

EXECUTIVE SUMMARY AND CONTRIBUTION REQUIREMENTS

- The only increases in the gross recommended contribution rates from the prior year were for the City of Bountiful Public Safety and the defined benefit component for both Tier II Hybrid Plans.
 - The contribution rate for the Noncontributory State & School Fund (Fund 16) is 22.19% of payroll.
 - The contribution rate for the Noncontributory Local Government Fund (Fund 15) is 18.47% of payroll.
 - The contribution rate for the City of Bountiful Public Safety Fund (Fund 48) increased to 49.58% of payroll due to the decrease in the investment return assumption.
 - The recommended contribution rate for the defined benefit portion of the Tier II Public Employee Retirement System increased from 8.22% to 8.42% while the Tier II Public Safety and Firefighter Retirement System rate increased from 10.67% to 10.74% of pay. Tier II Public Safety and Firefighter Retirement System continues to have a funded ratio greater than 100%, but Tier II Public Employee Retirement System funded ratio dropped from 108.7% to 99.8%, primarily due to the change in the assumed rate of return.
 - Due to a slight decrease in the average fire insurance premium receipts, the net employer contribution rates for both firefighter funds increased by 0.04% of pay. The employer rate for Fund 31 (Division A) increased from 3.89% to 3.93% and the rate for Fund 32 (Division B) increased from 6.66% to 6.70%. The member contribution rates remained unchanged at 15.05% for Division A and 16.71% for Division B.
 - See Exhibit 2(b) for details about the offsets applied to contribution rates for Firefighters.
 - Due to a decrease in the average court fee receipts relative to payroll, the net employer contribution rates for the Judicial fund increased by 0.57% of pay to 42.69%.
 - See Exhibit 2(b) for details about the offsets applied to contribution rates for Judges.
- Total projected contributions for all funds combined are estimated to be \$1.1 billion for fiscal year 2018.
- Exhibits 1(a) and 1(b) show the recommended contribution rates for FY 2018, and compare these to the rates certified for FY 2017 based on the last valuation.
 - Rates include funding for the 3% substantial substitute benefit, where applicable.
 - Rates do not include the 1.50% 401(k) contribution.
 - Offsets for Firefighters System and Judges System are shown.
 - Rates shown on Exhibits 1(a) and 1(b), column 6 are for the twelve-month period beginning July 1, 2017 (FY 2018).
 - Rates may need to be adjusted for the effect of 2017 legislation.

- Exhibits 1(c) and 1(d) show the development of the recommended rates under §49-11-301(5). The recommended rates are the larger of the actuarially calculated rates from the current valuation (Col. 2) and the rates certified for FY 2017 (Col. 3).
 - §49-11-301(5) permits the Board to set the contribution rate at the prior year’s level if the actuarially calculated rate would be less and the funded ratio is less than 110%.
 - The funded ratios for the Tier I Firefighter (Div A) Fund and the Tier II Public Safety and Firefighter Hybrid System exceed 100%, but are less than 110%. See the discussion on page 6.
 - The policy is applied to the gross rates for the Tier I Firefighter funds and the Judges, i.e., before application of the offsets for the fire insurance premium tax receipts and the court fees.
 - This policy is separately applied to the contribution rate for the 3% substantial substitute that is included with the contribution rates for the State and School funds, the State Public Safety funds and the Judges.
- Exhibit 2(a) shows the components of the actuarially determined contribution rate, and Exhibit 4(a) reconciles the actuarially calculated rates determined by this valuation and the previous valuation.
 - Due to the decrease in the interest rate assumption, almost all the funds experienced an increase in their actuarially calculated contribution rate.
- HB 347 allowed certain local government members and employers in the Contributory Public Employees’ Retirement System to transfer to the Noncontributory Public Employees’ Retirement System. This legislation resulted in a 0.02% increase in the calculated contribution rates for local government units in both the Contributory and Noncontributory Public Employees’ Retirement Systems. There were no other legislative changes enacted since the previous valuation that had a measurable effect on the current valuation.
- Amortization payments for the calculated contribution rates are based on:
 - A 20-year amortization period is used for determining the contribution rates (except for Governors and Legislators Plan, where amortization period is 18 years)
 - Contributions determined as level percentage of pay (except for Governors and Legislators Plan, where amortization is in level dollar payments)
 - Total payroll assumed to increase 3.10% per year
 - No future growth in the number of active members is taken into account
- The plan earned 1.7%, net of investment and administrative expenses, on a market-value basis during 2015
 - The actual market value as of December 31, 2015 (\$26.687 billion) was \$1.529 billion less than the expected market assets at this date based on a 7.50% return assumption for the prior year.

- Plan uses actuarial value to determine contribution rates and funded status
 - 5-year smoothing of net earnings above or below the investment return assumption
 - Method reflects just 20% of investment gain or loss each year
- The non-contributory local government, state and school funds, firefighters, both Tier II funds as well as most of the public safety funds experienced liability gains.
 - Impact on contribution rates shown on Exhibit 4(a) col. (5), and Exhibit 4(b) col. (4)
- The Governors and Legislative Plan was 80.2% funded as of January 1, 2016. We recommend a \$391,883 appropriation be made to the plan on or before June 30, 2018. Please see Exhibit 16.

SECTION II
DISCUSSION

DETERMINATION OF CALCULATED CONTRIBUTION RATES

The URS retirement systems, except for the Governors' and Legislators' Retirement Plan, are funded by employer contributions which are expressed as a percent of pay, and in some cases by member contributions. The Firefighters System and the Judges System receive additional funding from outside sources. As shown in Exhibit 2(a), the calculated employer contribution rate can have as many as four components:

- The normal cost percentage (NC%)
- The amortization percentage (UAAL%)
- The contribution required to fund the 3% substantial substitute benefit (3%SS)
- The offset for fire insurance premium taxes and court fees which reduce the employer contribution rates in the Firefighters System and the Judges System, respectively.

The NC% is the theoretical amount which would be required to pay the members' benefits, based on the current plan provisions, if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. This is the amount it should cost to provide the benefits for an average new member. The NC% for each fund is shown in Exhibit 6(a).

Some of the funds require active member contributions, and for these, only the excess of the NC% over the member contribution rate is included in the employer contribution rate, as shown in Exhibit 6(b) and in column 2 of Exhibit 2(a).

The actuarial accrued liability (AAL) is the difference between (i) the actuarial present value of all future benefits for all current members of the fund, including active, inactive and retired members, and (ii) the actuarial present value of future normal costs. Thus, the AAL represents the liability associated with past years. The unfunded actuarial accrued liability (UAAL) is the difference between the AAL and the actuarial value of assets (AVA). It is the shortfall/excess between the liability associated with prior years (the AAL) and the assets actually accumulated (the AVA). This shortfall/excess can arise from several sources, including actuarial gains and losses which are caused by differences between actual experience and the plan's assumptions, changes to the plan's actuarial assumptions, and amendments to the benefit provisions.

The UAAL% is the amount required to fund this difference. It is the amount, expressed as a level percentage of payroll (except for the Governors' and Legislators' Plan which is level dollar), necessary to amortize the UAAL. The Board's current policy calls for developing the actuarially determined contribution by amortizing the UAAL over an open 20 year period (except for the Governors' and Legislators' Plan which currently has a closed 18 year funding period). Column 3 of Exhibit 2(a) shows the UAAL% of the calculated rates for each fund.

The 3% Substantial Substitute component of the employer contribution rate is only required for funds whose members are employees of the state (or who are paid by state funding). This piece is the amount necessary to fund the 3% Substantial Substitute. It is shown in column 4 of Exhibit 2(a), and is described in greater detail later. The last piece of the contribution rate is the offset. The Firefighters System receives a portion of the fire insurance premium taxes collected by the state, and the Judges System receives a portion of court fees collected by the judiciary. The calculation of the offsets is shown in Exhibit 2(b).

Section 49-11-301(5) of the Utah Code gives the Board the option of setting contribution rates at the higher of the previous year's rate and the current year's actuarially calculated rate (for the Governors' and Legislative Plan it is the greater of the current and prior years' amortization amount). The Board does not have to decrease the contribution rate from the prior year as long as it is funding towards or maintaining a funded ratio of 110%. The Board has historically followed the policy of holding the rates constant, but not less than the actuarially calculated rate, as permitted by §49-11-301(5).

Under the policy, the actuarial rates and last year's certified rates are compared, and the larger is set as the new certified rate. This is done separately for: (1) the 3% Substantial Substitute fund, (2) each Tier II hybrid fund, (3) the total contribution rate applicable to the payroll of Tier I members, and (4) the total contribution rate applicable to the payroll of Tier II members. Then the offset for the fire insurance premium tax and the court fees are applied, as shown in Exhibit 1(a).

The defined benefit portion of both the Tier II Public Employee Retirement System and the Tier II Public Safety and Firefighter Hybrid System's contribution rate increased due to the assumption change and now exceed last year's certified rate. Therefore, we recommend that the new calculated rates for both systems become the certified rate for FY2018.

The Governors' and Legislators' Retirement Plan, unlike the other systems, is funded by direct legislative appropriations. Similar to last year, we are recommending an appropriation be made for this plan by the end of FY 2018. Please see the discussion about the determination of the appropriation later in this section and the calculation of the appropriation on Exhibit 16.

Exhibit 2(a) also shows the development of the calculated contribution rate for the Tier II Hybrid systems. The State makes contributions on Tier II payroll towards the 3% substantial substitute. However, since the Tier II Hybrid Plans are cost sharing plans and the State and local governments participating in the plans do not have separate Tier II Hybrid Plan contribution rates, the rates shown on Table 2(a) exclude the 3% Substantial Substitute contribution.

All employers in Tier II must make an additional contribution, based on the payroll of their Tier II employees, towards the amortization of their Tier I unfunded liabilities. This additional contribution rate is not shown on Exhibit 2(a) because it varies by employer. However, the additional amortization payment for each fund is shown in Column 7 of Table 1(d). This additional amortization payment also includes the payment for the 3% Substantial Substitute if applicable.

FINANCIAL DATA AND EXPERIENCE

As of December 31, 2015, the retirement systems that are part of URS have a total market value of \$26.687 billion. This excludes assets of the defined contribution plans that are also administered by URS. Assets of the various funds and systems are commingled for investment purposes. Financial information was gathered from the 2015 URS Comprehensive Annual Financial Report, with additional information provided by the URS staff.

This report includes a number of exhibits related to plan assets. Exhibit 11(a) shows how the total market value is distributed among the various classes of investments. Currently, 61% of invested assets are held in equities and alternative investments (excluding real assets).

Exhibit 11(b) provides a reconciliation, for each fund, of the market values between the beginning and end of 2015. The contributions shown in column 3 of Exhibit 11(b) include employer and member contributions, as well as court fees and fire insurance premium tax receipts. The 3% substantial substitute fund is shown as a separate item.

During 2015, the total investment return on market values was 1.7%, as shown on Exhibit 12(a). This return is net of all investment and administrative expenses.

In determining the contribution rates and funded status of the funds, an actuarial value of assets (AVA) is used, rather than the market value of assets. The method used to compute the AVA takes the difference between actual earnings and expected earnings (based on the assumed rate of investment return) each year, and recognizes the difference over five years, at 20% per year. This is intended to reduce the volatility of the contribution rates from year to year. This “smoothed” asset value is then subjected to the further constraint that the actuarial value of assets cannot be less than 75% or more than 125% of the market value of assets. For 2016, the five-year smoothed asset value is \$27.124 billion for all systems combined, or about 102% of the market value of assets.

The development of the AVA is shown on Exhibits 13 and 14. URS staff prepared the initial calculation of the AVAs, but these were reviewed and, if necessary, modified by GRS.

In addition to the market return, Exhibit 12(a) also shows the return on the actuarial value for URS. For 2015, this return was 7.8%. Because this is greater than the assumed 7.50% investment return, the plan experienced a gain on the actuarial value of assets. Exhibit 12(b) shows a summary of market and actuarial return rates in recent years.

Some funds in the Contributory Public Employees System and the Contributory Public Safety System are paired with funds in the Noncontributory Public Employees and Noncontributory Public Safety systems. For example, Fund 23, Other Division A, in the Contributory Public Safety System is paired with Fund 43, Other Division A, in the Noncontributory Public Safety System. In these cases, URS has established a policy of maintaining either the same difference between contribution rates for pairs of funds, or it maintains equal amortization percentages. To accomplish this, assets are transferred each year between fund pairs, as necessary. Because the 4% COLA funds in the Public Safety funds also contain employers that have members in both the Contributory and Noncontributory systems, we have continued the practice of pairing funds and transferring assets between the paired funds to produce the same amortization payment as a percentage of pay. For this purpose, Funds 77 & 75 are paired as are Funds 74 & 76. Exhibit 14, column 6 shows the change that must occur to the AVA in order to accomplish this. Exhibit 14, column 3 shows how much must be transferred between systems to accomplish this in terms of market value.

Exhibits 4a and 4b show the reconciliation of the contribution rates and the unfunded actuarial accrued liabilities from the last valuation to this one, including the effect of asset and liability gains and losses, changes in assumptions, changes in plan provisions, etc.

MEMBER DATA

Member data was supplied by URS staff on electronic files as of December 31, 2015. While we did not audit this data, we did perform various tests to ensure that it was internally consistent, consistent with the prior year’s data, and was reasonable overall.

Compared to last year, the number of public employees increased from 91,375 to 92,373. Similarly, the number of public safety and firefighters slightly increased from 9,803 to 10,013. The following table provides the number of Tier I and Tier II employees as of the valuation date for these two groups.

Tier I and Tier II Employee Count				
	Tier I	Tier II Hybrid Plan	Tier II Defined Contribution¹	Total
All Public Employee Funds ²	67,560	21,100	3,713	92,373
All Public Safety and Firefighter Funds	8,056	1,755	202	10,013

¹ Tier II members electing the defined contribution plan will be moved into that plan after their first year of employment and their election becomes irrevocable.

² Excludes employees in the Judges and Governors and Legislative Retirement Funds.

For all the funds combined, the number of retirees (including disables and beneficiaries) increased from 56,810 to 59,840. There are now 1.7 employees for every retiree in the Retirement System.

Exhibit 8 shows the number of members by category (active, inactive, retired, etc.) and by fund. Exhibit 9 shows active member statistics by fund, and Exhibit 10 shows retiree statistics by fund. Exhibits 17(a)-17(i) show summaries of certain historical data, including membership statistics, for each system.

BENEFIT PROVISIONS

Appendix 2 includes a summary of the benefit provisions for each of the retirement systems in URS. The valuation reflects any benefit changes enacted by the 2015 legislature. Such legislation would generally be effective on or before the contribution rates actually go into effect at July 1, 2016.

House Bill 347 (HB 347), “Retirement Window Amendments”, which amended Section 49-13-205 of Utah government code, allowed for a “six-month window for employers of certain entities to elect to participate in the Public Employees' Noncontributory Retirement System and for eligible employees to elect to participate in that system.” As a result of this transfer window, there were approximately 315 members that elected to transfer from the Tier I Contributory Public Employee Retirement System (Fund 11) to the Tier I Noncontributory Public Employee Retirement System (Fund 15). Due to slightly better benefits in the Noncontributory System (i.e. three-year Final Average Monthly Salary, 25-and-out reduced retirement, and better death benefits) there was a \$3.3 million increase in the unfunded actuarial accrued liability.

This valuation reflects all benefits promised to URS members, either by the statutes, or in the case of the special supplement for the Governors' and Legislators' Retirement Plan and the ROPP payments (discussed later), by the Board. There are no ancillary benefits that might be deemed a URS liability if continued beyond the availability of funding by the current funding source.

ACTUARIAL METHODS AND ASSUMPTIONS

Appendix 1 includes a summary of the actuarial assumptions and methods used in this valuation.

The actuary reviews the investment return assumption each year and provides consultation to the Board regarding its appropriateness. The Board has the authority to change this assumption each year and elected to decrease the assumed nominal rate of investment return from 7.50% to 7.20%. This was accomplished by decreasing the real rate of return assumption from 4.75% to 4.60% and the inflation assumption from 2.75% to 2.60%. It is our opinion that a 7.20% investment return assumption is appropriate for performing the January 1, 2016 actuarial valuation.

In conjunction with the 0.15% decrease in the inflation assumption, the payroll growth assumption and wage inflation assumption were also lowered by 0.15%.

An experience study was last conducted in conjunction with the 2014 valuation which resulted in several updates to the assumptions. Current Board policy is to perform an experience study to review the demographic assumptions every three years. Therefore, the next experience study is schedule to be performed in 2017.

Except as noted above, the other actuarial assumptions and methods used to determine the results of the 2016 actuarial valuation are the same as those used for the prior year's valuation. Please see Appendix 1 of this report for a complete description of these assumptions.

GOVERNORS AND LEGISLATIVE PENSION PLAN

The Governors and Legislative Pension Plan (Leg/Gov Plan) is funded by direct appropriations rather than through pay-period contributions. Since the plan continues to be less than fully funded for 2016, we are recommending an appropriation for fiscal year 2018. Please see Exhibit 16 for the determination of the appropriation amount. We also anticipate that appropriations will be recommended for each fiscal year for the next several years.

The Leg/Gov Plan is unique among the retirement systems in URS in that neither the benefits of the plan nor the contributions to the plan are tied to member pay. As a result, the calculation of the appropriation is performed in a slightly different manner than the determination of the contribution rates for the other funds.

The Entry Age Normal level dollar approach will be used to determine the normal cost and actuarial accrued liabilities of the Leg/Gov Plan. The Entry Age Normal funding method is used to determine the cost allocation of the contribution requirements because it produces a cost pattern that remains level over time for individual members (if the assumptions are met). With the other URS systems, the cost is determined so as to remain level as a percentage of pay over time. Since neither the contributions nor benefits of the Leg/Gov Plan are pay related, we have determined the cost as a level dollar amount. This method would normally be expected to produce appropriations that remain level over time (if the actuarial assumptions are exactly met). However, because the Leg/Gov Plan is closed to new members it is expected that the contributions will decrease over time as the number of active members decrease, thereby decreasing the dollar amount of the normal cost in the future.

In addition, the determination of the amortization payment for amortizing the unfunded liabilities of the system is determined using a level dollar approach as well. This valuation determines the appropriation for fiscal year 2018. Because of the lag between the determination of the dollar contribution amount and the payment of the contribution, we included an adjustment for interest in the determination of the appropriation. The recommended appropriation for fiscal year 2018 is \$391,883. The allocation of this appropriation to the Governor's Office, House, and Senate is \$17,986, \$269,637, and \$104,260, respectively.

The allocation of the Plan's normal cost was based on the number of active positions in each of the branches of government. Since the current Governor does not participate in the defined benefit plan, there is no normal cost assigned to the Governor's Office. Therefore, the normal cost was allocated to just the House and Senate based on their percentage of positions that are eligible for coverage (75 House members and 29 Senators). Because there are only three former governors on whose behalf benefits are payable (or will be payable in the future), we determined the liability and amortization charge directly for the Governor's office based on that percentage of the total liability of the Plan. We then allocated the remaining liability between the House and Senate in the same manner as the allocation of the normal cost. Finally, the interest charge was allocated in proportion to the sum of the normal cost and amortization charges.

We believe this procedure fairly allocates the required appropriation to the three entities.

FIREFIGHTERS AND JUDGES OFFSETS

A portion of the fire insurance premium taxes collected by the State of Utah is contributed to the Firefighters System, and a portion of the court fees collected by the state judiciary is contributed to the Judges System. To account for this prospectively, the recommended contribution rates for the funds in these systems are reduced.

In order to dampen year-to-year fluctuations in the offsets, we use a rolling three-year average of the fire insurance premium receipts and court cost in computing the offsets. The offset is first applied to reduce the amortization cost. The remaining offset (if any) will reduce the employer's normal cost. The calculation of the offsets is shown on Exhibit 2(b).

For the Firefighters, the offset for the amortization costs is determined using the combined payroll of Tier I and Tier II. The offset, if any, for the normal cost is determined only using the expected pay from Tier I. In addition, it is assumed that all of the offset will be contributed to Tier I.

Due to a larger than expected increase in the total payroll of firefighters compared to the increase in the fire insurance premium receipts, the offset for the Firefighter System slightly decreased from 11.64% to 11.60% of pay. Similarly, due to a slight decrease in the average court fees and an increasing covered payroll, the offset for the Judges System will decrease from 9.79% to 9.22%.

The gross employer contribution rate for both Firefighter funds remains larger than the offset, so employers will be required to make contributions. Member contribution rates will remain at last year's rate of 15.05% and 16.71% for Division A and Division B respectively.

The 2004 Legislature enacted legislation which created the Public Safety Retirees' Cost-of-Living Increases Restricted Account (Restricted Account). As a result of this legislation a portion of fire insurance premium tax receipts that would normally have been contributed to the Firefighter System may instead be redirected to this new account. No funds were transferred to this account in calendar year 2015.

3% SUBSTANTIAL SUBSTITUTE

Due to the removal of the state income tax exemption for benefits paid by URS, legislation was passed to provide a 3% retirement benefit increase for URS retirees who were members of URS prior to January 1, 1989. All future retirees who were members of URS prior to January 1, 1989 will be eligible for this benefit as well, as will beneficiaries of eligible members.

The 3% increase applies to all benefits paid to eligible members, including benefits earned after January 1, 1989 and including future cost-of-living increases. However, the 3% increase does not apply to refunds of employee contributions or to the Restoration of Purchasing Power (ROPP) benefits; see the next section.

Due to legislation passed in 1994, this benefit is now pre-funded. The obligation for payment of this benefit belongs to the state, however, not to the employer. Therefore the contribution needed to fund the benefit is determined as an addition to the employer contribution rates required for the State and School Funds in the Public Employees Contributory and Noncontributory Systems, the State of Utah Public Safety System, and the Judges System. Contributions are also collected on the payroll of state employees covered under the Tier II systems.

The actuarially determined contribution required to pay for this benefit is 0.66%, 0.19% less than the current contribution rate of 0.85%. Details of the calculation are shown in Exhibit 15(a), while Exhibit 15(b) shows a distribution of the liabilities associated with this benefit.

The Board has the authority, under Section 11-49-301(5), to hold the contribution rate for the Substantial Substitute at 0.85% (last year's rate).

RESTORATION OF PURCHASING POWER (ROPP)

URS provides a special benefit to a closed group of retired members. This benefit was granted by the Board of Trustees, not by the legislature, and hence it does not appear in the statutes governing URS. The Board provided this benefit, called the Restoration of Purchasing Power benefit or ROPP benefit, to retired members during the 1980s, in order to counteract some of the impact of inflation.

The ROPP benefit is a fixed amount that does not increase and is not adjusted for changes in the cost of living. It is provided only to the closed group of members who were retired at the time of the Board's action. Therefore, since the group is closed and since the benefit amount cannot increase, this liability decreases from year to year as the retiree group receiving the ROPP grows older and decreases in size due to mortality.

Exhibit 5(e) shows the liabilities for the ROPP benefits in column 5.

SECTION III
SUPPORTING EXHIBITS

Comparison of Tier I Prior Year Certified and
Current Year Recommended Contribution Rates

Fund/Division (1)	Prior Year Valuation Certified Rates for FY 2017			Current Year Valuation Recommended Rates for FY 2018			Increase/ (Decrease) in Total (8)
	Member	Employer	Total	Member	Employer	Total	
	(2)	(3)	(4)	(5)	(6)	(7)	
I. Public Employees Contributory							
A. Local Government	6.00%	14.46%	20.46%	6.00%	14.46%	20.46%	0.00%
B. State and School	6.00%	17.70%	23.70%	6.00%	17.70%	23.70%	0.00%
II. Public Employees Noncontributory							
A. Local Government	0.00%	18.47%	18.47%	0.00%	18.47%	18.47%	0.00%
B. State and School	0.00%	22.19%	22.19%	0.00%	22.19%	22.19%	0.00%
III. Public Safety Contributory							
A. Other Division A (2.5% COLA)	12.29%	22.75%	35.04%	12.29%	22.75%	35.04%	0.00%
B. Other Division A (4% COLA)	12.29%	24.33%	36.62%	12.29%	24.33%	36.62%	0.00%
C. Other Division B (2.5% COLA)	10.50%	22.29%	32.79%	10.50%	22.29%	32.79%	0.00%
D. Other Division B (4% COLA)	10.50%	28.95%	39.45%	10.50%	28.95%	39.45%	0.00%
IV. Public Safety Noncontributory							
A. State	0.00%	41.35%	41.35%	0.00%	41.35%	41.35%	0.00%
B. Other Division A (2.5% COLA)	0.00%	34.04%	34.04%	0.00%	34.04%	34.04%	0.00%
C. Other Division A (4% COLA)	0.00%	35.71%	35.71%	0.00%	35.71%	35.71%	0.00%
D. Salt Lake City	0.00%	46.67%	46.67%	0.00%	46.67%	46.67%	0.00%
E. Ogden	0.00%	48.68%	48.68%	0.00%	48.68%	48.68%	0.00%
F. Provo	0.00%	42.16%	42.16%	0.00%	42.16%	42.16%	0.00%
G. Logan	0.00%	41.92%	41.92%	0.00%	41.92%	41.92%	0.00%
H. Bountiful	0.00%	47.33%	47.33%	0.00%	49.58%	49.58%	2.25%
I. Other Division B (2.5% COLA)	0.00%	32.20%	32.20%	0.00%	32.20%	32.20%	0.00%
J. Other Division B (4% COLA)	0.00%	38.94%	38.94%	0.00%	38.94%	38.94%	0.00%
V. Firefighters							
A. Division A							
1. Gross Rate	15.05%	15.53%	30.58%	15.05%	15.53%	30.58%	0.00%
2. Less Estimated Offset	<u>-0.00%</u>	<u>-11.64%</u>	<u>-11.64%</u>	<u>0.00%</u>	<u>-11.60%</u>	<u>-11.60%</u>	<u>0.04%</u>
3. Net Rate	15.05%	3.89%	18.94%	15.05%	3.93%	18.98%	0.04%
B. Division B							
1. Gross Rate	16.71%	18.30%	35.01%	16.71%	18.30%	35.01%	0.00%
2. Less Estimated Offset	<u>-0.00%</u>	<u>-11.64%</u>	<u>-11.64%</u>	<u>0.00%</u>	<u>-11.60%</u>	<u>-11.60%</u>	<u>0.04%</u>
3. Net Rate	16.71%	6.66%	23.37%	16.71%	6.70%	23.41%	0.04%
VI. Judges							
A. Gross Rate	0.00%	51.91%	51.91%	0.00%	51.91%	51.91%	0.00%
B. Less Estimated Offset	<u>-0.00%</u>	<u>-9.79%</u>	<u>-9.79%</u>	<u>-0.00%</u>	<u>-9.22%</u>	<u>-9.22%</u>	<u>0.57%</u>
C. Net Rate	0.00%	42.12%	42.12%	0.00%	42.69%	42.69%	0.57%

Note: Rates reflect 3% Substantial Substitute where applicable

The recommended contribution rate for the Public Employees Retirement Funds includes the cost of the 75% of pay active death benefit.

Recommended rates reflect application of U.C. Sec. 49-11-301(5)

**Comparison of Tier II Prior Year Certified and
Current Year Recommended Contribution Rates**

Fund/Division (1)	Prior Year Valuation Certified Rates for FY 2017			Current Year Valuation Recommended Rates for FY 2018			Increase/ (Decrease) in Total (8)
	Member (2)	Employer (3)	Total (4)	Member (5)	Employer (6)	Total (7)	
I. Public Employees Contributory							
A. Local Government	0.00%	18.45%	18.45%	0.00%	18.45%	18.45%	0.00%
II. Public Employees Noncontributory							
A. Local Government	0.00%	16.69%	16.69%	0.00%	16.69%	16.69%	0.00%
B. State and School	0.00%	20.02%	20.02%	0.00%	20.02%	20.02%	0.00%
III. Public Safety Contributory							
A. Other Division A (2.5% COLA)	0.00%	23.83%	23.83%	0.00%	23.83%	23.83%	0.00%
B. Other Division A (4% COLA)	0.00%	24.99%	24.99%	0.00%	24.99%	24.99%	0.00%
C. Other Division B (2.5% COLA)	0.00%	21.83%	21.83%	0.00%	21.83%	21.83%	0.00%
D. Other Division B (4% COLA)	0.00%	28.00%	28.00%	0.00%	28.00%	28.00%	0.00%
IV. Public Safety Noncontributory							
A. State	0.00%	30.54%	30.54%	0.00%	30.54%	30.54%	0.00%
B. Other Division A (2.5% COLA)	0.00%	23.83%	23.83%	0.00%	23.83%	23.83%	0.00%
C. Other Division A (4% COLA)	0.00%	24.99%	24.99%	0.00%	24.99%	24.99%	0.00%
D. Salt Lake City	0.00%	36.25%	36.25%	0.00%	36.25%	36.25%	0.00%
E. Ogden	0.00%	38.35%	38.35%	0.00%	38.35%	38.35%	0.00%
F. Provo	0.00%	31.64%	31.64%	0.00%	31.64%	31.64%	0.00%
G. Logan	0.00%	31.41%	31.41%	0.00%	31.41%	31.41%	0.00%
H. Bountiful	0.00%	36.96%	36.96%	0.00%	38.97%	38.97%	2.01%
I. Other Division B (2.5% COLA)	0.00%	21.72%	21.72%	0.00%	21.72%	21.72%	0.00%
J. Other Division B (4% COLA)	0.00%	28.00%	28.00%	0.00%	28.00%	28.00%	0.00%
V. Firefighters							
A. Division A	0.00%	12.08%	12.08%	0.00%	12.08%	12.08%	0.00%
B. Division B	0.00%	12.08%	12.08%	0.00%	12.08%	12.08%	0.00%

Note: Recommended contribution rates include the contribution to the Tier II DC Plan and the Tier I amortization cost

Rates reflect 3% Substantial Substitute where applicable

The contribution rates shown above include the cost of the 75% of pay active death benefit. The cost of the death benefit for all public employee, public safety, and firefighter funds for FY 2017 and FY 2018 was 0.08%.

Recommended rates reflect application of U.C. Sec. 49-11-301(5)

Development of Recommended Tier I Employer Contribution Rates

Fund/Division	Actuarially Calculated Rates for Current Year*	Certified Rates from Prior Year*	Larger of Columns (2,3)*	Recommended Rates Including 3% Substantial Substitute
(1)	(2)	(3)	(4)	(5)
I. Public Employees Contributory				
A. Local Government	12.31%	14.46%	14.46%	14.46%
B. State and School	14.48%	16.85%	16.85%	17.70%
II. Public Employees Noncontributory				
A. Local Government	16.32%	18.47%	18.47%	18.47%
B. State and School	18.97%	21.34%	21.34%	22.19%
III. Public Safety Contributory				
A. Other Division A (2.5% COLA)	19.10%	22.75%	22.75%	22.75%
B. Other Division A (4% COLA)	20.70%	24.33%	24.33%	24.33%
C. Other Division B (2.5% COLA)	19.62%	22.29%	22.29%	22.29%
D. Other Division B (4% COLA)	20.64%	28.95%	28.95%	28.95%
IV. Public Safety Noncontributory				
A. State	35.32%	40.50%	40.50%	41.35%
B. Other Division A (2.5% COLA)	30.60%	34.04%	34.04%	34.04%
C. Other Division A (4% COLA)	32.37%	35.71%	35.71%	35.71%
D. Salt Lake City	44.34%	46.67%	46.67%	46.67%
E. Ogden	45.92%	48.68%	48.68%	48.68%
F. Provo	39.85%	42.16%	42.16%	42.16%
G. Logan	41.16%	41.92%	41.92%	41.92%
H. Bountiful	49.58%	47.33%	49.58%	49.58%
I. Other Division B (2.5% COLA)	30.26%	32.20%	32.20%	32.20%
J. Other Division B (4% COLA)	31.25%	38.94%	38.94%	38.94%
V. Firefighters				
A. Division A	10.25%	15.53%	15.53%	15.53%
B. Division B	10.08%	18.30%	18.30%	18.30%
VI. Judges	47.09%	51.06%	51.06%	51.91%
VII. 3% Substantial Substitute	0.66%	0.85%	0.85%	N/A

* Rates exclude 3% Substantial Substitute

Note: Rates shown for Firefighters and Judges exclude offsets for fire insurance premium tax and court fees
Rates include the cost of the 75% of pay active death benefit
Rates in Column (4) reflect application of U.C. Sec. 49-11-301(5).

Development of Recommended Tier II Employer Contribution Rates

Fund/Division	Certified Rates from Prior Year*	Actuarially Calculated Rates for Current Year*	Recommended Rate -- Greater of (2) and (3)**	Hybrid Plan DC Rate	Total Tier II Rate	Tier I <i>Certified</i> Amortization %	Total Employer Rate on Behalf of Tier II Members
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I. Public Employees Contributory							
A. Local Government	8.22%	8.42%	8.42%	1.58%	10.00%	8.37%	18.37%
II. Public Employees Noncontributory							
A. Local Government	8.22%	8.42%	8.42%	1.58%	10.00%	6.61%	16.61%
B. State and School	8.22%	8.42%	8.42%	1.58%	10.00%	9.94%	19.94%
III. Public Safety Contributory							
A. Other Division A (2.5% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	11.75%	23.75%
B. Other Division A (4% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	12.91%	24.91%
C. Other Division B (2.5% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	9.75%	21.75%
D. Other Division B (4% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	15.92%	27.92%
IV. Public Safety Noncontributory							
A. State	10.67%	10.74%	10.74%	1.26%	12.00%	18.46%	30.46%
B. Other Division A (2.5% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	11.75%	23.75%
C. Other Division A (4% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	12.91%	24.91%
D. Salt Lake City	10.67%	10.74%	10.74%	1.26%	12.00%	24.17%	36.17%
E. Ogden	10.67%	10.74%	10.74%	1.26%	12.00%	26.27%	38.27%
F. Provo	10.67%	10.74%	10.74%	1.26%	12.00%	19.56%	31.56%
G. Logan	10.67%	10.74%	10.74%	1.26%	12.00%	19.33%	31.33%
H. Bountiful	10.67%	10.74%	10.74%	1.26%	12.00%	26.89%	38.89%
I. Other Division B (2.5% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	9.64%	21.64%
J. Other Division B (4% COLA)	10.67%	10.74%	10.74%	1.26%	12.00%	15.92%	27.92%
V. Firefighters							
A. Division A	10.67%	10.74%	10.74%	1.26%	12.00%	0.00%	12.00%
B. Division B	10.67%	10.74%	10.74%	1.26%	12.00%	0.00%	12.00%

* Contribution rate for the Tier II defined benefit plan. Rates shown above do not include the cost of the 75% of pay death benefit provided to active members.

** The recommended contribution rate for the public employees hybrid plan is equal to the greater of the calculated rate for the current year and the certified rate from the prior year.

Note: Tier I certified amortization rates include 3% Substantial Substitute where applicable.

Tier I certified amortization rates shown above are certified and maintained by the Board as permitted by U.C. Sec. 49-11-301(5).

Components of Actuarially Calculated Contribution Rates

Fund/Division	Net Normal Cost	Amortization of UAAL	3% Substantial Substitute	Gross Employer Rate (2 + 3 + 4)	Offset	Net Employer Rate ¹ (5 - 6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Public Employees Contributory						
A. Local Government	5.81%	6.50%	0.00%	12.31%	0.00%	12.31%
B. State and School	5.29%	9.19%	0.66%	15.14%	0.00%	15.14%
II. Public Employees Noncontributory						
A. Local Government	11.77%	4.55%	0.00%	16.32%	0.00%	16.32%
B. State and School	12.32%	6.65%	0.66%	19.63%	0.00%	19.63%
III. Public Safety Contributory						
A. Other Division A (2.5% COLA)	11.01%	8.09%	0.00%	19.10%	0.00%	19.10%
B. Other Division A (4% COLA)	11.09%	9.61%	0.00%	20.70%	0.00%	20.70%
C. Other Division B (2.5% COLA)	12.11%	7.51%	0.00%	19.62%	0.00%	19.62%
D. Other Division B (4% COLA)	12.47%	8.17%	0.00%	20.64%	0.00%	20.64%
IV. Public Safety Noncontributory						
A. State	22.83%	12.49%	0.66%	35.98%	0.00%	35.98%
B. Other Division A (2.5% COLA)	22.51%	8.09%	0.00%	30.60%	0.00%	30.60%
C. Other Division A (4% COLA)	22.76%	9.61%	0.00%	32.37%	0.00%	32.37%
D. Salt Lake City	22.67%	21.67%	0.00%	44.34%	0.00%	44.34%
E. Ogden	22.63%	23.29%	0.00%	45.92%	0.00%	45.92%
F. Provo	22.76%	17.09%	0.00%	39.85%	0.00%	39.85%
G. Logan	22.76%	18.40%	0.00%	41.16%	0.00%	41.16%
H. Bountiful	22.69%	26.89%	0.00%	49.58%	0.00%	49.58%
I. Other Division B (2.5% COLA)	22.75%	7.51%	0.00%	30.26%	0.00%	30.26%
J. Other Division B (4% COLA)	23.08%	8.17%	0.00%	31.25%	0.00%	31.25%
V. Firefighters						
A. Division A	10.49%	-0.24%	0.00%	10.25%	11.60%	0.00%
B. Division B	8.72%	1.36%	0.00%	10.08%	11.60%	0.00%
VI. Judges	31.06%	16.03%	0.66%	47.75%	9.22%	38.53%
V. Tier II - Hybrid Plans ²						
A. Public Employees	8.42%	0.00%	0.00%	8.42%	0.00%	8.42%
B. Public Safety and Firefighter	10.83%	-0.09%	0.00%	10.74%	0.00%	10.74%

¹ The net employer rate may be less than the recommended contribution rates because they do not reflect the Board's policy of maintaining the prior year's rate, if greater, as permitted by U.C. Sec. 49-11-301(5).

² These rates exclude the Tier I amortization payment and the 3% Substantial Substitute. The normal cost excludes the 75% of pay death benefit provided to active members.

Determination of Contribution Rate Offsets for Firefighters and Judges

A. Firefighter's Offset

1. Calendar year	2013	2014	2015
2. Annual fire insurance premium receipts	\$ 11,285,000	\$ 14,154,562	\$ 17,218,000
3. 3-year average of premium receipts			14,219,187
4. Expected Tier I amortization payment			10,633,233
5. Payroll (Tier I + Tier II)			126,371,840
6. Amortization payment as % of pay (4. / 5.)			8.41%
7. Remaining available offset (3. - 4.)			3,585,954
8. Tier I payroll			112,322,278
9. Normal cost rate offset (7. / 8.)			3.19%
10. Total offset as % of pay (6. + 9.)			11.60%

B. Judge's Offset

1. Calendar year	2013	2014	2015
2. Court fees	\$ 1,498,000	\$ 1,485,677	\$ 1,653,000
3. 3-year average of court fees			\$ 1,545,559
4. Payroll			16,755,132
5. Offset: average of court fees as a percent of payroll			9.22%

Schedule of Funding Progress

Fund/Division (1)	Actuarial Value of Assets (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded AAL (UAAL) (3 - 2) (4)	Funded Ratio (2 / 3) (5)	Covered Payroll (6)	UAAL as a Percentage of Covered Payroll (4 / 6) (7)
I. Public Employees Contributory						
A. Local Government	424,164	451,531	27,367	93.9%	23,514	116.4%
B. State and School	784,905	830,979	46,074	94.5%	24,109	191.1%
C. Subtotal	1,209,069	1,282,510	73,441	94.3%	47,623	154.2%
II. Public Employees Noncontributory						
A. Local Government	4,145,394	4,807,198	661,804	86.2%	812,821	81.4%
B. State and School	17,162,787	20,138,332	2,975,545	85.2%	2,341,991	127.1%
C. Subtotal	21,308,181	24,945,530	3,637,349	85.4%	3,154,812	115.3%
III. Public Safety Contributory						
A. Other Division A (2.5% COLA)	122,250	125,327	3,077	97.5%	2,063	149.2%
B. Other Division A (4% COLA)	25,477	25,761	284	98.9%	185	153.5%
C. Other Division B (2.5% COLA)	33,850	33,929	79	99.8%	71	111.3%
D. Other Division B (4% COLA)	8,136	8,451	315	96.3%	242	130.2%
E. Subtotal	189,713	193,468	3,755	98.1%	2,561	146.6%
IV. Public Safety Noncontributory						
A. State	1,019,862	1,243,029	223,167	82.0%	106,359	209.8%
B. Other Division A (2.5% COLA)	839,284	983,374	144,090	85.3%	102,572	140.5%
C. Other Division A (4% COLA)	241,895	291,633	49,738	82.9%	31,733	156.7%
D. Salt Lake City	245,340	339,682	94,342	72.2%	27,707	340.5%
E. Ogden	56,791	76,303	19,512	74.4%	4,967	392.8%
F. Provo	43,998	57,909	13,911	76.0%	4,953	280.9%
G. Logan	25,032	32,126	7,094	77.9%	2,135	332.3%
H. Bountiful	18,096	25,407	7,311	71.2%	1,768	413.5%
I. Other Division B (2.5% COLA)	271,883	337,451	65,568	80.6%	55,316	118.5%
J. Other Division B (4% COLA)	36,533	42,583	6,050	85.8%	4,487	134.8%
K. Subtotal	2,798,714	3,429,497	630,783	81.6%	341,997	184.4%
V. Firefighters						
A. Division A	180,388	179,314	(1,074)	100.6%	26,536	-4.0%
B. Division B	879,924	897,649	17,725	98.0%	82,981	21.4%
C. Subtotal	1,060,312	1,076,963	16,651	98.5%	109,517	15.2%
VI. Judges	166,298	203,540	37,242	81.7%	16,484	225.9%
VII. Governors and Legislative	10,173	12,684	2,511	80.2%	799	314.3%
VIII. 3% Substantial Substitute	220,555	531,049	310,494	41.5%	N/A	N/A
IX. Tier II - Hybrid Plans						
A. Public Employees	145,518	145,871	353	99.8%	662,190	0.1%
B. Public Safety and Firefighter	15,618	14,774	(844)	105.7%	67,731	-1.2%
X. Grand Total	27,124,151	31,835,886	4,711,735	85.2%	4,403,714	107.0%

Note: Amounts shown are in \$ thousands
Columns may not add to total due to rounding
Covered Payroll consists of payroll for members in the Tier I and Tier II Hybrid Retirement System

Comparison of Funded Ratios

Fund/Division (1)	Funded Ratios as of January 1		
	2016 (2)	2015 (3)	2014 (4)
I. Public Employees Contributory			
A. Local Government	93.9%	89.8%	87.5%
B. State and School	94.5%	94.1%	92.4%
D. Subtotal	94.3%	92.5%	90.6%
II. Public Employees Noncontributory			
A. Local Government	86.2%	87.0%	83.0%
B. State and School	85.2%	85.5%	81.7%
D. Subtotal	85.4%	85.8%	81.9%
III. Public Safety Contributory			
A. Other Division A (2.5% COLA)	97.5%	97.7%	95.7%
B. Other Division A (4% COLA)	98.9%	98.5%	98.3%
C. Other Division B (2.5% COLA)	99.8%	99.8%	99.2%
D. Other Division B (4% COLA)	96.3%	96.6%	93.2%
E. Subtotal	98.1%	98.1%	96.5%
IV. Public Safety Noncontributory			
A. State	82.0%	81.7%	77.4%
B. Other Division A (2.5% COLA)	85.3%	87.0%	83.1%
C. Other Division A (4% COLA)	82.9%	83.9%	78.9%
D. Salt Lake City	72.2%	73.1%	70.0%
E. Ogden	74.4%	75.1%	70.8%
F. Provo	76.0%	76.7%	74.0%
G. Logan	77.9%	79.2%	76.5%
H. Bountiful	71.2%	73.1%	72.4%
I. Other Division B (2.5% COLA)	80.6%	81.7%	76.9%
J. Other Division B (4% COLA)	85.8%	85.5%	78.9%
K. Subtotal	81.6%	82.3%	78.1%
V. Firefighters			
A. Division A	100.6%	100.1%	95.9%
B. Division B	98.0%	97.9%	93.4%
C. Subtotal	98.5%	98.2%	93.8%
VI. Judges	81.7%	81.6%	78.4%
VII. Governors and Legislative	80.2%	81.1%	77.6%
VIII. 3% Substantial Substitute	41.5%	41.5%	39.4%
IX. Tier II - Hybrid Plans			
A. Public Employees	99.8%	108.7%	109.2%
B. Public Safety and Firefighter	105.7%	116.6%	116.8%
X. Grand Total	85.2%	85.5%	81.7%

Analysis of Changes in Calculated Contribution Rates

Fund/Division	Calculated Rate From Jan. 1, 2015 Valuation	Changes in Calculated Rate Due To						Calculated Rate Jan. 1, 2016 Valuation
		Payroll Growth	Investment Return	Liabilities	Benefit Changes	Act. vs Exp. Contributions	Assumption & Methods Change	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
I. Public Employees Contributory								
A. Local Government	11.49%	-0.02%	-0.10%	-0.09%	0.02%	-0.29%	1.30%	12.31%
B. State and School	14.37%	-0.01%	-0.14%	-0.25%	0.00%	-0.41%	1.54%	15.14%
II. Public Employees Noncontributory								
A. Local Government	15.50%	-0.02%	-0.10%	-0.09%	0.02%	-0.29%	1.30%	16.32%
B. State and School	18.86%	-0.01%	-0.14%	-0.25%	0.00%	-0.41%	1.54%	19.63%
III. Public Safety Contributory								
A. Other Division A (2.5% COLA)	16.75%	-0.05%	-0.15%	-0.33%	0.00%	-0.50%	3.38%	19.10%
B. Other Division A (4% COLA)	19.00%	-0.09%	0.17%	-0.39%	0.00%	-0.48%	2.49%	20.70%
C. Other Division B (2.5% COLA)	17.22%	-0.02%	-0.04%	0.14%	0.00%	-0.40%	2.72%	19.62%
D. Other Division B (4% COLA)	19.62%	-0.30%	-0.70%	0.16%	0.00%	-0.66%	2.52%	20.64%
IV. Public Safety Noncontributory								
A. State	35.12%	-0.20%	-0.18%	-0.82%	0.00%	-0.57%	2.59%	35.98%
B. Other Division A (2.5% COLA)	28.12%	-0.05%	-0.15%	-0.27%	0.00%	-0.50%	3.45%	30.60%
C. Other Division A (4% COLA)	30.42%	-0.09%	0.17%	-0.22%	0.00%	-0.48%	2.57%	32.37%
D. Salt Lake City	41.40%	0.27%	-0.18%	-0.36%	0.00%	-0.50%	3.71%	44.34%
E. Ogden	42.24%	1.24%	-0.24%	-1.02%	0.00%	-0.43%	4.13%	45.92%
F. Provo	37.18%	0.21%	-0.16%	-0.53%	0.00%	-0.43%	3.58%	39.85%
G. Logan	37.83%	0.48%	-0.22%	-0.62%	0.00%	-0.36%	4.05%	41.16%
H. Bountiful	45.84%	-0.23%	-0.23%	0.30%	0.00%	-0.20%	4.10%	49.58%
I. Other Division B (2.5% COLA)	27.73%	-0.02%	-0.04%	0.16%	0.00%	-0.40%	2.83%	30.26%
J. Other Division B (4% COLA)	30.18%	-0.30%	-0.70%	0.13%	0.00%	-0.66%	2.60%	31.25%
V. Firefighters								
A. Division A	9.34%	0.03%	-0.07%	-0.50%	0.00%	-0.67%	2.12%	10.25%
B. Division B	9.06%	-0.01%	-0.22%	-0.55%	0.00%	-0.91%	2.71%	10.08%
VI. Judges	48.48%	-0.40%	-0.26%	-1.75%	0.00%	-0.44%	2.08%	47.75%
VII. 3% Substantial Substitute	0.68%	0.00%	0.00%	-0.03%	0.00%	-0.01%	0.02%	0.66%
VIII. Tier II - Hybrid Plans								
A. Public Employees	7.83%	0.00%	0.01%	0.05%	0.00%	-0.02%	0.55%	8.42%
B. Public Safety and Firefighter	10.00%	0.02%	0.01%	0.04%	0.00%	-0.04%	0.71%	10.74%

Notes: Rates shown include contribution for 3% Substantial Substitute, if applicable. Rates shown do not include the offsets for court fees or for fire insurance premium taxes.
The change in the contribution rate due to liabilities includes the effect of the rolling 20-year amortization period.
For paired funds, rates include asset rebalancing at each point of the analysis
Rates for Tier II Hybrid Plans exclude the cost of the 75% of pay active death benefit

Analysis of Change in UAAL

Fund/Division (1)	Changes in Unfunded Actuarial Accrued Liability Due To							Jan. 1, 2016 UAAL (9)
	Jan. 1, 2015 UAAL (2)	Amortization Payments (3)	Liability (Gain)/Loss (4)	Asset (Gain)/Loss (5)	Change in Benefit Provisions (6)	Change in Assumptions (7)	Other Asset Transfers (8)	
I. Public Employees Contributory								
A. Local Government	48,655	(85)	19,536	(1,326)	(45,057)	3,645	1,999	27,367
B. State and School	48,064	(776)	8,054	(2,506)	0	5,503	(12,265)	46,074
C. Subtotal	96,719	(861)	27,590	(3,832)	(45,057)	9,148	(10,266)	73,441
II. Public Employees Noncontributory								
A. Local Government	572,485	(41,339)	(20,675)	(12,404)	48,400	117,336	(1,999)	661,804
B. State and School	2,750,262	(137,164)	(42,426)	(57,676)	0	450,283	12,265	2,975,545
C. Subtotal	3,322,747	(178,503)	(63,101)	(70,080)	48,400	567,619	10,266	3,637,349
III. Public Safety Contributory								
A. Other Division A (2.5% COLA)	2,949	(9)	930	(411)	0	836	(1,218)	3,077
B. Other Division A (4% COLA)	394	(5)	(1,299)	1,820	0	47	(673)	284
C. Other Division B (2.5% COLA)	63	(5)	1,091	(25)	0	17	(1,062)	79
D. Other Division B (4% COLA)	282	(24)	(137)	(133)	0	62	265	315
E. Subtotal	3,688	(43)	585	1,251	0	962	(2,688)	3,755
IV. Public Safety Noncontributory								
A. State	213,456	(9,198)	(7,195)	(3,211)	0	29,315	0	223,167
B. Other Division A (2.5% COLA)	117,224	(8,691)	(2,626)	(2,218)	0	39,183	1,218	144,090
C. Other Division A (4% COLA)	42,560	(2,334)	1,549	(946)	0	8,236	673	49,738
D. Salt Lake City	84,679	(2,091)	1,209	(767)	0	11,313	0	94,342
E. Ogden	17,879	(342)	(373)	(195)	0	2,544	0	19,512
F. Provo	12,469	(326)	(61)	(132)	0	1,960	0	13,911
G. Logan	6,258	(111)	(73)	(83)	0	1,103	0	7,094
H. Bountiful	6,323	(48)	267	(62)	0	830	0	7,311
I. Other Division B (2.5% COLA)	52,569	(3,221)	1,699	(279)	0	13,738	1,062	65,568
J. Other Division B (4% COLA)	5,578	(466)	417	(401)	0	1,188	(265)	6,050
K. Subtotal	558,995	(26,828)	(5,187)	(8,294)	0	109,410	2,688	630,783
V. Firefighters								
A. Division A	(195)	(2,821)	(2,348)	(346)	0	4,636	0	(1,074)
B. Division B	18,035	(11,301)	(7,098)	(2,848)	0	20,936	0	17,725
C. Subtotal	17,840	(14,122)	(9,446)	(3,194)	0	25,572	0	16,651
VI. Judges	35,489	(881)	334	(585)	0	2,885	0	37,242
VII. Governors and Legislative	2,315	(169)	166	(42)	0	241	0	2,511
VIII. 3% Substantial Substitute	304,832	(1,500)	(3,037)	316	0	9,883	0	310,494
IX. Tier II - Hybrid Plans								
A. Public Employees	(7,119)	(534)	(909)	1,048	0	7,867	0	353
B. Public Safety and Firefighter	(1,234)	(93)	(437)	117	0	803	0	(844)
X. Grand Total	4,334,272	(223,533)	(53,443)	(83,295)	3,343	734,390	0	4,711,734

Note: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

**Actuarial Present Value of Future Benefits
by Fund and Status**

Fund/Division (1)	Retirees and Beneficiaries (2)	Inactive Members (3)	Active Members (4)	Total (5)
I. Public Employees Contributory				
A. Local Government	281,516	41,313	143,483	466,312
B. State and School	557,406	53,463	230,943	841,812
D. Subtotal	838,922	94,776	374,426	1,308,124
II. Public Employees Noncontributory				
A. Local Government	1,972,628	385,794	3,234,474	5,592,897
B. State and School	10,433,307	1,100,136	11,187,807	22,721,250
D. Subtotal	12,405,935	1,485,930	14,422,281	28,314,147
III. Public Safety Contributory				
A. Other Division A (2.5% COLA)	106,162	10,557	12,676	129,395
B. Other Division A (4% COLA)	23,546	1,157	1,338	26,042
C. Other Division B (2.5% COLA)	31,541	1,822	610	33,973
D. Other Division B (4% COLA)	6,731	147	1,847	8,725
E. Subtotal	167,980	13,683	16,471	198,135
IV. Public Safety Noncontributory				
A. State	713,790	42,917	669,133	1,425,840
B. Other Division A (2.5% COLA)	434,068	99,590	636,943	1,170,601
C. Other Division A (4% COLA)	127,084	19,114	203,212	349,410
D. Salt Lake City	206,578	7,371	174,883	388,831
E. Ogden	52,549	2,251	30,728	85,528
F. Provo	33,697	1,318	31,935	66,950
G. Logan	20,334	1,411	14,193	35,938
H. Bountiful	18,039	1,086	9,798	28,923
I. Other Division B (2.5% COLA)	139,795	15,264	284,000	439,059
J. Other Division B (4% COLA)	23,863	1,561	26,218	51,642
K. Subtotal	1,769,797	191,883	2,081,043	4,042,722
V. Firefighters				
A. Division A	77,876	9,290	166,137	253,302
B. Division B	522,689	9,610	576,033	1,108,331
C. Subtotal	600,565	18,900	742,170	1,361,633
VI. Judges	129,958	1,371	107,640	238,969
VII. Governors and Legislative	7,619	3,144	2,250	13,012
VIII. Tier II - Hybrid Plans				
A. Public Employees	12	300	784,297	784,609
B. Public Safety and Firefighter	0	1	130,784	130,784
IX. Grand Total	15,920,788	1,809,988	18,661,362	36,392,135

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

**Actuarial Present Value of Future Benefits
Details for Retirees and Beneficiaries, by Status**

Fund/Division (1)	Retired Members (2)	Disabled Members (3)	Beneficiaries (4)	Total (5)
I. Public Employees Contributory				
A. Local Government	250,347	6,940	24,228	281,516
B. State and School	502,364	17,402	37,641	557,406
D. Subtotal	752,711	24,342	61,869	838,922
II. Public Employees Noncontributory				
A. Local Government	1,786,226	40,674	145,728	1,972,628
B. State and School	9,723,949	136,973	572,385	10,433,307
D. Subtotal	11,510,175	177,647	718,113	12,405,935
III. Public Safety Contributory				
A. Other Division A (2.5% COLA)	89,004	1,503	15,655	106,162
B. Other Division A (4% COLA)	18,419	242	4,885	23,546
C. Other Division B (2.5% COLA)	30,054	554	933	31,541
D. Other Division B (4% COLA)	5,671	397	663	6,731
E. Subtotal	143,148	2,696	22,136	167,980
IV. Public Safety Noncontributory				
A. State	654,186	9,247	50,357	713,790
B. Other Division A (2.5% COLA)	399,876	5,366	28,826	434,068
C. Other Division A (4% COLA)	120,357	905	5,822	127,084
D. Salt Lake City	183,378	4,064	19,135	206,578
E. Ogden	46,525	524	5,500	52,549
F. Provo	30,904	0	2,793	33,697
G. Logan	19,855	126	353	20,334
H. Bountiful	17,315	348	377	18,039
I. Other Division B (2.5% COLA)	127,512	3,140	9,143	139,795
J. Other Division B (4% COLA)	22,845	410	608	23,863
K. Subtotal	1,622,753	24,130	122,914	1,769,797
V. Firefighters				
A. Division A	63,326	8,327	6,223	77,876
B. Division B	446,165	22,880	53,644	522,689
C. Subtotal	509,491	31,207	59,867	600,565
VI. Judges	120,218	0	9,740	129,958
VII. Governors and Legislative	6,435	0	1,184	7,619
VIII. Tier II - Hybrid Plans				
A. Public Employees	12	0	0	12
B. Public Safety and Firefighter	0	0	0	0
IX. Grand Total	14,664,943	260,022	995,823	15,920,788

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

**Actuarial Present Value of Future Benefits
Details for Inactive Members, by Status**

Fund/Division (1)	Disabled (2)	Other Vested (3)	Nonvested (4)	Total (5)
I. Public Employees Contributory				
A. Local Government	1,036	38,046	2,231	41,313
B. State and School	842	52,587	35	53,463
D. Subtotal	1,878	90,633	2,266	94,776
II. Public Employees Noncontributory				
A. Local Government	31,852	352,899	1,043	385,794
B. State and School	94,363	1,000,813	4,960	1,100,136
D. Subtotal	126,215	1,353,712	6,003	1,485,930
III. Public Safety Contributory				
A. Other Division A (2.5% COLA)	0	10,153	404	10,557
B. Other Division A (4% COLA)	0	1,145	12	1,157
C. Other Division B (2.5% COLA)	0	1,770	52	1,822
D. Other Division B (4% COLA)	0	147	0	147
E. Subtotal	0	13,215	468	13,683
IV. Public Safety Noncontributory				
A. State	805	42,088	25	42,917
B. Other Division A (2.5% COLA)	2,624	96,926	40	99,590
C. Other Division A (4% COLA)	619	18,495	0	19,114
D. Salt Lake City	383	6,986	2	7,371
E. Ogden	0	2,251	0	2,251
F. Provo	0	1,317	0	1,318
G. Logan	0	1,411	0	1,411
H. Bountiful	0	1,086	0	1,086
I. Other Division B (2.5% COLA)	1,416	13,824	23	15,264
J. Other Division B (4% COLA)	379	1,182	0	1,561
K. Subtotal	6,226	185,566	90	191,883
V. Firefighters				
A. Division A	0	8,970	319	9,290
B. Division B	0	9,397	213	9,610
C. Subtotal	0	18,367	532	18,900
VI. Judges	0	1,371	0	1,371
VII. Governors and Legislative	0	3,138	5	3,144
VIII. Tier II - Hybrid Plans				
A. Public Employees	0	300	0	300
B. Public Safety and Firefighter	0	1	0	1
IX. Grand Total	134,319	1,666,303	9,364	1,809,988

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

**Actuarial Present Value of Future Benefits
Details for Active Members, by Benefit**

Fund/Division (1)	Retirement (2)	Deferred		Refunds (5)	Death (6)	Total (7)
		Termination (3)	Disability (4)			
I. Public Employees Contributory						
A. Local Government	138,169	1,175	835	518	2,787	143,483
B. State and School	227,867	0	10	104	2,962	230,943
D. Subtotal	366,036	1,175	845	622	5,749	374,426
II. Public Employees Noncontributory						
A. Local Government	2,916,439	153,561	80,510	1	83,963	3,234,474
B. State and School	10,397,273	410,702	191,182	1	188,649	11,187,807
D. Subtotal	13,313,712	564,263	271,692	2	272,612	14,422,281
III. Public Safety Contributory						
A. Other Division A (2.5% COLA)	12,036	199	153	164	124	12,676
B. Other Division A (4% COLA)	1,300	12	9	4	13	1,338
C. Other Division B (2.5% COLA)	604	0	0	0	6	610
D. Other Division B (4% COLA)	1,827	2	1	0	17	1,847
E. Subtotal	15,767	213	163	168	160	16,471
IV. Public Safety Noncontributory						
A. State	643,183	12,314	6,506	0	7,130	669,133
B. Other Division A (2.5% COLA)	609,810	13,332	6,944	0	6,856	636,943
C. Other Division A (4% COLA)	195,337	3,759	2,005	0	2,111	203,212
D. Salt Lake City	168,095	3,112	1,609	0	2,066	174,883
E. Ogden	29,416	611	321	0	379	30,728
F. Provo	30,649	597	304	0	386	31,935
G. Logan	13,725	210	105	0	152	14,193
H. Bountiful	9,263	267	141	0	127	9,798
I. Other Division B (2.5% COLA)	270,113	6,203	3,412	0	4,272	284,000
J. Other Division B (4% COLA)	24,826	666	342	0	384	26,218
K. Subtotal	1,994,417	41,071	21,689	0	23,863	2,081,043
V. Firefighters						
A. Division A	157,536	1,037	4,310	706	2,548	166,137
B. Division B	551,982	2,446	9,269	1,564	10,772	576,033
C. Subtotal	709,518	3,483	13,579	2,270	13,320	742,170
VI. Judges	105,617	0	0	0	2,023	107,640
VII. Governors and Legislative	1,638	596	0	0	17	2,250
VIII. Tier II - Hybrid Plans						
A. Public Employees	627,576	112,854	19,743	0	24,124	784,297
B. Public Safety and Firefighter	116,343	5,790	3,704	0	4,947	130,784
IX. Grand Total	17,250,624	729,445	331,415	3,062	346,815	18,661,362

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

**Actuarial Present Value of Future Benefits
Details for Members Receiving Benefits, by Benefit**

Fund/Division (1)	Basic Benefit (2)	COLA (3)	Subtotal (2) + (3) (4)	ROPP (5)	Total (4) + (5) (6)
I. Public Employees Contributory					
A. Local Government	206,211	75,254	281,465	50	281,516
B. State and School	401,828	155,345	557,173	233	557,406
D. Subtotal	608,039	230,599	838,638	283	838,922
II. Public Employees Noncontributory					
A. Local Government	1,431,623	541,005	1,972,628	0	1,972,628
B. State and School	7,453,580	2,979,727	10,433,307	0	10,433,307
D. Subtotal	8,885,203	3,520,732	12,405,935	0	12,405,935
III. Public Safety Contributory					
A. Other Division A (2.5% COLA)	67,602	38,188	105,790	372	106,162
B. Other Division A (4% COLA)	13,259	10,080	23,339	207	23,546
C. Other Division B (2.5% COLA)	21,351	10,188	31,539	2	31,541
D. Other Division B (4% COLA)	4,464	2,267	6,731	0	6,731
E. Subtotal	106,676	60,723	167,399	581	167,980
IV. Public Safety Noncontributory					
A. State	487,527	225,507	713,034	756	713,790
B. Other Division A (2.5% COLA)	303,866	130,202	434,068	0	434,068
C. Other Division A (4% COLA)	88,954	38,130	127,084	0	127,084
D. Salt Lake City	137,286	69,054	206,340	238	206,578
E. Ogden	34,782	17,737	52,519	29	52,549
F. Provo	22,986	10,679	33,665	32	33,697
G. Logan	13,957	6,373	20,330	4	20,334
H. Bountiful	12,548	5,485	18,033	6	18,039
I. Other Division B (2.5% COLA)	101,585	38,210	139,795	0	139,795
J. Other Division B (4% COLA)	17,188	6,675	23,863	0	23,863
K. Subtotal	1,220,679	548,052	1,768,731	1,065	1,769,797
V. Firefighters					
A. Division A	54,700	23,070	77,770	106	77,876
B. Division B	347,872	173,593	521,465	1,224	522,689
C. Subtotal	402,572	196,663	599,235	1,330	600,565
VI. Judges	89,235	40,723	129,958	0	129,958
VII. Governors and Legislative	4,975	1,954	6,929	689	7,619
VIII. Tier II - Hybrid Plans					
A. Public Employees	10	2	12	0	12
B. Public Safety and Firefighter	0	0	0	0	0
VIII. Grand Total	11,317,389	4,599,448	15,916,837	3,948	15,920,788

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

Normal Cost

Fund/Division (1)	Retirement (2)	Deferred Termination (3)	Disability (4)	Refunds (5)	Death (6)	Total (7)
I. Public Employees Contributory						
A. Local Government	8.76%	0.87%	0.53%	1.31%	0.34%	11.81%
B. State and School	8.36%	0.68%	0.41%	1.59%	0.25%	11.29%
II. Public Employees Noncontributory						
A. Local Government	8.89%	1.90%	0.62%	0.00%	0.36%	11.77%
B. State and School	9.84%	1.76%	0.47%	0.00%	0.25%	12.32%
III. Public Safety Contributory						
A. Other Division A (2.5% COLA)	20.02%	0.76%	0.68%	1.52%	0.32%	23.30%
B. Other Division A (4% COLA)	19.97%	0.81%	0.72%	1.51%	0.37%	23.38%
C. Other Division B (2.5% COLA)	18.82%	0.93%	0.85%	1.35%	0.66%	22.61%
D. Other Division B (4% COLA)	19.63%	0.76%	0.71%	1.32%	0.55%	22.97%
IV. Public Safety Noncontributory						
A. State	20.28%	1.45%	0.75%	0.00%	0.35%	22.83%
B. Other Division A (2.5% COLA)	20.12%	1.36%	0.69%	0.00%	0.34%	22.51%
C. Other Division A (4% COLA)	20.44%	1.32%	0.67%	0.00%	0.33%	22.76%
D. Salt Lake City	20.18%	1.31%	0.68%	0.00%	0.50%	22.67%
E. Ogden	20.12%	1.32%	0.68%	0.00%	0.51%	22.63%
F. Provo	20.28%	1.29%	0.67%	0.00%	0.52%	22.76%
G. Logan	20.57%	1.15%	0.58%	0.00%	0.46%	22.76%
H. Bountiful	20.00%	1.53%	0.77%	0.00%	0.39%	22.69%
I. Other Division B (2.5% COLA)	20.12%	1.38%	0.73%	0.00%	0.52%	22.75%
J. Other Division B (4% COLA)	20.36%	1.43%	0.73%	0.00%	0.56%	23.08%
V. Firefighters						
A. Division A	22.70%	0.33%	1.45%	0.56%	0.50%	25.54%
B. Division B	22.63%	0.29%	1.23%	0.60%	0.68%	25.43%
VI. Judges	30.04%	0.00%	0.00%	0.00%	1.02%	31.06%
VII. Tier II - Hybrid Plans						
A. Public Employees	6.72%	1.30%	0.22%	0.00%	0.18%	8.42%
B. Public Safety and Firefighter	9.66%	0.52%	0.31%	0.00%	0.34%	10.83%

Note: Columns may not add to total due to rounding.

The normal cost for the Tier II Hybrid Plans does not include the cost of the 75% of pay death benefit provided to active members.

Net Employer Normal Cost

Fund/Division (1)	Total Normal Cost (2)	Member Rate (3)	Net Employer Normal Cost (2) - (3) (4)
I. Public Employees Contributory			
A. Local Government	11.81%	6.00%	5.81%
B. State and School	11.29%	6.00%	5.29%
II. Public Employees Noncontributory			
A. Local Government	11.77%	0.00%	11.77%
B. State and School	12.32%	0.00%	12.32%
III. Public Safety Contributory			
A. Other Division A (2.5% COLA)	23.30%	12.29%	11.01%
B. Other Division A (4% COLA)	23.38%	12.29%	11.09%
C. Other Division B (2.5% COLA)	22.61%	10.50%	12.11%
D. Other Division B (4% COLA)	22.97%	10.50%	12.47%
IV. Public Safety Noncontributory			
A. State	22.83%	0.00%	22.83%
B. Other Division A (2.5% COLA)	22.51%	0.00%	22.51%
C. Other Division A (4% COLA)	22.76%	0.00%	22.76%
D. Salt Lake City	22.67%	0.00%	22.67%
E. Ogden	22.63%	0.00%	22.63%
F. Provo	22.76%	0.00%	22.76%
G. Logan	22.76%	0.00%	22.76%
H. Bountiful	22.69%	0.00%	22.69%
I. Other Division B (2.5% COLA)	22.75%	0.00%	22.75%
J. Other Division B (4% COLA)	23.08%	0.00%	23.08%
V. Firefighters			
A. Division A	25.54%	15.05%	10.49%
B. Division B	25.43%	16.71%	8.72%
VI. Judges			
	31.06%	0.00%	31.06%
VII. Tier II - Hybrid Plans			
A. Public Employees	8.42%	0.00%	8.42%
B. Public Safety and Firefighter	10.83%	0.00%	10.83%

Determination of Actuarial Accrued Liability

Fund/Division	Actuarial Present Value of Future Benefits	Actuarial Present Value of Future Normal Costs			Actuarial Accrued Liability (2) - (5)
		Members	Employers	Total	
(1)	(2)	(3)	(4)	(5)	(6)
I. Public Employees Contributory					
A. Local Government	466,312	7,509	7,272	14,781	451,531
B. State and School	841,812	5,757	5,076	10,833	830,979
D. Subtotal	1,308,124	13,266	12,348	25,614	1,282,510
II. Public Employees Noncontributory					
A. Local Government	5,592,897	0	785,700	785,700	4,807,198
B. State and School	22,721,250	0	2,582,918	2,582,918	20,138,332
D. Subtotal	28,314,147	0	3,368,618	3,368,618	24,945,530
III. Public Safety Contributory					
A. Other Division A (2.5% COLA)	129,395	2,146	1,922	4,068	125,327
B. Other Division A (4% COLA)	26,042	148	133	281	25,761
C. Other Division B (2.5% COLA)	33,973	20	24	44	33,929
D. Other Division B (4% COLA)	8,725	125	149	274	8,451
E. Subtotal	198,135	2,439	2,228	4,667	193,468
IV. Public Safety Noncontributory					
A. State	1,425,840	0	182,811	182,811	1,243,029
B. Other Division A (2.5% COLA)	1,170,601	0	187,227	187,227	983,374
C. Other Division A (4% COLA)	349,410	0	57,776	57,776	291,633
D. Salt Lake City	388,831	0	49,149	49,149	339,682
E. Ogden	85,528	0	9,225	9,225	76,303
F. Provo	66,950	0	9,042	9,042	57,909
G. Logan	35,938	0	3,811	3,811	32,126
H. Bountiful	28,923	0	3,517	3,517	25,407
I. Other Division B (2.5% COLA)	439,059	0	101,609	101,609	337,451
J. Other Division B (4% COLA)	51,642	0	9,059	9,059	42,583
K. Subtotal	4,042,722	0	613,226	613,226	3,429,497
V. Firefighters					
A. Division A	253,302	43,599	30,389	73,988	179,314
B. Division B	1,108,331	138,439	72,243	210,682	897,649
C. Subtotal	1,361,633	182,038	102,632	284,670	1,076,963
VI. Judges	238,969	0	35,429	35,429	203,540
VII. Governors and Legislative	13,012	0	329	329	12,684
VIII. Tier II - Hybrid Plans					
A. Public Employees	784,609	0	638,739	638,739	145,871
B. Public Safety and Firefighter	130,784	0	116,011	116,011	14,774
IX. Grand Total	36,392,135	197,743	4,889,560	5,087,303	31,304,837

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

**Actuarial Accrued Liability
Details of Member and Employer Financing**

Fund/Division	Inactive Members			Active Members		
	Accumulated Member Contributions	Employer Financed	Total	Accumulated Member Contributions	Employer Financed	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Public Employees Contributory						
A. Local Government	34,258	7,055	41,313	57,516	71,186	128,702
B. State and School	46,781	6,682	53,463	98,037	122,072	220,109
C. Subtotal	81,039	13,737	94,776	155,553	193,258	348,811
II. Public Employees Noncontributory						
A. Local Government	28,921	356,873	385,794	85,257	2,363,518	2,448,775
B. State and School	77,501	1,022,635	1,100,136	191,338	8,413,552	8,604,890
C. Subtotal	106,422	1,379,508	1,485,930	276,595	10,777,070	11,053,665
III. Public Safety Contributory						
A. Other Division A (2.5% COLA)	8,244	2,313	10,557	4,196	4,412	8,608
B. Other Division A (4% COLA)	858	299	1,157	488	570	1,058
C. Other Division B (2.5% COLA)	1,470	352	1,822	296	269	565
D. Other Division B (4% COLA)	147	0	147	673	900	1,573
E. Subtotal	10,719	2,964	13,683	5,653	6,151	11,804
IV. Public Safety Noncontributory						
A. State	1,691	41,226	42,917	2,519	483,803	486,322
B. Other Division A (2.5% COLA)	6,043	93,547	99,590	14,114	435,602	449,716
C. Other Division A (4% COLA)	976	18,138	19,114	2,151	143,285	145,436
D. Salt Lake City	210	7,161	7,371	1,235	124,499	125,734
E. Ogden	54	2,197	2,251	471	21,032	21,503
F. Provo	982	336	1,318	6,203	16,691	22,894
G. Logan	766	645	1,411	2,338	8,044	10,382
H. Bountiful	0	1,086	1,086	6	6,276	6,282
I. Other Division B (2.5% COLA)	2,077	13,187	15,264	7,051	175,341	182,392
J. Other Division B (4% COLA)	172	1,389	1,561	801	16,358	17,159
K. Subtotal	12,971	178,912	191,883	36,889	1,430,931	1,467,820
V. Firefighters						
A. Division A	5,390	3,900	9,290	31,908	60,240	92,148
B. Division B	5,088	4,522	9,610	119,991	245,359	365,350
C. Subtotal	10,478	8,422	18,900	151,899	305,599	457,498
VI. Judges	45	1,326	1,371	2,559	69,652	72,211
VII. Governors and Legislative	62	3,082	3,144	4	1,918	1,922
VIII. Tier II - Hybrid Plans						
A. Public Employees	0	300	300	0	145,558	145,558
B. Public Safety and Firefighter	0	1	1	0	14,773	14,773
IX. Grand Total	221,736	1,588,252	1,809,988	629,152	12,944,910	13,574,062

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

Number of Members

Fund/Division (1)	Active (2)	Inactive Members			Members Receiving Benefits			Total (9)
		Disabled (3)	Vested (4)	Nonvested (5)	Regular Retirees (6)	Disabled Retirees (7)	Beneficiaries (8)	
I. Public Employees Contributory								
A. Local Government	418	5	880	664	975	40	228	3,210
B. State and School	493	4	492	9	2,326	120	533	3,977
C. Subtotal	911	9	1,372	673	3,301	160	761	7,187
II. Public Employees Noncontributory								
A. Local Government	15,010	192	12,600	278	7,422	225	933	36,660
B. State and School	51,639	567	34,891	778	35,915	805	3,439	128,034
C. Subtotal	66,649	759	47,491	1,056	43,337	1,030	4,372	164,694
III. Public Safety Contributory								
A. Other Division A (2.5% COLA)	40	0	177	48	268	6	120	659
B. Other Division A (4% COLA)	4	0	20	4	84	1	48	161
C. Other Division B (2.5% COLA)	1	0	43	11	67	3	8	133
D. Other Division B (4% COLA)	4	0	2	0	23	1	6	36
E. Subtotal	49	0	242	63	442	11	182	989
IV. Public Safety Noncontributory								
A. State	2,042	4	1,390	10	1,586	40	332	5,404
B. Other Division A (2.5% COLA)	1,932	12	1,852	3	912	21	133	4,865
C. Other Division A (4% COLA)	616	2	379	0	270	3	31	1,301
D. Salt Lake City	410	1	153	1	392	15	112	1,084
E. Ogden	97	0	88	0	115	3	38	341
F. Provo	82	0	28	1	62	0	19	192
G. Logan	40	0	26	0	45	1	2	114
H. Bountiful	30	0	8	0	38	1	3	80
I. Other Division B (2.5% COLA)	957	7	323	3	255	9	48	1,602
J. Other Division B (4% COLA)	79	1	28	0	39	1	3	151
K. Subtotal	6,285	27	4,275	18	3,714	94	721	15,134
V. Firefighters								
A. Division A	458	0	217	39	126	23	30	893
B. Division B	1,264	0	160	87	831	66	257	2,665
C. Subtotal	1,722	0	377	126	957	89	287	3,558
VI. Judges	112	0	4	0	106	0	34	256
VII. Governors and Legislative	65	0	103	2	171	0	70	411
VIII. Tier II - Hybrid Plans								
A. Public Employees	21,100	0	92	0	1	0	0	21,193
B. Public Safety and Firefighter	1,755	0	1	0	0	0	0	1,756
IX. Grand Total	98,648	795	53,957	1,938	52,029	1,384	6,427	215,178

Note: The counts for the inactive members shown above includes members who may have a benefit in multiple funds/divisions.

Active Membership Statistics

Fund/Division (1)	Number (2)	Total Compensation \$ Thousands (3)	Average Compensation (\$'s) (4)	Accumulated Member Contributions With Interest \$ Thousands (5)	Average Age (6)	Average Service (7)
I. Public Employees Contributory						
A. Local Government	418	23,514	56,254	57,516	54.8	22.3
B. State and School	493	24,109	59,528	98,037	59.4	32.7
D. Subtotal	911	47,623	58,026	155,553	57.3	27.9
II. Public Employees Noncontributory						
A. Local Government	15,010	812,821	54,152	85,257	48.8	13.8
B. State and School	51,639	2,341,991	49,127	191,338	49.4	14.7
D. Subtotal	66,649	3,154,812	50,259	276,595	49.3	14.5
III. Public Safety Contributory						
A. Other Division A (2.5% COLA)	40	2,063	51,568	4,196	41.7	12.3
B. Other Division A (4% COLA)	4	185	46,335	488	46.5	16.8
C. Other Division B (2.5% COLA)	1	71	70,814	296	59.0	26.0
D. Other Division B (4% COLA)	4	242	60,541	673	48.8	19.0
E. Subtotal	49	2,561	52,266	5,653	43.0	13.5
IV. Public Safety Noncontributory						
A. State	2,042	106,359	52,086	2,519	43.9	13.1
B. Other Division A (2.5% COLA)	1,932	102,572	53,091	14,114	42.1	12.6
C. Other Division A (4% COLA)	616	31,733	51,515	2,151	41.6	13.1
D. Salt Lake City	410	27,707	67,577	1,235	42.6	13.2
E. Ogden	97	4,967	51,206	471	41.3	12.2
F. Provo	82	4,953	60,398	6,203	41.9	13.3
G. Logan	40	2,135	53,377	2,338	40.7	13.4
H. Bountiful	30	1,768	58,933	6	41.2	9.7
I. Other Division B (2.5% COLA)	957	55,316	57,802	7,051	42.3	8.9
J. Other Division B (4% COLA)	79	4,487	56,801	801	41.0	10.8
K. Subtotal	6,285	341,997	54,415	36,889	42.7	12.3
V. Firefighters						
A. Division A	458	26,536	57,938	31,908	42.1	11.0
B. Division B	1,264	82,981	65,650	119,991	43.0	14.1
C. Subtotal	1,722	109,517	63,599	151,899	42.8	13.3
VI. Judges	112	16,484	147,175	2,559	56.3	9.3
VII. Governors and Legislative	65	799	12,289	4	55.2	7.6
VIII. Tier II - Hybrid Plans						
A. Public Employees	21,100	662,190	31,383	0	37.3	1.9
B. Public Safety and Firefighter	1,755	67,731	38,593	0	33.6	2.0
IX. Grand Total	98,648	4,403,714	44,641	629,152	48.7	14.4

Retired Member Statistics
(Including Disabled Retirees and Beneficiaries)

Fund/Division (1)	Number (2)	Annual Total Benefits (\$ Thousands) (3)	Average Monthly Benefit (\$'s) (4)
I. Public Employees Contributory			
A. Local Government	1,243	24,443	1,639
B. State and School	2,979	52,776	1,476
D. Subtotal	4,222	77,219	1,524
II. Public Employees Noncontributory			
A. Local Government	8,580	172,077	1,671
B. State and School	40,159	925,989	1,922
D. Subtotal	48,739	1,098,066	1,877
III. Public Safety Contributory			
A. Other Division A (2.5% COLA)	394	9,379	1,984
B. Other Division A (4% COLA)	133	2,543	1,593
C. Other Division B (2.5% COLA)	78	2,259	2,414
D. Other Division B (4% COLA)	30	520	1,446
E. Subtotal	635	14,701	1,929
IV. Public Safety Noncontributory			
A. State	1,958	56,883	2,421
B. Other Division A (2.5% COLA)	1,066	32,273	2,523
C. Other Division A (4% COLA)	304	8,968	2,458
D. Salt Lake City	519	17,008	2,731
E. Ogden	156	4,134	2,208
F. Provo	81	2,688	2,766
G. Logan	48	1,500	2,604
H. Bountiful	42	1,368	2,714
I. Other Division B (2.5% COLA)	312	9,375	2,504
J. Other Division B (4% COLA)	43	1,632	3,163
K. Subtotal	4,529	135,829	2,499
V. Firefighters			
A. Division A	179	5,752	2,678
B. Division B	1,154	42,706	3,084
C. Subtotal	1,333	48,458	3,029
VI. Judges	140	11,963	7,121
VII. Governors and Legislative	241	904	313
VIII. Tier II - Hybrid Plans			
A. Public Employees	1	1	72
B. Public Safety and Firefighter	0	0	0
IX. Grand Total	59,840	1,387,141	1,932

Market Value of Assets
(All Retirement Systems Combined)

Item	December 31, 2014	December 31, 2015
(1)	(2)	(3)
1. Cash	5,510	2,188
2. Receivables		
a. Member contributions	512	384
b. Employer contributions	40,078	37,705
c. Fire insurance premium tax & court fees	1,206	470
d. Investments	386,301	288,711
e. Total	<u>428,097</u>	<u>327,270</u>
3. Investments		
a. Short-term securities	1,572,064	2,229,799
b. Debt securities	4,212,687	4,281,606
c. Equity investments	9,576,809	9,193,510
d. Absolute return	4,643,417	4,141,321
e. Private equity	3,170,276	3,214,680
f. Real assets	3,780,357	4,025,398
g. Total	<u>26,955,610</u>	<u>27,086,314</u>
4. Other	2,286,469	2,021,068
5. Total Assets	29,675,686	29,436,840
6. Liabilities		
a. Securities lending liability	(2,282,747)	(2,017,935)
b. Other accounting liabilities and reserves	(823,815)	(732,065)
c. Total	<u>(3,106,562)</u>	<u>(2,750,000)</u>
7. Net assets	26,569,124	26,686,840

Note: Assets exclude the defined contribution plans
Amount shown are in \$ thousands
Amounts shown are from the December 31, 2015 Comprehensive Annual Financial Report
and may differ from other numbers contained in this report due to rounding.

Reconciliation of Market Value of Assets (MVA)

Fund/Division (1)	MVA as of Dec. 31, 2014 (2)	Contributions (3)	Benefits and Refunds (4)	Earnings, Net of Expenses (5)	Transfers (6)	MVA as of Dec. 31, 2015 (7)
I. Public Employees Contributory						
A. Local Government	452,747	8,956	(27,275)	7,421	(21,993)	419,856
B. State and School	817,245	7,534	(55,328)	13,353	(19,565)	763,238
C. Subtotal	1,269,992	16,490	(82,604)	20,774	(41,558)	1,183,094
II. Public Employees Noncontributory						
A. Local Government	3,984,141	172,495	(178,162)	68,273	27,420	4,074,168
B. State and School	16,888,881	634,492	(947,947)	285,868	41,843	16,903,137
C. Subtotal	20,873,022	806,987	(1,126,108)	354,141	69,262	20,977,304
III. Public Safety Contributory						
A. Other Division A (2.5% COLA)	134,375	773	(9,622)	2,113	(7,959)	119,680
B. Other Division A (4% COLA)	27,888	99	(2,499)	437	(1,335)	24,590
C. Other Division B (2.5% COLA)	35,121	23	(2,323)	570	(992)	32,399
D. Other Division B (4% COLA)	8,607	96	(519)	144	(28)	8,299
E. Subtotal	205,991	991	(14,963)	3,263	(10,314)	184,968
IV. Public Safety Noncontributory						
A. State	995,830	47,564	(59,289)	16,919	2,301	1,003,325
B. Other Division A (2.5% COLA)	809,310	39,200	(33,331)	13,894	(3,315)	825,758
C. Other Division A (4% COLA)	229,102	12,306	(9,665)	3,970	2,542	238,254
D. Salt Lake City	239,652	14,100	(17,074)	4,062	657	241,397
E. Ogden	56,325	2,786	(4,089)	949	(66)	55,904
F. Provo	42,906	2,314	(2,738)	729	66	43,277
G. Logan	24,854	1,044	(1,443)	421	(247)	24,629
H. Bountiful	17,965	883	(1,358)	302	35	17,826
I. Other Division B (2.5% COLA)	243,440	18,880	(10,167)	4,314	11,356	267,824
J. Other Division B (4% COLA)	34,008	1,862	(1,800)	598	1,009	35,677
K. Subtotal	2,693,391	140,940	(140,954)	46,158	14,336	2,753,871
V. Fire fighters						
A. Division A	169,492	9,288	(6,433)	2,921	1,784	177,053
B. Division B	861,548	32,795	(43,769)	14,641	789	866,004
C. Subtotal	1,031,040	42,084	(50,201)	17,562	2,573	1,043,058
VI. Judges	163,834	8,208	(12,400)	2,772	1,334	163,748
VII. Governors and Legislative	10,365	421	(905)	177	(19)	10,040
VIII. 3% Substantial Substitute	223,491	23,482	(32)	3,809	(35,615)	215,134
IX. Tier II- Hybrid Plans						
A. Public Employees	89,289	49,645	(330)	1,932	3	140,539
B. Public Safety and Fire fighter	8,706	6,221	(31)	196	(3)	15,089
X. Grand Total	26,569,122	1,095,469	(1,428,528)	450,783	0	26,686,846

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

Investment Return Rates for Prior Year

	Basis of Assets	
	Market Value (1)	Actuarial Value (2)
1. Beginning of year assets	26,569,122	25,473,963
2. Contributions to fund during year	1,095,469	1,095,469
3. Benefit payments during year (including refunds of contributions)	(1,428,528)	(1,428,528)
4. Transfers to and (from) URS	0	0
5. Investment income, net of investment and administrative expenses	450,783	1,983,244
6. End of year assets	26,686,846	27,124,148
7. Investment rate return	1.7%	7.8%

Note: Amounts shown are in \$ thousands
 Columns may not add to total due to rounding

Summary of Investment Return Rates

Year	Return on Market Value	Return on Actuarial Value
(1)	(2)	(3)
1993	15.7%	13.8%
1994	0.0%	8.8%
1995	21.4%	11.6%
1996	14.7%	11.7%
1997	15.8%	13.7%
1998	9.4%	12.6%
1999	16.3%	14.7%
2000	1.8%	11.2%
2001	-5.3%	6.8%
2002	-8.0%	-1.5%
2003	25.6%	8.0%
2004	13.7%	5.3%
2005	9.2%	7.4%
2006	14.4%	11.1%
2007	6.6%	13.0%
2008	-23.4%	-1.1%
2009	13.2%	6.1%
2010	13.2%	2.9%
2011	2.5%	1.3%
2012	12.6%	2.7%
2013	14.8%	11.0%
2014	7.1%	10.2%
2015	1.7%	7.8%
Average return		
Last 5 years:	7.6%	6.5%
Last 10 years:	5.6%	6.4%
Last 15 years:	5.9%	6.0%
Last 20 years:	7.2%	7.6%

**Calculation of Actuarial Value of Assets
(All Retirement Systems Combined)**

1. Market value of assets				\$ 26,686,846
2. Adjustments to smooth asset values based on excess/shortfall of expected investment income for:				
	Year	Total Excess / (Shortfall)	Weight Subtracted	Weight Subtracted
a.	2015	(1,529,412)	80%	(1,223,529)
b.	2014	(95,447)	60%	(57,268)
c.	2013	1,600,276	40%	640,110
d.	2012	1,016,923	20%	203,385
e.	2011	(977,081)	0%	0
f.	Total			(437,302)
3. Preliminary actuarial value of assets (1-2f)				\$ 27,124,148
4. Corridor Limits				
a. 75% of market value				\$ 20,015,134
b. 125% of market value				33,358,557
c. Actuarial value (Item 3, not more than 4b, not less than 4a)				\$ 27,124,148
5. Ratio of actuarial value to market value				101.6%

Note: Amounts shown are in \$ thousands

Transfer Adjustments to Asset Values

Fund/Division (1)	Market Value of Assets (MVA) at January 1, 2016			Actuarial Value of Assets (AVA) at January 1, 2016		
	MVA Before Transfer	Transfer Amount	MVA After Transfer	AVA Before Transfer	Transfer Amount	AVA After Transfer
	(2)	(3)	(4)	(5)	(6)	(7)
I. Public Employees Contributory						
A. Local Government	419,856	(1,969)	417,887	426,163	(1,999)	424,164
B. State and School	763,238	12,116	775,354	772,640	12,265	784,905
D. Subtotal	1,183,094	10,147	1,193,241	1,198,803	10,266	1,209,069
II. Public Employees Noncontributory						
A. Local Government	4,074,168	1,969	4,076,137	4,143,395	1,999	4,145,394
B. State and School	16,903,137	(12,116)	16,891,021	17,175,052	(12,265)	17,162,787
D. Subtotal	20,977,304	(10,147)	20,967,157	21,318,447	(10,266)	21,308,181
III. Public Safety Contributory						
B. Other Division A (2.5% COLA)	119,680	1,198	120,879	121,032	1,218	122,250
C. Other Division A (4% COLA)	24,590	662	25,252	24,804	673	25,477
E. Other Division B (2.5% COLA)	32,399	1,045	33,444	32,788	1,062	33,850
F. Other Division B (4% COLA)	8,299	(261)	8,038	8,401	(265)	8,136
G. Subtotal	184,968	2,645	187,613	187,025	2,688	189,713
IV. Public Safety Noncontributory						
A. State	1,003,325	0	1,003,325	1,019,862	0	1,019,862
B. Other Division A (2.5% COLA)	825,758	(1,198)	824,560	840,502	(1,218)	839,284
C. Other Division A (4% COLA)	238,254	(662)	237,592	242,568	(673)	241,895
D. Salt Lake City	241,397	0	241,397	245,340	0	245,340
E. Ogden	55,904	0	55,904	56,791	0	56,791
F. Provo	43,277	0	43,277	43,998	0	43,998
G. Logan	24,629	0	24,629	25,032	0	25,032
H. Bountiful	17,826	0	17,826	18,096	0	18,096
I. Other Division B (2.5% COLA)	267,824	(1,045)	266,779	272,945	(1,062)	271,883
J. Other Division B (4% COLA)	35,677	261	35,938	36,268	265	36,533
K. Subtotal	2,753,871	(2,645)	2,751,226	2,801,402	(2,688)	2,798,714
V. Firefighters						
A. Division A	177,053	0	177,053	180,388	0	180,388
B. Division B	866,004	0	866,004	879,924	0	879,924
C. Subtotal	1,043,058	0	1,043,058	1,060,312	0	1,060,312
VI. Judges	163,748	0	163,748	166,298	0	166,298
VII. Governors and Legislative	10,040	0	10,040	10,173	0	10,173
VIII. 3% Substantial Substitute	215,134	0	215,134	220,555	0	220,555
IX. Tier II - Hybrid Plans						
A. Public Employees	140,539	0	140,539	145,518	0	145,518
B. Public Safety and Firefighter	15,089	0	15,089	15,618	0	15,618
X. Grand Total	26,686,846	0	26,686,846	27,124,151	0	27,124,151

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

Actuarially Determined Contribution Rate for 3% Substantial Substitute

1. Actuarial accrued liability, all funds combined		
a. Retirees	\$	404,818
b. Inactives		15,669
c. Actives		<u>110,562</u>
d. Total	\$	531,049
2. Actuarial value of assets	\$	220,555
3. Unfunded actuarial accrued liability		310,494
4. Covered compensation of state funds that will pay for benefit	\$	3,406,828
5. Calculated rate (20-year funding period and 3.10% PGR)		0.66%

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

Liabilities for 3% Substantial Substitute

Fund/Division (1)	Retirees and Beneficiaries (2)	Inactive Members (3)	Active Members (4)	Total (5)
I. Public Employees Contributory				
A. Local Government	7,923	834	3,454	12,211
B. State and School	16,666	1,603	6,922	25,191
D. Subtotal	<u>24,589</u>	<u>2,437</u>	<u>10,376</u>	<u>37,402</u>
II. Public Employees Noncontributory				
A. Local Government	46,942	2,988	18,637	68,568
B. State and School	269,962	7,940	73,224	351,125
D. Subtotal	<u>316,904</u>	<u>10,928</u>	<u>91,861</u>	<u>419,693</u>
III. Public Safety Contributory				
A. Other Division A (2.5% COLA)	2,897	202	64	3,163
B. Other Division A (4% COLA)	678	31	0	709
C. Other Division B (2.5% COLA)	822	31	18	871
D. Other Division B (4% COLA)	158	4	0	162
E. Subtotal	<u>4,555</u>	<u>268</u>	<u>82</u>	<u>4,905</u>
IV. Public Safety Noncontributory				
A. State	16,869	417	1,882	19,168
B. Other Division A (2.5% COLA)	9,618	1,149	1,393	12,160
C. Other Division A (4% COLA)	2,583	78	352	3,013
D. Salt Lake City	5,155	40	434	5,629
E. Ogden	1,345	9	86	1,440
F. Provo	800	26	139	965
G. Logan	454	28	57	539
H. Bountiful	454	0	0	454
I. Other Division B (2.5% COLA)	2,502	121	510	3,134
J. Other Division B (4% COLA)	519	13	72	604
K. Subtotal	<u>40,299</u>	<u>1,881</u>	<u>4,925</u>	<u>47,106</u>
V. Firefighters				
A. Division A	1,602	50	407	2,058
B. Division B	14,031	81	2,158	16,270
C. Subtotal	<u>15,633</u>	<u>131</u>	<u>2,565</u>	<u>18,328</u>
VI. Judges	2,695	0	752	3,447
VII. Governors and Legislative	144	24	1	169
VIII. Tier II - Hybrid Plans				
A. Public Employees	0	0	0	0
B. Public Safety and Firefighter	0	0	0	0
VIII. Grand Total	404,819	15,669	110,562	531,050

Notes: Amounts shown are in \$ thousands
Columns may not add to total due to rounding

**Governors and Legislative Pension Plan
Determination of Contribution**

1. Actuarial Accrued Liability	
a. Retirees	\$ 7,618,581
b. Inactives	3,143,603
c. Actives	<u>1,921,586</u>
d. Total	\$ 12,683,770
2. Actuarial Value of Assets	\$ 10,173,000
3. Unfunded Actuarial Accrued Liability (UAAL) (1d) - (2)	2,510,770
4. Normal Cost	\$ 82,074
5. Total Recommended Appropriation Payable by June 30, 2018	
a. Normal Cost	\$ 82,074
b. Amortization Charge (18-year funding period, level dollar)*	<u>258,936</u>
c. Subtotal	\$ 341,010
d. Interest Adjustment (two years at 7.20%)	<u>50,873</u>
e. Total	\$ 391,883

* Greater of the current year amortization dollar amount based on the closed 18-year funding period and the amortization amount actually contributed based on the prior year's valuation results.

**Historical Summary of Statistical Data
Public Employees Retirement System
(Contributory)**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active (2)	Inactive (3)	Retired (4)	Total (5)						
1994	10,826	1,733	11,444	24,003	280,655	25,924	57,861	421	929,993	880,979
1995	10,421	1,805	11,115	23,341	284,657	27,316	58,345	437	922,155	935,845
1996	6,954	2,028	10,645	19,627	195,717	28,145	58,238	456	919,007	852,034
1997	4,673	1,906	10,176	16,755	135,083	28,907	57,770	473	859,304	772,977
1998	4,396	1,975	9,724	16,095	134,341	30,560	57,496	493	916,532	809,388
1999	4,144	2,089	9,208	15,441	133,440	32,201	56,599	512	927,169	840,215
2000	3,967	2,134	8,717	14,818	133,615	33,682	55,716	533	974,834	878,190
2001	3,827	2,149	8,264	14,240	134,816	35,228	56,264	567	936,798	924,573
2002	3,703	2,262	7,822	13,787	137,721	37,192	55,569	592	827,741	927,523
2003	3,608	2,269	7,375	13,252	137,743	38,177	54,765	619	749,408	899,290
2004	3,444	2,293	6,916	12,653	134,144	38,950	53,815	648	873,520	913,948
2005	3,318	2,285	6,550	12,153	134,810	40,630	53,630	682	971,242	933,974
2006	3,140	2,321	5,963	11,424	131,437	41,859	51,646	722	1,014,414	951,540
2007	2,964	2,372	5,687	11,023	127,588	43,046	53,059	777	1,105,890	1,004,452
2008	2,821	2,425	5,718	10,964	128,030	45,385	57,596	839	1,142,078	1,102,107
2009	2,701	2,476	5,408	10,585	128,970	47,749	58,318	899	878,169	1,097,711
2010	2,470	2,467	5,171	10,108	120,258	48,687	62,382	1,005	939,905	1,116,735
2011	2,289	2,416	4,947	9,652	110,691	48,358	64,170	1,081	1,046,886	1,132,661
2012	2,110	2,364	4,751	9,225	104,065	49,320	65,688	1,152	1,065,149	1,135,251
2013	1,891	2,306	4,573	8,770	95,985	50,759	68,055	1,240	1,176,614	1,133,433
2014	1,694	2,223	4,411	8,328	88,875	52,464	70,747	1,337	1,251,018	1,165,002
2015	1,476	2,164	4,315	7,955	80,845	54,773	73,475	1,419	1,253,647	1,198,862
2016	911	2,054	4,222	7,187	47,623	58,026	77,219	1,524	1,193,241	1,209,069

**Historical Summary of Statistical Data
Public Employees Retirement System
(Noncontributory)**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active (2)	Inactive (3)	Retired (4)	Total (5)						
1994	63,448	9,507	8,025	80,980	1,536,528	24,217	104,731	1,088	4,258,021	4,039,120
1995	67,698	10,131	9,143	86,972	1,688,967	24,949	121,850	1,111	4,312,948	4,372,190
1996	69,922	12,413	10,458	92,793	1,862,940	26,643	142,838	1,138	5,497,373	5,128,203
1997	73,478	13,965	11,841	99,284	2,048,876	27,884	166,432	1,171	6,547,598	5,954,796
1998	76,728	15,383	13,242	105,353	2,231,957	29,089	192,723	1,213	7,711,808	6,896,740
1999	77,360	17,494	14,645	109,499	2,343,986	30,300	220,230	1,253	8,560,909	7,894,249
2000	80,639	18,630	16,163	115,432	2,486,200	30,831	248,366	1,281	10,112,606	9,186,463
2001	81,850	20,357	17,728	119,935	2,611,413	31,905	280,910	1,320	10,367,596	10,294,444
2002	83,690	27,385	19,145	130,220	2,801,564	33,475	314,821	1,370	9,848,682	11,021,828
2003	83,925	26,664	20,623	131,212	2,888,853	34,422	351,690	1,421	8,963,388	10,756,065
2004	84,039	28,673	22,202	134,914	2,915,008	34,686	388,305	1,457	11,191,566	11,551,092
2005	85,502	30,498	23,782	139,782	3,058,487	35,771	426,813	1,496	12,639,732	12,093,408
2006	86,502	33,035	25,446	144,983	3,121,800	36,089	466,287	1,527	13,756,039	12,935,862
2007	87,960	34,820	27,866	150,646	3,284,295	37,339	532,188	1,592	15,664,709	14,295,945
2008	91,342	36,713	30,325	158,380	3,583,525	39,232	596,337	1,639	16,564,574	16,026,629
2009	93,633	38,324	32,104	164,061	3,837,934	40,989	642,434	1,668	12,533,979	15,667,473
2010	92,847	39,583	34,433	166,863	3,888,415	41,847	726,282	1,758	13,992,989	16,434,614
2011	91,871	40,928	36,612	169,411	3,842,855	41,828	778,376	1,772	15,585,991	16,663,090
2012	87,220	42,646	38,708	168,574	3,760,961	43,120	830,698	1,788	15,704,227	16,615,078
2013	80,837	44,655	40,959	166,451	3,610,948	44,669	892,610	1,816	17,392,873	16,777,789
2014	75,381	46,653	43,362	165,396	3,486,507	46,252	959,814	1,845	19,728,833	18,396,476
2015	70,453	48,326	45,921	164,700	3,378,417	47,953	1,024,495	1,859	20,889,367	20,024,686
2016	66,649	49,306	48,739	164,694	3,154,812	50,259	1,098,066	1,877	20,967,157	21,308,181

**Historical Summary of Statistical Data
Public Safety Retirement System
(Contributory)**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active	Inactive	Retired	Total						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1994	1,601	714	1,273	3,588	46,728	29,187	15,373	1,006	326,536	311,148
1995	1,280	568	1,294	3,142	38,571	30,134	16,087	1,036	284,198	289,572
1996	971	525	1,321	2,817	30,304	31,209	17,323	1,093	310,209	291,478
1997	952	543	1,322	2,817	31,940	33,550	17,735	1,118	335,065	304,699
1998	1,006	531	1,340	2,877	34,262	34,058	18,487	1,150	364,531	324,488
1999	855	498	1,344	2,697	29,704	34,742	19,147	1,187	347,477	316,739
2000	804	486	1,333	2,623	28,957	36,016	19,351	1,210	363,654	327,635
2001	794	479	1,243	2,516	30,021	37,810	18,611	1,248	331,370	326,949
2002	795	503	1,257	2,555	30,783	38,721	19,480	1,291	293,617	328,959
2003	789	502	1,250	2,541	31,501	39,925	20,222	1,348	269,041	322,275
2004	759	519	1,249	2,527	31,688	41,749	20,759	1,385	316,514	331,432
2005	740	522	1,241	2,503	32,446	43,846	21,202	1,424	352,753	339,304
2006	698	526	1,256	2,480	31,443	45,047	22,127	1,468	368,717	345,699
2007	693	534	1,252	2,479	32,291	46,596	23,020	1,532	398,502	361,788
2008	539	505	1,101	2,145	25,700	47,681	20,452	1,548	330,176	318,303
2009	188	431	1,027	1,646	9,507	50,569	19,531	1,585	201,270	267,761
2010	165	404	1,046	1,615	8,398	50,906	21,177	1,687	222,779	271,894
2011	140	408	1,018	1,566	6,933	49,514	21,200	1,735	243,309	269,379
2012	130	398	1,003	1,531	6,475	49,817	21,293	1,769	244,173	263,771
2013	120	386	990	1,496	6,067	50,549	21,448	1,805	271,029	260,591
2014	110	381	968	1,459	5,646	51,320	21,455	1,847	277,988	258,627
2015	62	341	915	1,318	3,215	51,848	20,408	1,859	247,934	236,598
2016	49	305	635	989	2,561	52,266	14,701	1,929	187,613	189,713

**Historical Summary of Statistical Data
Public Safety Retirement System
(Noncontributory)**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active (2)	Inactive (3)	Retired (4)	Total (5)						
1994	3,289	198	238	3,725	89,839	27,315	4,272	1,496	251,536	236,786
1995	3,899	360	304	4,563	111,292	28,544	5,684	1,558	297,278	300,101
1996	4,455	555	395	5,405	130,552	29,305	7,596	1,603	409,217	379,132
1997	4,720	614	492	5,826	149,086	31,586	9,870	1,672	496,197	450,407
1998	5,033	664	592	6,289	161,826	32,153	12,068	1,699	606,326	542,680
1999	5,427	752	747	6,926	180,904	33,334	15,603	1,741	726,304	672,062
2000	5,735	865	882	7,482	196,271	34,223	18,504	1,748	898,266	818,697
2001	5,974	832	1,118	7,924	212,442	35,561	23,428	1,746	964,708	960,047
2002	6,120	1,464	1,326	8,910	225,760	36,889	28,907	1,817	936,286	1,047,507
2003	6,228	1,733	1,462	9,423	237,192	38,085	33,444	1,906	855,508	1,027,160
2004	6,324	1,915	1,617	9,856	243,745	38,543	38,614	1,990	1,087,654	1,117,457
2005	6,428	2,093	1,808	10,329	257,241	40,019	44,508	2,051	1,241,290	1,185,601
2006	6,556	2,283	2,038	10,877	263,905	40,254	51,112	2,090	1,367,735	1,287,322
2007	6,740	2,481	2,205	11,426	282,955	41,981	57,294	2,165	1,582,989	1,447,411
2008	7,015	2,633	2,612	12,260	311,886	44,460	67,997	2,169	1,776,121	1,720,309
2009	7,642	2,854	2,841	13,337	356,186	46,609	75,602	2,218	1,409,649	1,745,887
2010	7,519	3,066	3,042	13,627	359,978	47,983	84,735	2,321	1,598,416	1,861,644
2011	7,443	3,186	3,207	13,836	355,318	47,739	91,555	2,379	1,809,515	1,919,525
2012	7,495	3,613	3,355	14,463	360,231	48,063	96,988	2,409	1,854,254	1,952,972
2013	7,129	3,877	3,550	14,556	350,623	49,183	104,366	2,450	2,095,022	2,023,320
2014	6,847	4,014	3,743	14,604	346,544	50,612	111,953	2,493	2,434,192	2,272,082
2015	6,551	4,190	3,993	14,734	343,668	52,460	120,426	2,513	2,651,448	2,544,778
2016	6,285	4,320	4,529	15,134	341,997	54,415	135,829	2,499	2,751,226	2,798,714

**Historical Summary of Statistical Data
Firefighters Retirement System**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active (2)	Inactive (3)	Retired (4)	Total (5)						
1994	1,079	100	595	1,774	37,191	34,468	8,678	1,215	247,715	234,501
1995	1,123	103	618	1,844	39,669	35,324	9,811	1,323	249,712	253,304
1996	1,165	116	644	1,925	42,599	36,566	10,397	1,415	315,063	293,816
1997	1,229	123	675	2,027	47,550	38,690	12,049	1,488	362,555	329,475
1998	1,285	130	707	2,122	50,886	39,600	13,747	1,620	421,184	376,178
1999	1,352	156	736	2,244	54,402	40,238	14,940	1,692	460,190	423,405
2000	1,380	160	772	2,312	57,664	41,786	16,112	1,739	532,783	483,373
2001	1,433	173	823	2,429	61,593	42,982	18,163	1,839	540,822	536,503
2002	1,504	179	866	2,549	66,871	44,462	20,008	1,925	508,565	569,151
2003	1,545	197	884	2,626	71,347	46,179	22,246	2,097	461,324	553,589
2004	1,577	222	920	2,719	75,148	47,653	22,859	2,071	570,160	589,502
2005	1,608	237	948	2,793	79,168	49,234	24,242	2,131	637,979	610,688
2006	1,647	294	979	2,920	83,495	50,695	26,064	2,219	686,062	644,496
2007	1,690	315	1,021	3,026	87,089	51,532	28,312	2,311	773,774	705,051
2008	1,786	338	1,098	3,222	94,488	52,905	31,944	2,424	814,674	787,663
2009	1,852	370	1,120	3,342	101,508	54,810	33,985	2,529	612,696	765,871
2010	1,899	396	1,168	3,463	105,341	55,472	37,991	2,711	682,218	802,576
2011	1,890	399	1,199	3,488	105,471	55,805	39,823	2,768	756,256	810,216
2012	1,931	451	1,227	3,609	108,222	56,045	41,291	2,804	765,526	810,764
2013	1,874	463	1,262	3,599	107,495	57,361	43,349	2,862	853,776	824,060
2014	1,834	485	1,271	3,590	108,307	59,055	44,620	2,926	968,661	903,627
2015	1,775	502	1,298	3,575	108,207	60,962	46,405	2,979	1,031,040	988,806
2016	1,722	503	1,333	3,558	109,517	63,599	48,458	3,029	1,043,058	1,060,312

**Historical Summary of Statistical Data
Judges Retirement System**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active	Inactive	Retired	Total						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1994	85	1	68	154	6,897	81,142	1,930	2,365	37,398	35,479
1995	87	0	70	157	7,263	83,488	2,193	2,610	38,220	38,726
1996	98	3	70	171	8,480	86,534	2,309	2,749	47,531	44,304
1997	100	1	69	170	9,202	92,019	2,396	2,894	55,757	50,721
1998	102	1	72	175	9,298	91,158	2,778	3,215	66,299	59,373
1999	103	2	73	178	9,667	93,850	2,970	3,391	73,650	67,998
2000	106	2	73	181	10,150	95,750	3,078	3,514	85,921	78,130
2001	104	4	75	183	10,318	99,208	3,299	3,666	87,731	87,139
2002	106	4	78	188	10,910	102,925	3,608	3,855	82,760	92,649
2003	106	4	77	187	11,095	104,674	3,728	4,035	75,753	90,904
2004	106	5	83	194	11,163	105,311	4,306	4,324	94,467	97,412
2005	108	6	84	198	11,820	109,442	4,431	4,396	105,483	100,814
2006	109	5	85	199	11,721	107,533	4,711	4,618	113,353	106,374
2007	110	5	87	202	12,336	112,143	5,145	4,928	128,300	116,879
2008	110	6	96	212	13,387	121,700	5,931	5,149	134,366	129,847
2009	110	5	97	212	14,347	130,423	6,190	5,318	100,896	126,120
2010	108	4	107	219	14,458	133,873	7,435	5,791	111,727	131,491
2011	110	5	115	230	14,849	134,987	8,555	6,199	123,037	131,869
2012	112	4	118	234	15,061	134,477	8,692	6,138	123,237	130,561
2013	111	4	119	234	14,922	134,432	9,149	6,407	136,129	131,217
2014	111	5	127	243	15,932	142,249	10,244	6,722	155,680	145,121
2015	113	5	132	250	15,568	137,768	11,090	7,001	163,834	156,956
2016	112	4	140	256	16,484	147,175	11,963	7,121	163,748	166,298

**Historical Summary of Statistical Data
Legislative and Governors Retirement System**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active (2)	Inactive (3)	Retired (4)	Total (5)						
1994	93	126	188	407	427	4,593	385	171	8,089	7,683
1995	89	112	196	397	412	4,628	422	180	7,684	7,804
1996	96	111	201	408	439	4,569	445	184	8,788	8,185
1997	75	115	200	390	367	4,892	457	190	9,561	8,636
1998	90	108	208	406	488	5,419	476	191	10,531	9,318
1999	91	99	211	401	495	5,440	504	199	10,976	9,988
2000	94	101	221	416	511	5,437	531	200	12,159	10,946
2001	86	96	218	400	478	5,557	536	205	11,724	11,569
2002	94	107	228	429	601	6,391	562	206	10,448	11,710
2003	94	105	231	430	592	6,297	585	211	8,932	10,719
2004	100	110	223	433	610	6,097	573	214	10,390	10,906
2005	97	103	221	421	521	5,374	577	218	11,066	10,650
2006	88	113	224	425	788	8,955	608	226	11,319	10,587
2007	89	110	216	415	797	8,955	604	233	12,163	10,983
2008	92	118	220	430	538	5,850	596	226	12,195	11,736
2009	91	111	222	424	532	5,850	580	218	8,673	10,841
2010	94	117	223	434	585	6,224	773	289	8,995	10,770
2011	83	119	221	423	547	6,587	778	293	9,337	10,197
2012	96	116	219	431	505	5,256	819	312	8,932	9,565
2013	74	125	224	423	390	5,265	806	300	9,444	9,077
2014	76	113	235	424	854	12,200	867	307	10,165	9,457
2015	73	105	236	414	943	12,923	886	313	10,365	9,908
2016	65	105	241	411	799	12,289	904	313	10,040	10,173

**Historical Summary of Statistical Data
Tier II Public Employees' Hybrid Retirement System**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active (2)	Inactive (3)	Retired (4)	Total (5)						
2012	4,342	0	0	4,342	115,876	26,687	0	0	2,799	2,833
2013	9,510	0	0	9,510	269,287	28,316	0	0	17,935	17,817
2014	13,352	0	0	13,352	410,861	30,771	0	0	47,690	46,239
2015	16,786	0	0	16,786	552,585	32,919	0	0	89,289	88,743
2016	21,100	92	1	21,193	662,190	31,383	1	72	140,539	145,518

**Historical Summary of Statistical Data
 Tier II Public Safety and Firefighter Hybrid Retirement System**

Plan Year Beginning January 1st	Participant Counts				Covered Payroll (\$ Thousands)	Average Pay (7)	Retirement Benefits in Force Annual Amount (\$ Thousands)	Average Retiree Monthly Benefit (9)	Market Value of Assets (\$ Thousands)	Actuarial Value of Assets (\$ Thousands)
	Active (2)	Inactive (3)	Retired (4)	Total (5)						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2012	87	0	0	87	3,146	36,161	0	0	90	90
2013	439	0	0	439	16,152	36,793	0	0	1,172	1,161
2014	843	0	0	843	30,887	36,639	0	0	3,934	3,819
2015	1,280	0	0	1,280	47,707	37,271	0	0	8,706	8,666
2016	1,755	1	0	1,756	67,731	38,593	0	0	15,089	15,618

Preliminary Tier I Retirement Contribution Rates as a Percentage of Salary and Wages
Fiscal Year July 1, 2017 - June 30, 2018

	Preliminary Tier I 2017-2018 Rates						Increase (Decrease) From Prior Year
	(1)	(2)	(3)	(4)	(5)	(6)	
	Employee	Employer	Normal cost (1) + (2)	Amortization of UAAL*	Net Employer (2) + (4)	Total (3) + (4)	
Public Employees							
Contributory Retirement System							
11- Local Government	6.00%	6.09%	12.09%	8.37%	14.46%	20.46%	0.00%
12- State and School	6.00%	5.45%	11.45%	12.25%	17.70%	23.70% ^{1,2}	0.00%
Public Employees							
Noncontributory Retirement System							
15- Local Government	-	11.86%	11.86%	6.61%	18.47%	18.47%	0.00%
16- State and School	-	12.25%	12.25%	9.94%	22.19%	22.19% ^{1,2}	0.00%
Public Safety							
Contributory Retirement System							
Division A							
23- Other Division A with 2.5% COLA	12.29%	11.00%	23.29%	11.75%	22.75%	35.04%	0.00%
77- Other Division A with 4% COLA	12.29%	11.42%	23.71%	12.91%	24.33%	36.62%	0.00%
Division B							
29- Other Division B with 2.5% COLA	10.50%	12.54%	23.04%	9.75%	22.29%	32.79%	0.00%
74- Other Division B with 4% COLA	10.50%	13.03%	23.53%	15.92%	28.95%	39.45%	0.00%
Public Safety							
Noncontributory Retirement System							
Division A							
42- State with 4% COLA	-	22.89%	22.89%	18.46%	41.35%	41.35% ¹	0.00%
23- Other Division A with 2.5% COLA	-	22.29%	22.29%	11.75%	34.04%	34.04%	0.00%
75- Other Division A with 4% COLA	-	22.80%	22.80%	12.91%	35.71%	35.71%	0.00%
48- Bountiful with 2.5% COLA	-	22.69%	22.69%	26.89%	49.58%	49.58%	2.25%
Division B							
44- Salt Lake City with 2.5% COLA	-	22.50%	22.50%	24.17%	46.67%	46.67%	0.00%
45- Ogden with 2.5% COLA	-	22.41%	22.41%	26.27%	48.68%	48.68%	0.00%
46- Provo with 2.5% COLA	-	22.60%	22.60%	19.56%	42.16%	42.16%	0.00%
47- Logan with 2.5% COLA	-	22.59%	22.59%	19.33%	41.92%	41.92%	0.00%
49- Other Division B with 2.5% COLA	-	22.56%	22.56%	9.64%	32.20%	32.20%	0.00%
76- Other Division B with 4% COLA	-	23.02%	23.02%	15.92%	38.94%	38.94%	0.00%
Firefighters' Retirement System							
Division A							
Gross Rate	15.05%	11.62%	26.67%	3.91%	15.53%	30.58%	0.00%
Insurance Premium Offset	-	<u>-7.69%</u>	<u>-7.69%</u>	<u>-3.91%</u>	<u>-11.60%</u>	<u>-11.60%</u>	<u>0.04%</u>
31- Net Rate	15.05%	3.93%	18.98%	0.00%	3.93%	18.98%	0.04%
Division B							
Gross Rate	16.71%	9.80%	26.51%	8.50%	18.30%	35.01%	0.00%
Insurance Premium Offset	-	<u>-3.10%</u>	<u>-3.10%</u>	<u>-8.50%</u>	<u>-11.60%</u>	<u>-11.60%</u>	<u>0.04%</u>
32- Net Rate	16.71%	6.70%	23.41%	0.00%	6.70%	23.41%	0.04%
Judges' Retirement System							
Gross Rate	-	31.60%	31.60%	20.31%	51.91%	51.91% ¹	0.00%
Court Fees Offset	-	-	-	<u>-9.22%</u>	<u>-9.22%</u>	<u>-9.22%</u>	<u>0.57%</u>
37- Net Rate- Noncontributory	-	31.60%	31.60%	11.09%	42.69%	42.69% ¹	0.57%
Governors and Legislative							
14- Appropriation Payable by June 30, 2018					\$ 391,883	\$ 391,883	\$ (12,526)

Note: The normal cost and amortization rates shown above are certified and maintained by the Board at the 2014-15 levels (except for Firefighters and Judges due to the offset) in accordance with Utah Code Subsection 49-11-301(5)(a).

1 Includes funding of 3% Substantial Substitute based on salaries for all state and school employees.

2 Does not include 1.5% 401(k).

* Amortization of Unfunded Actuarial Accrued Liability (UAAL).

Preliminary Tier II Retirement Contribution Rates as a Percentage of Salary and Wages
Fiscal Year July 1, 2017 - June 30, 2018

	Tier II Hybrid Retirement System						Tier II Defined Contribution Plan				Increase (Decrease) From Prior Year
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	
	Employer Tier II Rate	Hybrid DB Plan Rate	Hybrid Plan DC Plan Rate (1) - (2)	Death Benefit**	Tier I Amort %	Total (1) + (4) + (5)	Employer Tier II Rate	Death Benefit**	Tier I Amort %	Total (1) + (2) + (3)	
Public Employees											
Contributory Retirement System											
11- Local Government	10.00%	8.42%	1.58%	0.08%	8.37%	18.45%	10.00%	0.08%	8.37%	18.45%	0.00%
Public Employees											
Noncontributory Retirement System											
15- Local Government	10.00%	8.42%	1.58%	0.08%	6.61%	16.69%	10.00%	0.08%	6.61%	16.69%	0.00%
16- State and School	10.00%	8.42%	1.58%	0.08%	9.94%	20.02%	10.00%	0.08%	9.94%	20.02%	0.00%
Public Safety											
Contributory Retirement System											
23- Other Division A (2.5% COLA)	12.00%	10.74%	1.26%	0.08%	11.75%	23.83%	12.00%	0.08%	11.75%	23.83%	0.00%
77- Other Division A (4% COLA)	12.00%	10.74%	1.26%	0.08%	12.91%	24.99%	12.00%	0.08%	12.91%	24.99%	0.00%
29- Other Division B (2.5% COLA)	12.00%	10.74%	1.26%	0.08%	9.75%	21.83%	12.00%	0.08%	9.75%	21.83%	0.00%
74- Other Division B (4% COLA)	12.00%	10.74%	1.26%	0.08%	15.92%	28.00%	12.00%	0.08%	15.92%	28.00%	0.00%
Public Safety											
Noncontributory Retirement System											
42- State	12.00%	10.74%	1.26%	0.08%	18.46%	30.54%	12.00%	0.08%	18.46%	30.54%	0.00%
43- Other Division A (2.5% COLA)	12.00%	10.74%	1.26%	0.08%	11.75%	23.83%	12.00%	0.08%	11.75%	23.83%	0.00%
75- Other Division A (4% COLA)	12.00%	10.74%	1.26%	0.08%	12.91%	24.99%	12.00%	0.08%	12.91%	24.99%	0.00%
44- Salt Lake City	12.00%	10.74%	1.26%	0.08%	24.17%	36.25%	12.00%	0.08%	24.17%	36.25%	0.00%
45- Ogden	12.00%	10.74%	1.26%	0.08%	26.27%	38.35%	12.00%	0.08%	26.27%	38.35%	0.00%
46- Provo	12.00%	10.74%	1.26%	0.08%	19.56%	31.64%	12.00%	0.08%	19.56%	31.64%	0.00%
47- Logan	12.00%	10.74%	1.26%	0.08%	19.33%	31.41%	12.00%	0.08%	19.33%	31.41%	0.00%
48- Bountiful	12.00%	10.74%	1.26%	0.08%	26.89%	38.97%	12.00%	0.08%	26.89%	38.97%	2.01%
49- Other Division B (2.5% COLA)	12.00%	10.74%	1.26%	0.08%	9.64%	21.72%	12.00%	0.08%	9.64%	21.72%	0.00%
76- Other Division B (4% COLA)	12.00%	10.74%	1.26%	0.08%	15.92%	28.00%	12.00%	0.08%	15.92%	28.00%	0.00%
Firefighters											
31- Division A*	12.00%	10.74%	1.26%	0.08%	0.00%	12.08%	12.00%	0.08%	0.00%	12.08%	0.00%
32- Division B*	12.00%	10.74%	1.26%	0.08%	0.00%	12.08%	12.00%	0.08%	0.00%	12.08%	0.00%

Note: * For Firefighters, the fire insurance premium offset was applied first to the amortization charge, leaving no amount owed to Tier I by employers for Tier II firefighters.

** Employer paid active member death benefit (75% of salary) per Utah Code Section 49-22-501 and 49-23-501.

Preliminary Condensed Retirement Contribution Rate Guide
Fiscal Year July 1, 2017 - June 30, 2018

	Tier I DB System			Tier I Post Retired		Tier II - DB Hybrid System				Tier II - DC Plan			
	Contribution Reporting Fields			Post Retired	Post Retired	Contribution Reporting Fields				Contribution Reporting Fields			
	Tier I 2017-2018 Rates			Employment post	Employment prior	Tier II 2017-2018 Rates				Tier II 2017-2018 Rates			
	Member	Employer	Total	6/30/2010 - No 401(k)	July 1, 2010	Tier II	Employer	401(k)	Total	Tier II	Employer	401(k)	Total
			Amort of UAAL**	Optional 401(k) Cap	Fund				Fund				
Public Employees													
Contributory Retirement System													
11- Local Government	6.00%	14.46%	20.46%	8.37%	12.09%	111	16.87%	1.58%	18.45%	211	8.45%	10.00%	18.45%
12- State and School	6.00%	17.70%	23.70%	12.25%	11.45%								
Public Employees													
Noncontributory Retirement System													
15- Local Government	-	18.47%	18.47%	6.61%	11.86%	111	15.11%	1.58%	16.69%	211	6.69%	10.00%	16.69%
16- State and School	-	22.19%	22.19% *	9.94%	12.25%	112	18.44%	1.58%	20.02%	212	10.02%	10.00%	20.02%
Public Safety													
Contributory Retirement System													
Division A													
23- Other Division A with 2.5% COLA	12.29%	22.75%	35.04%	11.75%	23.29%	122	22.57%	1.26%	23.83%	222	11.83%	12.00%	23.83%
77- Other Division A with 4% COLA	12.29%	24.33%	36.62%	12.91%	23.71%	122	23.73%	1.26%	24.99%	222	12.99%	12.00%	24.99%
Division B													
29- Other Division B with 2.5% COLA	10.50%	22.29%	32.79%	9.75%	23.04%	122	20.57%	1.26%	21.83%	222	9.83%	12.00%	21.83%
74- Other Division B with 4% COLA	10.50%	28.95%	39.45%	15.92%	23.53%	122	26.74%	1.26%	28.00%	222	16.00%	12.00%	28.00%
Public Safety													
Noncontributory Retirement System													
Division A													
42- State with 4% COLA	-	41.35%	41.35%	18.46%	22.89%	122	29.28%	1.26%	30.54%	222	18.54%	12.00%	30.54%
43- Other Division A with 2.5% COLA	-	34.04%	34.04%	11.75%	22.29%	122	22.57%	1.26%	23.83%	222	11.83%	12.00%	23.83%
75- Other Division A with 4% COLA	-	35.71%	35.71%	12.91%	22.80%	122	23.73%	1.26%	24.99%	222	12.99%	12.00%	24.99%
48- Bountiful with 2.5% COLA	-	49.58%	49.58%	26.89%	22.69%	122	37.71%	1.26%	38.97%	222	26.97%	12.00%	38.97%
Division B													
44- Salt Lake City with 2.5% COLA	-	46.67%	46.67%	24.17%	22.50%	122	34.99%	1.26%	36.25%	222	24.25%	12.00%	36.25%
45- Ogden with 2.5% COLA	-	48.68%	48.68%	26.27%	22.41%	122	37.09%	1.26%	38.35%	222	26.35%	12.00%	38.35%
46- Provo with 2.5% COLA	-	42.16%	42.16%	19.56%	22.60%	122	30.38%	1.26%	31.64%	222	19.64%	12.00%	31.64%
47- Logan with 2.5% COLA	-	41.92%	41.92%	19.33%	22.59%	122	30.15%	1.26%	31.41%	222	19.41%	12.00%	31.41%
49- Other Division B with 2.5% COLA	-	32.20%	32.20%	9.64%	22.56%	122	20.46%	1.26%	21.72%	222	9.72%	12.00%	21.72%
76- Other Division B with 4% COLA	-	38.94%	38.94%	15.92%	23.02%	122	26.74%	1.26%	28.00%	222	16.00%	12.00%	28.00%
Firefighters Retirement System													
Division A													
31- Division A	15.05%	3.93%	18.98%	0.00%	18.98%	132	10.82%	1.26%	12.08%	232	0.08%	12.00%	12.08%
Division B													
32- Division B	16.71%	6.70%	23.41%	0.00%	23.41%	132	10.82%	1.26%	12.08%	232	0.08%	12.00%	12.08%
Judges' Retirement System													
32- Judges' Noncontributory	0.00%	42.69%	42.69%										

Note: * Does not include the required 1.5% 401(k) contribution.

** Unfunded Actuarial Accrued Liability.

APPENDIX 1

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

1. *Investment return rate:*

7.20% per annum, compounded annually, composed of a 2.60% inflation rate, a 4.60% net real rate of return.

2. *Active member mortality rates:*

Active member mortality rates are a function of the member’s sex, occupation, and age. These rates were developed based on plan experience. For the Public Safety and Firefighters Systems, 25% of deaths are assumed to be service related. Rates at selected ages are shown:

Active Male Members		
Age	All Public Employees Except Educators	Public Educators
20	.000276	.000173
25	.000301	.000188
30	.000355	.000222
35	.000618	.000387
40	.000863	.000540
45	.001206	.000754
50	.001710	.001069
55	.002423	.001515
60	.003902	.002439
65	.006058	.003787
70	.007938	.004961

Active Female Members		
Age	All Public Employees Except Educators	Public Educators
20	.000096	.000067
25	.000104	.000072
30	.000132	.000092
35	.000238	.000166
40	.000353	.000247
45	.000562	.000393
50	.000838	.000587
55	.001263	.000884
60	.001966	.001376
65	.002911	.002037
70	.003807	.002665

3. *Disability rates:*

Disability rates are a function of the member’s sex, occupation, and age. These rates were developed based on plan experience. Rates are applied at all ages. For the Firefighters Systems, 25% of disabilities are assumed to be service related. Rates at selected ages are shown:

Active Male Members					
Age	Local Government	Public Employees	Public Educators	Public Safety	Firefighters
20	.000230	.000230	.000090	.000300	.000360
25	.000345	.000345	.000135	.000450	.000540
30	.000690	.000690	.000270	.000900	.001080
35	.001035	.001035	.000405	.001350	.001620
40	.001380	.001380	.000540	.001800	.002160
45	.002300	.002300	.000900	.003000	.003600
50	.002990	.002990	.001170	.003900	.004680
55	.004715	.004715	.001845	.006150	.007380
60	.006440	.006440	.002520	.008400	.010080

Active Female Members					
Age	Local Government	Public Employees	Public Educators	Public Safety	Firefighters
20	.000200	.000200	.000120	.000300	.000360
25	.000300	.000300	.000180	.000450	.000540
30	.000600	.000600	.000360	.000900	.001080
35	.000900	.000900	.000540	.001350	.001620
40	.001200	.001200	.000720	.001800	.002160
45	.002000	.002000	.001200	.003000	.003600
50	.002600	.002600	.001560	.003900	.004680
55	.004100	.004100	.002460	.006150	.007380
60	.005600	.005600	.003360	.008400	.010080

4. *Termination rates (for causes other than death, disability or retirement):*

Termination rates are a function of the member’s sex, occupation, and service. These rates were developed based on plan experience. Termination rates are not applied after a member becomes eligible for a reduced or unreduced retirement benefit.

Active Male Members					
Years of Service					
Service	Local Government	Public Employees	Public Educators	Public Safety	Firefighters
0	0.1900	0.2800	0.1500	0.1200	0.0600
1	0.1500	0.2450	0.1300	0.0650	0.0350
2	0.1100	0.1500	0.0900	0.0550	0.0300
3	0.0900	0.1200	0.0750	0.0525	0.0250
4	0.0800	0.1000	0.0650	0.0500	0.0250
5	0.0700	0.0900	0.0500	0.0450	0.0200
6	0.0600	0.0750	0.0400	0.0425	0.0150
7	0.0550	0.0650	0.0350	0.0400	0.0150
8	0.0475	0.0550	0.0325	0.0350	0.0150
9	0.0400	0.0500	0.0300	0.0325	0.0150
10	0.0350	0.0425	0.0275	0.0300	0.0150
11	0.0325	0.0400	0.0250	0.0275	0.0150
12	0.0300	0.0375	0.0225	0.0250	0.0050
13	0.0300	0.0350	0.0225	0.0225	0.0050
14	0.0300	0.0300	0.0200	0.0150	0.0050
15	0.0275	0.0250	0.0175	0.0150	0.0050
16	0.0275	0.0225	0.0175	0.0150	0.0050
17	0.0275	0.0225	0.0175	0.0150	0.0050
18	0.0250	0.0200	0.0175	0.0150	0.0050
19	0.0250	0.0200	0.0150	0.0150	0.0050
20	0.0200	0.0200	0.0100	0.0000	0.0000
21	0.0200	0.0200	0.0100	0.0000	0.0000
22	0.0175	0.0200	0.0100	0.0000	0.0000
23	0.0150	0.0150	0.0100	0.0000	0.0000
24	0.0125	0.0150	0.0100	0.0000	0.0000
25+	0.0000	0.0000	0.0000	0.0000	0.0000

4. Termination rates (continued):

Active Female Members					
Years of Service					
Service	Local Government	Public Employees	Public Educators	Public Safety	Firefighters
0	0.2400	0.3000	0.1800	0.1200	0.0600
1	0.1800	0.2250	0.1700	0.0650	0.0350
2	0.1400	0.1700	0.1350	0.0550	0.0300
3	0.1200	0.1400	0.1250	0.0525	0.0250
4	0.1100	0.1100	0.1000	0.0500	0.0250
5	0.0975	0.0950	0.0800	0.0450	0.0200
6	0.0800	0.0850	0.0750	0.0425	0.0150
7	0.0750	0.0750	0.0550	0.0400	0.0150
8	0.0650	0.0650	0.0450	0.0350	0.0150
9	0.0600	0.0600	0.0450	0.0325	0.0150
10	0.0550	0.0550	0.0400	0.0300	0.0150
11	0.0500	0.0475	0.0300	0.0275	0.0150
12	0.0450	0.0450	0.0250	0.0250	0.0050
13	0.0400	0.0425	0.0200	0.0225	0.0050
14	0.0375	0.0375	0.0200	0.0150	0.0050
15	0.0350	0.0350	0.0200	0.0150	0.0050
16	0.0325	0.0300	0.0200	0.0150	0.0050
17	0.0325	0.0275	0.0175	0.0150	0.0050
18	0.0300	0.0275	0.0150	0.0150	0.0050
19	0.0275	0.0275	0.0125	0.0150	0.0050
20	0.0250	0.0275	0.0125	0.0000	0.0000
21	0.0250	0.0250	0.0125	0.0000	0.0000
22	0.0225	0.0225	0.0125	0.0000	0.0000
23	0.0200	0.0200	0.0125	0.0000	0.0000
24	0.0200	0.0200	0.0125	0.0000	0.0000
25+	0.0000	0.0000	0.0000	0.0000	0.0000

5. *Refund rates:*

Refund rates are the percentage of vested members electing to receive a refund of contributions upon termination of employment. This rate is only applied to members of the contributory systems; vested members in the noncontributory systems are assumed to defer their benefits until retirement, even if they have a contribution account from service prior to the establishment of the noncontributory system. The rate is a function of the member's sex, occupation and service. These rates are based on plan experience.

Males				
Service	Local Government	Public Employees	Public Educators	Public Safety & Firefighters ¹
0-3	100%	100%	100%	100%
4	75%	86%	75%	76%
5	73%	83%	73%	74%
6	70%	80%	70%	71%
7	67%	78%	66%	69%
8	65%	77%	61%	67%
9	62%	75%	57%	65%
10	61%	73%	54%	57%
11	59%	70%	50%	50%
12	58%	68%	47%	42%
13	55%	66%	42%	40%
14	52%	65%	38%	37%
15	49%	63%	33%	35%
16	48%	61%	28%	33%
17	46%	60%	22%	31%
18	45%	58%	17%	29%
19	23%	29%	09%	15%
20 or more	00%	00%	00%	00%

¹ Male and female members combined.

5. Refund rates (continued):

Females			
Service	Local Government	Public Employees	Public Educators
0-3	100%	100%	100%
4	77%	80%	65%
5	75%	79%	64%
6	72%	77%	62%
7	69%	74%	61%
8	67%	71%	59%
9	64%	68%	58%
10	61%	64%	53%
11	57%	60%	48%
12	54%	56%	43%
13	49%	55%	39%
14	45%	53%	36%
15	40%	52%	32%
16	35%	49%	27%
17	30%	46%	21%
18	25%	43%	16%
19	13%	22%	08%
20 or more	0%	0%	0%

6. *Retirement rates:*

Retirement rates are a function of the member’s age, sex and occupation (and service in the case of Firefighters, Public Safety and Judges). Rates are based on plan experience. Rates are applied only at ages at which the member is eligible for a reduced or unreduced retirement benefit. Members are assumed to retire no later than age 75 (age 70 for the public safety, firefighter and judges systems). Sample rates are shown below.

Tier I - Local Government				
Age	Male		Female	
	Reduced	Unreduced	Reduced	Unreduced
50	0.025	0.150	0.030	0.200
51	0.025	0.150	0.030	0.200
52	0.025	0.150	0.030	0.200
53	0.025	0.150	0.030	0.200
54	0.025	0.150	0.040	0.200
55	0.030	0.150	0.040	0.250
56	0.030	0.150	0.040	0.250
57	0.030	0.150	0.040	0.250
58	0.050	0.150	0.060	0.250
59	0.050	0.150	0.060	0.250
60	0.050	0.200	0.060	0.300
61	0.050	0.200	0.120	0.300
62	0.130	0.230	0.120	0.300
63	0.130	0.230	0.120	0.300
64	0.130	0.230	0.120	0.300
65	N/A	0.230	N/A	0.250
66	N/A	0.300	N/A	0.250
67	N/A	0.220	N/A	0.250
68	N/A	0.220	N/A	0.250
69	N/A	0.220	N/A	0.250
70	N/A	0.220	N/A	0.200
71	N/A	0.180	N/A	0.150
72	N/A	0.180	N/A	0.150
73	N/A	0.180	N/A	0.150
74	N/A	0.180	N/A	0.150
75+	N/A	1.000	N/A	1.000

6. Retirement rates (continued):

Tier II - Local Government				
Age	Male		Female	
	Reduced	Unreduced ¹	Reduced	Unreduced ¹
50	N/A	0.150	N/A	0.200
51	N/A	0.150	N/A	0.200
52	N/A	0.150	N/A	0.200
53	N/A	0.150	N/A	0.200
54	N/A	0.150	N/A	0.200
55	N/A	0.150	N/A	0.250
56	N/A	0.150	N/A	0.250
57	N/A	0.150	N/A	0.250
58	N/A	0.150	N/A	0.250
59	N/A	0.150	N/A	0.250
60	0.020	0.200	0.020	0.300
61	0.040	0.200	0.040	0.300
62	0.060	0.230	0.060	0.300
63	0.080	0.230	0.080	0.300
64	0.100	0.230	0.100	0.300
65	N/A	0.230	N/A	0.250
66	N/A	0.300	N/A	0.250
67	N/A	0.220	N/A	0.250
68	N/A	0.220	N/A	0.250
69	N/A	0.220	N/A	0.250
70	N/A	0.220	N/A	0.200
71	N/A	0.180	N/A	0.150
72	N/A	0.180	N/A	0.150
73	N/A	0.180	N/A	0.150
74	N/A	0.180	N/A	0.150
75+	N/A	1.000	N/A	1.000

¹ The retirement rate at the age the member is first eligible for an unreduced retirement benefit prior to the age of 65 is increased by 30%.

6. Retirement rates (continued):

Tier I - Public Employees				
Age	Male		Female	
	Reduced	Unreduced	Reduced	Unreduced
50	0.023	0.150	0.025	0.170
51	0.023	0.150	0.025	0.160
52	0.025	0.150	0.025	0.160
53	0.025	0.150	0.025	0.160
54	0.025	0.150	0.025	0.160
55	0.025	0.160	0.040	0.160
56	0.040	0.160	0.040	0.160
57	0.040	0.160	0.040	0.160
58	0.040	0.160	0.040	0.200
59	0.050	0.160	0.040	0.200
60	0.075	0.200	0.100	0.300
61	0.075	0.200	0.100	0.300
62	0.130	0.330	0.160	0.300
63	0.130	0.330	0.160	0.300
64	0.130	0.300	0.160	0.300
65	N/A	0.220	N/A	0.260
66	N/A	0.220	N/A	0.260
67	N/A	0.220	N/A	0.220
68	N/A	0.220	N/A	0.220
69	N/A	0.220	N/A	0.220
70	N/A	0.220	N/A	0.220
71	N/A	0.220	N/A	0.220
72	N/A	0.220	N/A	0.220
73	N/A	0.220	N/A	0.220
74	N/A	0.220	N/A	0.220
75+	N/A	1.000	N/A	1.000

6. Retirement rates (continued):

Tier II - Public Employees				
Age	Male		Female	
	Reduced	Unreduced ¹	Reduced	Unreduced ¹
50	N/A	0.150	N/A	0.170
51	N/A	0.150	N/A	0.160
52	N/A	0.150	N/A	0.160
53	N/A	0.150	N/A	0.160
54	N/A	0.150	N/A	0.160
55	N/A	0.160	N/A	0.160
56	N/A	0.160	N/A	0.160
57	N/A	0.160	N/A	0.160
58	N/A	0.160	N/A	0.200
59	N/A	0.160	N/A	0.200
60	0.020	0.200	0.020	0.300
61	0.040	0.200	0.040	0.300
62	0.060	0.330	0.060	0.300
63	0.080	0.330	0.080	0.300
64	0.100	0.300	0.100	0.300
65	N/A	0.220	N/A	0.260
66	N/A	0.220	N/A	0.260
67	N/A	0.220	N/A	0.220
68	N/A	0.220	N/A	0.220
69	N/A	0.220	N/A	0.220
70	N/A	0.220	N/A	0.220
71	N/A	0.220	N/A	0.220
72	N/A	0.220	N/A	0.220
73	N/A	0.220	N/A	0.220
74	N/A	0.220	N/A	0.220
75+	N/A	1.000	N/A	1.000

¹ The retirement rate is increased by 30% (i.e. adding 30%) at the age the member is first eligible for an unreduced retirement benefit due to attaining 35 years of service prior to the age of 65.

6. Retirement rates (continued):

Tier I - Public Educators				
Age	Male		Female	
	Reduced	Unreduced	Reduced	Unreduced
50	0.0225	0.200	0.0200	0.300
51	0.0225	0.200	0.0200	0.300
52	0.0225	0.200	0.0300	0.300
53	0.0275	0.200	0.0300	0.140
54	0.0275	0.120	0.0300	0.140
55	0.0400	0.120	0.0400	0.140
56	0.0400	0.120	0.0400	0.180
57	0.0400	0.120	0.0700	0.180
58	0.0400	0.120	0.0700	0.180
59	0.0400	0.120	0.0700	0.180
60	0.1000	0.230	0.1100	0.300
61	0.1000	0.230	0.1100	0.300
62	0.1300	0.300	0.1800	0.350
63	0.1300	0.300	0.1800	0.350
64	0.1300	0.300	0.1800	0.300
65	N/A	0.300	N/A	0.300
66	N/A	0.300	N/A	0.300
67	N/A	0.300	N/A	0.300
68	N/A	0.300	N/A	0.230
69	N/A	0.250	N/A	0.230
70	N/A	0.200	N/A	0.230
71	N/A	0.200	N/A	0.230
72	N/A	0.200	N/A	0.230
73	N/A	0.200	N/A	0.230
74	N/A	0.200	N/A	0.230
75+	N/A	1.000	N/A	1.000

6. Retirement rates (continued):

Tier II - Public Educators				
Age	Male		Female	
	Reduced	Unreduced ¹	Reduced	Unreduced ¹
50	N/A	0.200	N/A	0.300
51	N/A	0.200	N/A	0.300
52	N/A	0.200	N/A	0.300
53	N/A	0.200	N/A	0.140
54	N/A	0.120	N/A	0.140
55	N/A	0.120	N/A	0.140
56	N/A	0.120	N/A	0.180
57	N/A	0.120	N/A	0.180
58	N/A	0.120	N/A	0.180
59	N/A	0.120	N/A	0.180
60	0.020	0.230	0.020	0.300
61	0.040	0.230	0.040	0.300
62	0.060	0.300	0.060	0.350
63	0.080	0.300	0.080	0.350
64	0.100	0.300	0.100	0.300
65	N/A	0.300	N/A	0.300
66	N/A	0.300	N/A	0.300
67	N/A	0.300	N/A	0.300
68	N/A	0.300	N/A	0.230
69	N/A	0.250	N/A	0.230
70	N/A	0.200	N/A	0.230
71	N/A	0.200	N/A	0.230
72	N/A	0.200	N/A	0.230
73	N/A	0.200	N/A	0.230
74	N/A	0.200	N/A	0.230
75+	N/A	1.000	N/A	1.000

¹ The retirement rate is increased by 30% (i.e. adding 30%) at the age the member is first eligible for an unreduced retirement benefit due to attaining 35 years of service prior to the age of 65.

6. Retirement rates (continued):

Tier I - Public Safety (Unisex)				Tier I - Firefighters (Unisex)	
Age	Years of Service			Years of Service	
	0 – 19	20 – 29	30+	0 – 29	30+
40-44	0.000	0.150	0.200	0.100	N/A
45	0.000	0.150	0.200	0.100	0.150
46	0.000	0.150	0.200	0.100	0.150
47	0.000	0.150	0.200	0.050	0.150
48	0.000	0.150	0.200	0.050	0.150
49	0.000	0.150	0.200	0.050	0.150
50	0.000	0.150	0.200	0.050	0.150
51	0.000	0.150	0.200	0.050	0.150
52	0.000	0.150	0.200	0.050	0.150
53	0.000	0.150	0.200	0.100	0.150
54	0.000	0.150	0.200	0.100	0.150
55	0.000	0.150	0.200	0.100	0.200
56	0.000	0.150	0.200	0.100	0.200
57	0.000	0.150	0.200	0.100	0.200
58	0.000	0.150	0.200	0.100	0.200
59	0.000	0.150	0.200	0.100	0.200
60	0.120	0.200	0.200	0.100	0.225
61	0.120	0.200	0.200	0.100	0.225
62	0.120	0.300	0.350	0.250	0.250
63	0.120	0.300	0.350	0.250	0.250
64	0.120	0.300	0.350	0.250	0.250
65	0.250	0.300	0.500	0.500	0.500
66	0.250	0.300	0.500	0.500	0.500
67	0.250	0.300	0.500	0.500	0.500
68	0.250	0.300	0.500	0.500	0.500
69	0.250	0.300	0.500	0.500	0.500
70+	1.000	1.000	1.000	1.000	1.000

6. Retirement rates (continued):

Age	Tier II - Public Safety (Unisex)			Tier II - Firefighters (Unisex)	
	Years of Service			Years of Service	
	0 – 19 ¹	20 - 29 ¹	30+	0 - 29 ¹	30+
40-44	N/A	0.090	N/A	0.060	N/A
45	N/A	0.090	0.120	0.060	0.090
46	N/A	0.090	0.120	0.060	0.090
47	N/A	0.090	0.120	0.030	0.090
48	N/A	0.090	0.120	0.030	0.090
49	N/A	0.090	0.120	0.030	0.090
50	N/A	0.090	0.120	0.030	0.090
51	N/A	0.090	0.120	0.030	0.090
52	N/A	0.090	0.120	0.030	0.090
53	N/A	0.090	0.120	0.060	0.090
54	N/A	0.090	0.120	0.060	0.090
55	N/A	0.090	0.120	0.060	0.120
56	N/A	0.090	0.120	0.060	0.120
57	N/A	0.090	0.120	0.060	0.120
58	N/A	0.090	0.120	0.060	0.120
59	N/A	0.090	0.120	0.060	0.120
60	N/A	0.250	0.250	0.200	0.400
61	N/A	0.300	0.300	0.200	0.400
62	0.120	0.350	0.350	0.300	0.400
63	0.120	0.350	0.350	0.300	0.400
64	0.120	0.350	0.350	0.300	0.400
65	0.250	0.500	0.500	0.600	0.600
66	0.250	0.500	0.500	0.600	0.600
67	0.250	0.500	0.500	0.600	0.600
68	0.250	0.500	0.500	0.600	0.600
69	0.250	0.500	0.500	0.600	0.600
70+	1.000	1.000	1.000	1.000	1.000

¹Retirement rates for reduced retirements are 50% of the rates shown in the table above.

6. Retirement rates (continued):

Judges - Males and Females			
Age	Years of Service		
	0 - 24	25 - 29	30+
45	N/A	0.100	0.100
46	N/A	0.100	0.100
47	N/A	0.100	0.100
48	N/A	0.100	0.100
49	N/A	0.100	0.100
50	N/A	0.100	0.100
51	N/A	0.100	0.100
52	N/A	0.100	0.100
53	N/A	0.100	0.100
54	N/A	0.100	0.100
55	N/A	0.100	0.100
56	N/A	0.100	0.100
57	N/A	0.100	0.100
58	N/A	0.100	0.100
59	N/A	0.100	0.100
60	N/A	0.100	0.100
61	N/A	0.100	0.100
62	0.250	0.200	0.200
63	0.250	0.200	0.200
64	0.250	0.200	0.200
65	0.200	0.200	0.200
66	0.200	0.200	0.200
67	0.200	0.200	0.200
68	0.200	0.200	0.200
69	0.200	0.200	0.200
70	1.000	1.000	1.000

7. *Salary increase rates:*

Salaries for individual members are assumed to increase each year, as a function of the member’s occupation and service. Rates are composed of a 2.60% inflation rate, a 0.75% general increase rate that applies to all, and a variable promotional/longevity component that is a function of the member’s service.

Active Male and Female Members - Local Government		
Years of Service	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.35% Wage Inflation
0	5.75%	9.10%
1	4.25	7.60
2	3.50	6.85
3	3.00	6.35
4	2.50	5.85
5	2.25	5.60
6	2.00	5.35
7	1.75	5.10
8	1.50	4.85
9	1.50	4.85
10	1.25	4.60
11	1.00	4.35
12	1.00	4.35
13	1.00	4.35
14	1.00	4.35
15	1.00	4.35
16	0.75	4.10
17	0.75	4.10
18	0.75	4.10
19	0.75	4.10
20	0.50	3.85
21	0.25	3.60
22	0.25	3.60
23	0.00	3.35
24	0.00	3.35
25+	0.00	3.35

7. Salary increase rates (continued):

Active Male and Female Members - Public Employees		
Years of Service	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.35% Wage Inflation
0	5.25%	8.60%
1	4.50	7.85
2	3.50	6.85
3	2.75	6.10
4	2.50	5.85
5	2.00	5.35
6	1.75	5.10
7	1.50	4.85
8	1.50	4.85
9	1.25	4.60
10	1.25	4.60
11	1.00	4.35
12	1.00	4.35
13	1.00	4.35
14	0.75	4.10
15	0.50	3.85
16	0.50	3.85
17	0.50	3.85
18	0.50	3.85
19	0.50	3.85
20	0.25	3.60
21	0.25	3.60
22	0.25	3.60
23	0.25	3.60
24	0.00	3.35
25+	0.00	3.35

7. Salary increase rates (continued):

Active Male and Female Members Public Educators		
Years of Service	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.35% Wage Inflation
0	7.00%	10.35%
1	6.00	9.35
2	5.00	8.35
3	4.50	7.85
4	4.25	7.60
5	4.00	7.35
6	4.00	7.35
7	3.75	7.10
8	3.50	6.85
9	3.25	6.60
10	2.75	6.10
11	2.25	5.60
12	2.00	5.35
13	1.50	4.85
14	1.25	4.60
15	1.00	4.35
16	0.75	4.10
17	0.50	3.85
18	0.50	3.85
19	0.50	3.85
20	0.50	3.85
21	0.50	3.85
22	0.50	3.85
23	0.50	3.85
24	0.25	3.60
25+	0.00	3.35

7. *Salary increase rates (continued):*

Active Male and Female Members Public Safety		
Years of Service	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.35% Wage Inflation
0	4.50%	7.85%
1	3.50	6.85
2	3.25	6.60
3	3.00	6.35
4	2.75	6.10
5	2.50	5.85
6	2.50	5.85
7	2.25	5.60
8	2.00	5.35
9	2.00	5.35
10	1.75	5.10
11	1.50	4.85
12	1.25	4.60
13	1.25	4.60
14	1.00	4.35
15	1.00	4.35
16	1.00	4.35
17	0.75	4.10
18	0.75	4.10
19	0.75	4.10
20	0.75	4.10
21	0.50	3.85
22	0.50	3.85
23	0.25	3.60
24	0.25	3.60
25+	0.00	3.35

7. *Salary increase rates (continued):*

Active Male and Female Members Firefighters		
Years of Service	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.35% Wage Inflation
0	5.75%	9.10%
1	5.25	8.60
2	5.00	8.35
3	4.75	8.10
4	4.50	7.85
5	4.25	7.60
6	4.25	7.60
7	3.75	7.10
8	3.50	6.85
9	3.25	6.60
10	2.75	6.10
11	2.00	5.35
12	1.75	5.10
13	1.50	4.85
14	1.50	4.85
15	1.25	4.60
16	1.25	4.60
17	1.00	4.35
18	0.75	4.10
19	0.75	4.10
20	0.75	4.10
21	0.50	3.85
22	0.25	3.60
23	0.25	3.60
24	0.25	3.60
25+	0.00	3.35

8. *Annuitant mortality rates (nondisabled retirees):*

All non-educator groups:

Male retirees: 100% of RP-2000 Combined Healthy for Males with White Collar adjustments, projected with Scale AA from 2000.

Female retirees: 120% of rates in a GRS table based on female teacher experience, projected with Scale AA from 2000.

Educator group:

Male retirees: 90% of rates in a GRS table based on male teacher experience, projected with Scale AA from 2000.

Female retirees: 100% of rates in a GRS table based on female teacher experience, projected with Scale AA from 2000.

Mortality Rates in Base Tables before Projection (Multipliers Applied)				
Age	Non-educators		Educators	
	Males	Females	Males	Females
50	0.001978	0.001843	0.002496	0.001536
55	0.003302	0.004522	0.004282	0.003768
60	0.005583	0.005660	0.004028	0.004717
65	0.011061	0.005232	0.005139	0.004360
70	0.019275	0.010756	0.013480	0.008963
75	0.033634	0.017066	0.022424	0.014222
80	0.059412	0.038077	0.044386	0.031731
85	0.104665	0.088752	0.088040	0.073960
90	0.178273	0.166303	0.154143	0.138586

The following table provides the life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Group	Year of Retirement				
	2015	2020	2025	2030	2035
Noneducators - Male	20.3	20.6	21.0	21.3	21.6
Noneducators - Female	22.2	22.3	22.5	22.7	22.9
Educators - Male	22.3	22.6	22.9	23.2	23.5
Educators - Female	23.4	23.6	23.8	23.9	24.1

9. *Disabled annuitant mortality rates:*

Males: 100% of the RP-2000 for Disabled Males, projected with Scale AA from 2000.

Females: 110% of the RP-2000 for Disabled females, projected with Scale AA from 2000.

Disabled Mortality Rates in Base Table before Projections (Multipliers Applied)		
Age	Males	Females
20	0.022571	0.008195
25	0.022571	0.008195
30	0.022571	0.008195
35	0.022571	0.008195
40	0.022571	0.008195
45	0.022571	0.008195
50	0.028975	0.012689
55	0.035442	0.018198
60	0.042042	0.024023
65	0.050174	0.030829
70	0.062583	0.041398
75	0.082067	0.057453
80	0.109372	0.079543
85	0.141603	0.110223
90	0.183408	0.154054

The following table provides the life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Gender	Year of Retirement				
	2015	2020	2025	2030	2035
Males	14.1	14.6	15.1	15.6	16.1
Females	16.1	16.4	16.7	16.9	17.2

10. *Actuarial cost method:*

The Entry Age Normal actuarial cost method is used. This method is designed to produce a relatively level funding pattern when expressed as a percent of pay.

First, the actuarial present value of all future expected benefits is determined for each member, including retired members, beneficiaries, inactive members and active members. This takes into account both the probability that a benefit will be paid at a given age and the time value of money. The sum of these amounts--the Present Value of Future Benefits (PVFB)--is then determined.

Next, the Entry Age Normal actuarial cost method is used to allocate the PVFB between the current year (the normal cost), prior years (the Actuarial Accrued Liability), and future years (future normal costs). The current and future normal costs are determined as a level percentage of pay, except that for the Legislators and Governors plan, which is not pay related, normal costs are determined as a level dollar amount.

A portion of the normal cost may be paid by employee contributions in which case the balance becomes the normal cost portion of the employer contribution rate.

The difference between the Actuarial Accrued Liability (the portion of the total actuarial present value of future benefits allocated to prior years) and the Actuarial Value of Assets is called the Unfunded Actuarial Accrued Liability (UAAL). This is funded over 20 years from the valuation date.

The total employer cost rate is the sum of (i) the normal cost rate, net of employee contributions if applicable, and (ii) the level percent-of-pay amortization of the UAAL. For the Judges' System and the Firefighters' System, certain specified revenues (court fees and a tax on fire insurance premiums, respectively) are used as an offset to the employer contribution rate each year, as described elsewhere in this report.

All contribution rates are based upon monthly payments of contributions.

11. *Actuarial value of assets:*

The actuarial value of assets is equal to the market value, adjusted for a five-year phase in of actual investment return in excess of (or less than) expected investment return. The actual return is calculated net of investment and administrative expenses, and the expected investment return is equal to the assumed investment return rate multiplied by the prior year's market value of assets, adjusted for contributions, benefits paid, and refunds. The actuarial value of assets is further adjusted, if necessary, so that it is not less than 75% of market value and not more than 125% of market value.

12. *Payroll growth rate:*

In determining the level percent of payroll amortization rate, payroll is assumed to grow annually at 3.10%. No allowance is made for future growth in the number of members.

13. *Marital status:*

All nonretired members are assumed to be married with no children. Female members are assumed to be three years younger than their spouses, while male members are assumed to be three years older than their spouses.

14. *Administrative and investment expenses:*

The assumed 7.20% investment return rate represents the anticipated net return after payment of all investment and administrative expenses. Administrative expenses are assumed to be 0.06% of plan assets each year.

15. *Judges System:*

For the Judges System, no disability or withdrawal rates were used. Salaries are assumed to increase at 3.35% per year.

16. *Governors and Legislative Pension Plan:*

A 10% withdrawal rate is assumed regardless of age or service. No disability rates are used. No salary increase rate is used because the benefits do not reflect pay. Members are assumed to retire at the earlier of (i) age 65 with four years of service, or (ii) age 62 with 10 years of service. Normal cost and actuarial accrued liability are based on Level Dollar Entry Age Cost Method (not Level Percent of Pay).

17. *Interest Credited on Member Contribution Account Balances:*

In projecting member contribution account balances, we assume that the rate credited is 7.20% each year. (The actual rate is set by the Board of Trustees annually, based on investment performance.) Interest is not credited to account balances for members of the Firefighters Retirement System.

18. *Mortality Improvement:*

For post-retirement mortality, both healthy and disabled, we assume continuous (generational) mortality improvement according to Scale AA from a base year of 2000. Mortality improvement is ignored for the pre-retirement mortality assumption, since it would not have a material effect on the liabilities.

19. *LTD Benefit Protection Contracts:*

It is assumed that all members of the Tier I Public Employee Retirement Systems are covered by an LTD Benefit Protection Contract. LTD benefit protection contract coverage for the Tier II Hybrid Retirement Systems (Public Employees and Public Safety and Firefighters) is being valued for those members who are employed by a participating employer that elected to provide coverage to their workforce.

20. *Cost-of-living increases:*

Retirement benefits for all systems with a maximum 4.00% COLA are assumed to increase at 2.60% even though the maximum allowable rate is 4.00%. Retirement benefits for the funds with a maximum 2.60% COLA—e.g., some of the Public Safety funds—are assumed to increase at the maximum allowable rate of 2.50%.

For current retirees who have received cumulative COLAs less than the total of annual CPI increases since retirement, we assume higher COLAs, subject to the annual maximum, as long as the member has “banked” CPI increases left.

APPENDIX 2

**SUMMARY OF BENEFIT PROVISIONS FOR
PUBLIC EMPLOYEE RETIREMENT SYSTEMS
(CONTRIBUTORY AND NONCONTRIBUTORY)**

1. *Effective Date:* Contributory System - July 1, 1961.
Noncontributory System - July 1, 1986.
2. *Plan Year:* Twelve-month period ending December 31st.
3. *Administration:* The Systems are administered by a Board of Trustees (which also administers the other Utah Retirement Systems). The Board of Trustees is responsible for both administration of the Systems and investment of the fund assets.
4. *Type of Plan:* These are qualified governmental defined benefit retirement plans. Under GASB 25, they are considered to be cost-sharing multiple-employer plans.
5. *Eligibility:* These Systems cover eligible employees of the State of Utah, most local government employees, and most public education employees. Generally all employees are covered, except for those covered by another System--public safety employees, firefighters, judges, legislators, and higher education employees covered under TIAA-CREF. Eligible employees become participants immediately when hired, and are required to participate. The employer-selected plan determines whether new employees participate in the Contributory or Noncontributory System. Employees who were members of the Contributory System at the time their employer selected the Noncontributory System had an option to remain in the Contributory System. These Systems are closed to members hired on and after July 1, 2011.
6. *Employee Contributions:* Members of the Contributory System contribute 6.00% of salary per year. Employers may "pick-up" employee contributions under Section 414(h) of the Internal Revenue Code. No contributions are made by members of the Noncontributory System.
7. *Employer Contributions:* The current contribution rates differ between the Contributory and Noncontributory Systems, and also differ depending on whether the member is employed by a local government (Level B) or the State of Utah or a public school (Level A). Rates are set by the Board of Trustees, based upon the actuarial valuation report for the preceding year. The Funds participating in these systems are:
 - Fund 11 - Local Government Contributory
 - Fund 12 - State and School Contributory
 - Fund 15 - Local Government Noncontributory
 - Fund 16 - State and School Noncontributory
8. *Final Average Monthly Salary (FAMS):* The monthly average of the member's highest salaries preceding retirement. For the Contributory System a five-year average is used, while a three-year average is used for the Noncontributory System.

9. *Service Retirement (Unreduced):*

- a. Eligibility: A member may retire with an unreduced benefit at age 65 with four years of service or after 30 years of service if earlier.
- b. Monthly Benefit (Contributory): 2.00% times Final Average Monthly Salary (FAMS) times years of service earned since July 1, 1975, plus 1.25% of FAMS times service earned prior to July 1, 1975.
- c. Monthly Benefit (Noncontributory): 2.00% of Final Average Monthly Salary times years of service.
- d. Payment Form: Life annuity.

10. *Service Retirement (Reduced):*

- a. Eligibility: A member may retire with a reduced benefit upon attaining age 62 with 10 years of service or age 60 with 20 years of service. A member of the Noncontributory System may retire at any age after earning 25 years of service.
- b. Reduction: 3% per year that retirement is earlier than age 65. For Noncontributory System members retiring prior to age 60, actuarial reduction is applied to the 85% factor at age 60. The early retirement reduction factors are shown below:

Age	Factor	Age	Factor
64	97.00%	54	49.58%
63	94.00%	53	45.47%
62	91.00%	52	41.73%
61	88.00%	51	38.34%
60	85.00%	50	35.24%
59	77.49%	49	32.42%
58	70.73%	48	29.84%
57	64.62%	47	27.49%
56	59.10%	46	25.33%
55	54.11%	45	23.36%

- c. Payment Form: Life annuity.

11. *Disability Retirement:*

- a. Eligibility: Member must be eligible for retirement under the Disability Act and must not be eligible for a 30-year service retirement at time of disability.
- b. Monthly Benefits Payable Prior to Retirement: A separate fund established under the Disability Act provides benefits from the time of disability until the age specified in 49-21-403. Benefits from this separate fund are not covered by these Systems.
- c. Monthly Benefits Payable after Retirement: An unreduced service retirement benefit is payable. The member receives service credit for time while disabled (both for computing the benefit amount and for determining whether the member is eligible for an unreduced service retirement benefit). Final Average Monthly Salary is increased by the same factors used for automatic cost-of-living benefit increases. I.e., the FAMS is adjusted by a cost-of-living increase up to 4.0% per year (simple interest).
- d. Payment Form: Life annuity.
- e. Death while Disabled: A disabled member is treated as an active member for purposes of determining a death benefit for the period prior to retirement.

12. *Vesting and Refunds:*

- a. Eligibility: All members who are not vested are eligible for a refund when they terminate service. Members are vested after four years of service. Vested members may also elect to receive a refund in lieu of the deferred termination benefit described below. (Noncontributory System members hired after July 1, 1986, are ineligible for a refund.)
- b. Amount: The refund benefit is the accumulated value of the member's contributions plus interest credited by the fund. The amount of interest credited each year is set annually by the Board of Trustees.

13. *Deferred Termination Benefit:*

- a. Eligibility: Member must be vested (4 years of service) and must elect to leave his/her contributions on deposit.
- b. Monthly Benefit: Same as the unreduced or reduced service retirement benefit, based on service and FAMS at termination, and commencing once the member is eligible.
- c. Payment Form: Life annuity.
- d. Death Benefit: The beneficiary of an inactive member who dies is entitled to receive the benefit described in 14.2.a. and 2.b.

14. *Death while an Active Member:*
- a. Members will receive benefits 1. and 2. described below.
 - 1. Death Benefit Insurance: A lump-sum payment that is equal to 75% of the member's highest annual salary.
 - 2.a. In General: A refund of the member's accumulated contributions (with interest) is paid to the beneficiary of a deceased member.
 - 2.b. Spousal Annuity: If the deceased member was married at the time of death and was either (i) eligible for reduced or unreduced service retirement, or (ii) had 25 years of service (15 years of service in the noncontributory system), the spouse may elect an annuity benefit in lieu of the refund benefit. The annuity is equal to the reduced or unreduced service retirement benefit payable as though Option 3 (a Joint and 100% Survivor annuity) were elected. If the member had 25 years of service or more, no reduction factor is applied in determining the service retirement benefit. If a member of the noncontributory system is not eligible for a retirement benefit and has less than 25 years of service, then the death benefit is equal to 1/3 of Option 3 benefit if the member has at least 15 and less than 20 years of service, and 2/3 of the Option 3 benefit if the member has at least 20 and less than 25 years of service.
15. *Optional Forms of Benefit*: The Systems permit members to elect from six forms of benefit at retirement. In each case the benefit amount is adjusted to be actuarially equivalent to the "Option 1" form. The six optional forms are:
- Option 1 - A life annuity with no benefits due following the member's death.
 - Option 2 - Modified Cash Refund Annuity. A reduced annuity payable for the member's lifetime, plus a death benefit equal to the excess of the member's accumulated contributions (determined at retirement) over the sum of the member's annuity payments from retirement. (The annuity payments are that part of the original benefit derived from the member's own accumulated contributions.)
 - Option 3 - Joint and 100% Survivor Annuity. An annuity payable as long as either the member or his/her spouse is living.
 - Option 4 - Joint and 50% Survivor Annuity. An annuity payable during the member's lifetime, and after the member's death if the member's spouse is still living, an annuity to the spouse of 50% of the original benefit.
 - Option 5 - Joint and 100% Pop-up Annuity. Same as Option 3, except that the benefit amount reverts to the Option 1 (life annuity) amount if the member's spouse predeceases the member.
 - Option 6 - Joint and 50% Pop-up Annuity. Same as Option 4, except that the benefit amount reverts to the Option 1 (life annuity) amount if the member's spouse predeceases the member.

16. *Postretirement Death Benefit:* None, except as elected by the member. See Optional Forms of Benefit above.
17. *Postretirement Benefit Increases:* Benefits are increased annually to take into account changes in the cost of living, with a maximum annual increase of 4% of the original benefit (i.e., a maximum 4% simple interest increase). In years in which the cost of living increases more than 4%, the excess increase is accumulated and used in later years in which the cost-of-living increase is less than 4%. This calculation is made separately for each individual. In addition, a closed group of retirees also receives a second special increase amount paid as a level annuity under whichever form of payment was elected. This is the Restoration of Purchasing Power (ROPP) payment.
18. *3% Substantial Substitute:* All members whose service began before January 1, 1989, receive an additional annual payment equal to 3% of their benefit. These payments are made to offset the taxability of the retirement benefits under the State income tax provisions. Prior to July 1, 1995, this benefit was funded by annual appropriations made by the State on a pay-as-you go basis. Beginning July 1, 1995, this benefit is funded on an actuarial basis by increasing the employer contribution rate for those Funds which are funded by the State.

**SUMMARY OF BENEFIT PROVISIONS FOR
PUBLIC SAFETY RETIREMENT SYSTEMS
(CONTRIBUTORY AND NONCONTRIBUTORY)**

1. *Effective Date:* Contributory System - July 1, 1969.
Noncontributory System - July 1, 1989.
2. *Plan Year:* Twelve-month period ending December 31st.
3. *Administration:* The Systems are administered by a Board of Trustees (which also administers the other Utah Retirement Systems). The Board of Trustees is responsible for both administration of the Systems and investment of the fund assets.
4. *Type of Plan:* These are qualified governmental defined benefit retirement plans. Under GASB 25, they are considered to be a combination of agent and cost-sharing multiple-employer plans.
5. *Eligibility:* These Systems cover eligible public safety employees of the State of Utah and some local governments. Eligible employees become participants immediately when hired, and are required to participate. The employer-selected plan determines whether new employees participate in the Contributory or Noncontributory System. Employees who were members of the Contributory System at the time their employer selected the Noncontributory System had an option to remain in the Contributory System. These Systems are closed to members hired on and after July 1, 2011.
6. *Employee Contributions:* Members of the Contributory System contribute a percentage of salary, as shown below. Employers may "pick-up" employee contributions under Section 414(h) of the Internal Revenue Code. No contributions are made by members of the Noncontributory System. Rates in the Contributory System vary by employer as follows:

Fund 22 - State of Utah	12.29%
Fund 23 - Other Division A (2.5% COLA)	12.29%
Fund 77 - Other Division A (4.0% COLA)	12.29%
Fund 27 - Logan	11.13%
Fund 29 - Other Division B (2.5% COLA)	10.50%
Fund 74 - Other Division B (4.0% COLA)	10.50%

7. *Employer Contributions*: The current contribution rates differ between the Contributory and Noncontributory Systems, and also differ depending on which fund (employer or group of employers) the member belongs to. Rates are set by the Board of Trustees, based upon the actuarial valuation report for the preceding year. The Funds included in these Systems are:

Contributory System

Fund 22 - State of Utah (Div A)
Fund 23 - Other Division A (2.5% COLA)
Fund 77 - Other Division A (4.0% COLA)
Fund 27 - Logan (Div B)
Fund 29 - Other Division B (2.5% COLA)
Fund 74 - Other Division B (4.0% COLA)

Noncontributory System

Fund 42 - State of Utah (Div A)
Fund 43 - Other Division A (2.5% COLA)
Fund 75 - Other Division A (4.0% COLA)
Fund 44 - Salt Lake City (Div B)
Fund 45 - Ogden (Div B)
Fund 46 - Provo (Div B)
Fund 47 - Logan (Div B)
Fund 48 - Bountiful (Div A)
Fund 49 - Other Division B (2.5% COLA)
Fund 76 - Other Division B (4.0% COLA)

The division designation (A or B) distinguishes between those employers covered by Social Security (A) and those not covered (B). Some plan provisions differ depending on the member's division.

8. *Final Average Monthly Salary (FAMS)*: The monthly average of the member's highest three salaries preceding retirement.
9. *Service Retirement*:
- Eligibility: A member may retire with an unreduced benefit at age 65 with four years of service or at age 60 with 10 years of service or at any age with 20 years of service.
 - Monthly Benefit: 2.50% of Final Average Monthly Salary (FAMS) times years of service up to 20 years, plus 2.00% of FAMS times years of service in excess of 20.
 - Payment Form: For married members benefits are paid as an automatic unreduced Joint and 65% Survivor Annuity. A life annuity is payable to unmarried members (although children's benefits may also be due following the member's death).

10. *Disability Retirement:*

- a. Eligibility: Member must be eligible for retirement under the Disability Act (or a substantially equivalent program) and must not be eligible for a 20-year service retirement at time of disability. Note that not all political subdivisions cover their members under a disability program.
- b. Monthly Benefits Payable Prior to Retirement: A separate fund established under the Disability Act (or an equivalent program) provides benefits from the time of disability until the age specified in 49-21-403. Benefits from this separate fund are not covered by these Systems.
- c. Monthly Benefits Payable after Retirement: An unreduced service retirement benefit is payable. The member receives service credit for time while disabled (both for computing the benefit amount and for determining whether the member is eligible for an unreduced service retirement benefit). Final Average Monthly Salary is increased by the same factors used for automatic cost-of-living benefit increases. I.e., the FAMS is adjusted by a cost-of-living increase up to 2.5% per year (up to 4% per year for the 4% COLA funds).
- d. Payment Form: Same as for Service Retirement.
- e. Death while Disabled: A disabled member is treated as an active member for purposes of determining a death benefit for the period prior to retirement.

11. *Vesting and Refunds:*

- a. Eligibility: All members who are not vested are eligible for a refund when they terminate service. Members are vested after four years of service. Vested members may also elect to receive a refund in lieu of the deferred termination benefit described below. (Noncontributory System members hired after July 1, 1989, are ineligible for a refund.)
- b. Amount: The refund benefit is the accumulated value of the member's contributions credited by the fund. Interest is credited on the member's contribution account, beginning July 1, 1996. The amount of interest credited each year is set annually by the Board of Trustees.

12. *Deferred Termination Benefit:*

- a. Eligibility: Member must be vested (4 years of service) and must elect to leave his/her contributions on deposit.
- b. Monthly Benefit: Same as the service retirement benefit, based on service and FAMS at retirement, and commencing once the member is eligible.
- c. Payment Form: Same as for service retirement.

- d. Death Benefit: The beneficiary of an inactive member who dies is entitled to receive a refund benefit (or \$500 if larger). The spouse of an inactive member with 20 years of service receives a monthly annuity equal to 50% of the service retirement benefit that would have been paid had the member died immediately prior to retirement. (An actuarial reduction factor is applied if the member was under age 50 at death.)
13. *Death while an Active Member (On Duty)*: If death occurs in the line of duty, the lump-sum and annuity benefits described below will be paid to the spouse. (The benefits are not applicable to unmarried members, although children's benefits may be due.)
- a. Lump-sum (Division A members): \$1,500.
- b. Annuity (Division A members): 30% of member's FAMS.*
- c. Lump-sum (Division B members): \$1,500.
- d. Annuity (Division B members): 37.5% of member's FAMS.
14. *Death of an Active Member (Off Duty)*: If death occurs from a cause not related to the member's duties, the lump-sum and annuity benefits described below will be paid to the spouse. (The benefits are not applicable to unmarried members, although children's benefits may be due.)
- a. Lump-sum (Division A members): If the member has less than 10 years of service, the benefit is \$1,000 or a refund benefit, whichever is larger. If the member has 10 or more years of service, the benefit is \$500.
- b. Annuity (Division A members): If the member has less than 10 years of service, no annuity is due. For members with 10 or more years of service, the benefit is 2% of FAMS per year of service, to a maximum of 30% of FAMS.*
- c. Lump-sum (Division B members): If the member does not have two years of service, the benefit is the sum of 50% of the member's salary plus a refund benefit. If the member has two or more years of service, the benefit is \$1,500.
- d. Annuity (Division B members): If the member has fewer than two years of service, no annuity is due. If the member has two or more years of service, the annuity is 37.5% of the member's FAMS.
- *(For members of the Noncontributory System, not less than the benefit payable to the surviving spouse if the member had retired the day before the member's date of death.)
15. *Optional Forms of Benefit*: Married members may elect an optional Joint & 75% Survivor option in lieu of the standard Joint & 65% option. The amount of the Joint & 75% Survivor option is determined actuarially.
16. *Postretirement Death Benefit*: None, except for survivor benefit applicable to married members.

17. *Postretirement Benefit Increases:* Benefits are increased annually to take into account changes in the cost of living. Most funds have a maximum annual increase of 2.50% of the original benefit (i.e., a maximum 2.50% simple interest increase). A window was opened in 2008 to allow employers to make an election to provide a 4.00% maximum COLA. If elected, the 4.00% maximum applies to both current and future annuitants. The legislation opening the window mandated that the State public safety members would receive the 4.00% maximum COLA. The window was originally scheduled to close at the end of 2009, but it was extended in 2009 to December 2012.

In years in which the cost of living increases more than the maximum COLA, the excess increase is accumulated and used in later years in which the cost-of-living increase is less than the maximum COLA. This calculation is made separately for each individual. In addition, a closed group of retirees also receives a second special increase amount paid as a level annuity under whichever form of payment is applicable. This is the Restoration of Purchasing Power (ROPP) payment.

The table below shows which funds provide the 2.5% maximum COLA and which ones provide the 4.0% maximum COLA:

2.50% Maximum COLA

Funds 23 & 43 - Other Division A
Fund 44 - Salt Lake City (Div B)
Fund 45 - Ogden (Div B)
Fund 46 - Provo (Div B)
Funds 27 & 47 - Logan (Div B)
Fund 48 - Bountiful (Div A)
Funds 29 & 49 - Other Division B

4.00% Maximum COLA

Funds 22 & 42 - State of Utah (Div A)
Funds 75 & 77 - Other Division A
Funds 74 & 76 - Other Division B

18. *3% Substantial Substitute:* All members whose service began before January 1, 1989, receive an additional annual payment equal to 3% of their benefit. These payments are made to offset the taxability of the retirement benefits under the State income tax provisions. Prior to July 1, 1995, this benefit was funded by annual appropriations made by the State on a pay-as-you go basis. Beginning July 1, 1995, this benefit is funded on an actuarial basis by increasing the employer contribution rate for those Funds which are funded by the State.

**SUMMARY OF BENEFIT PROVISIONS FOR
FIREFIGHTERS RETIREMENT SYSTEM**

1. *Effective Date:* July 1, 1971.
2. *Plan Year:* Twelve-month period ending December 31st.
3. *Administration:* The System is administered by a Board of Trustees (which also administers the other Utah Retirement Systems). The Board of Trustees is responsible for both administration of the System and investment of the fund assets.
4. *Type of Plan:* This is a qualified governmental defined benefit retirement plan. Under GASB 25, it is considered to be a cost-sharing multiple-employer plan.
5. *Eligibility:* This System covers eligible firefighters employed by participating local governments in Utah. Eligible employees become participants immediately when hired, and are required to participate. Employers are designated as either Division A (employers with Social Security coverage) or Division B (employers without Social Security coverage). Benefit provisions and contribution rates differ for members of different divisions. This System is closed to members hired on and after July 1, 2011.
6. *Employee Contributions:* Members contribute a percentage of salary, as shown below. Employers may "pick-up" employee contributions under Section 414(h) of the Internal Revenue Code.

Fund 31 - Division A 15.05%
Fund 32 - Division B 16.71%

Contribution rates shown may be reduced by expected income from a tax on fire insurance premiums.

7. *Employer Contributions:* The current employer contribution rates depend on the Fund. Division A covers employers covered by Social Security and Division B covers other employers. The contribution rates are set by the Board of Trustees, based on the actuarial valuation for the preceding year. Contribution rates are reduced by expected income from a tax on fire insurance premiums. The Funds in this System are:

Fund 31 - Division A
Fund 32 - Division B

8. *Final Average Monthly Salary (FAMS):* The monthly average of the member's highest three salaries preceding retirement.

9. *Service Retirement:*

- a. Eligibility: A member may retire with an unreduced benefit at age 65 with four years of service or at age 60 with 10 years of service or at any age with 20 years of service.
- b. Monthly Benefit: 2.50% of Final Average Monthly Salary (FAMS) times years of service up to 20 years, plus 2.00% of FAMS times years of service in excess of 20. There is a minimum benefit of \$500 per month.
- c. Payment Form: For married members benefits are paid as an automatic unreduced Joint and 75% Survivor Annuity. A life annuity is payable to unmarried members (although children's benefits may also be due following the member's death).

10. *Disability Retirement:*

- a. Eligibility: Member must have five or more years of service or the disability must be related to the member's duties. In addition, the member must not be eligible for a 20-year service retirement at time of disability.
- b. Monthly Benefits: 50% of FAMS.
- c. Payment Form: Benefits are payable as long as the member is disabled. Upon reaching 20 years of service, including time while disabled, or at age 65 if earlier, benefits are converted to a retirement benefit. There are special rules governing when benefits must be converted for members who become disabled after age 60.
- d. Death while Disabled: Upon the death of a disabled firefighter, the spouse shall receive 75% of the benefit currently being paid.

11. *Vesting and Refunds:*

- a. Eligibility: All members who are not vested are eligible for a refund when they terminate service. Members are vested after four years of service. Vested members may also elect to receive a refund in lieu of the deferred termination benefit described below.
- b. Amount: The refund benefit is the accumulated value of the member's contributions credited by the fund. Interest is not credited on member contributions.

12. *Deferred Termination Benefit:*

- a. Eligibility: Member must be vested (4 years of service) and must elect to leave his/her contributions on deposit.
- b. Monthly Benefit: Same as the service retirement benefit, based on service and FAMS at termination, and commencing once the member is eligible.
- c. Payment Form: Same as for service retirement.

- d. Death Benefit: The beneficiary of an unmarried inactive member who dies with 20 or more years of service prior to retirement is entitled to receive a refund benefit (or \$500 if larger). The spouse of an inactive member with 20 years of service receives a monthly annuity equal to 50% of the service retirement benefit that would have been paid had the member died immediately prior to retirement. (An actuarial reduction factor is applied if the member was under age 50 at death.) If the inactive member had less than 20 years of service, no death benefit is due.
13. *Death while an Active Member (On Duty)*: If death occurs in the line of duty, the lump-sum and annuity benefits described below will be paid to the spouse. (The benefits are not applicable to unmarried members, although children's benefits may be due.)
- a. Lump-sum (Division A members): \$1,500.
- b. Annuity (Division A members): 30% of member's FAMS. For members with more than 20 years of service, the annuity is 75% of the retirement benefit earned by the member as of his/her date of death.
- c. Lump-sum (Division B members): \$1,500.
- d. Annuity (Division B members): 37.5% of member's FAMS. For members with more than 20 years of service, the annuity is 75% of the retirement benefit earned by the member as of his/her date of death.
14. *Death of an Active Member (Off Duty)*: If death occurs from a cause not related to the member's duties, the lump-sum and annuity benefits described below will be paid to the spouse. (The benefits are not applicable to unmarried members, although children's benefits may be due.)
- a. Lump-sum (Division A members): If the member has less than 10 years of service, the benefit is \$1,000 or a refund benefit, whichever is larger. If the member has 10 or more years of service, the benefit is \$500.
- b. Annuity (Division A members): If the member has less than 10 years of service, no annuity is due. For members with 10 or more years of service, the benefit is 2% of FAMS per year of service, to a maximum of 30% of FAMS.
- c. Lump-sum (Division B members): If the member does not have five years of service, the benefit is the sum of 50% of the member's salary plus a refund benefit. If the member has five or more years of service, the benefit is \$1,500.
- d. Annuity (Division B members): If the member has fewer than five years of service, no annuity is due. If the member has five or more years of service, the annuity is 37.5% of the member's FAMS. For members with more than 20 years of service, the annuity is 75% of the retirement benefit earned by the member as of his/her date of death.
15. *Optional Forms of Benefit*: None.

16. *Postretirement Death Benefit:* None, except for survivor benefit applicable to married members.
17. *Postretirement Benefit Increases:* Benefits are increased annually to take into account changes in the cost of living, with a maximum annual increase of 4% of the original benefit (i.e., a maximum 4% simple interest increase). In years in which the cost of living increases more than 4%, the excess increase is accumulated and used in later years in which the cost-of-living increase is less than 4%. This calculation is made separately for each individual. In addition, a closed group of retirees also receives a second special increase amount paid as a level annuity under whichever form of payment is applicable. This is the Restoration of Purchasing Power (ROPP) payment.
18. *3% Substantial Substitute:* All members whose service began before January 1, 1989, receive an additional annual payment equal to 3% of their benefit. These payments are made to offset the taxability of the retirement benefits under the State income tax provisions. Prior to July 1, 1995, this benefit was funded by annual appropriations made by the State on a pay-as-you go basis. Beginning July 1, 1995, this benefit is funded on an actuarial basis by increasing the employer contribution rate for those Funds which are funded by the State.

SUMMARY OF BENEFIT PROVISIONS FOR JUDGES' NONCONTRIBUTORY RETIREMENT SYSTEM

1. *Effective Date:* July 1, 1963.
2. *Plan Year:* Twelve-month period ending December 31st.
3. *Administration:* The System is administered by a Board of Trustees (which also administers the other Utah Retirement Systems). The Board of Trustees is responsible for both administration of the System and investment of the fund assets.
4. *Type of Plan:* This is a qualified governmental defined benefit retirement plan. Under GASB 25, it is considered to be a single-employer plan.
5. *Eligibility:* This System covers judges of the State of Utah, including Supreme Court justices and appellate, district, circuit and juvenile court judges.
6. *Employee Contributions:* None. There are no longer any members in the Judges' Contributory Retirement System.
7. *Employer Contributions:* Fund 37 (Judges) has a contribution rate which is set by the Board of Trustees, based on the actuarial valuation for the preceding year. The rate is reduced by estimated court fees which are earmarked for this fund.
8. *Final Average Monthly Salary (FAMS):* The monthly average of the member's highest two salaries preceding retirement.
9. *Service Retirement (Unreduced):*
 - a. Eligibility: A member may retire with an unreduced benefit at age 70 with six years of service or after age 62 with 10 years of service or after 25 years of service.
 - b. Monthly Benefit: 5.00% times Final Average Monthly Salary (FAMS) times years of service up to 10, plus 2.25% of FAMS times years of service in excess of 10 but less than 20, plus 1.00% times FAMS times years of service in excess of 20. There is a minimum benefit equal to 110% of the formula benefit (but not greater than \$1,000 per month).
 - c. Payment Form: Married members receive an automatic, unreduced Joint and 65% Survivor annuity. Unmarried members receive a life annuity.

10. *Service Retirement (Reduced):*

- a. Eligibility: A member may retire with a reduced benefit upon attaining age 55 with 20 years of service.
- b. Reduction: An actuarial reduction from age 65. The reduction factors are shown in the following table:

Age	Factor	Age	Factor
64	90.31%	59	55.57%
63	81.71%	58	50.62%
62	74.05%	57	46.16%
61	67.20%	56	42.14%
60	61.07%	55	38.50%

- c. Payment Form: Same as for unreduced service retirement.

11. *Disability Retirement:*

- a. Eligibility: Member must be eligible for retirement under the Disability Act (or a substantially equivalent program) and must not be eligible for an unreduced service retirement benefit at time of disability.
- b. Monthly Benefits Payable Prior to Retirement: A separate fund established under the Disability Act (or an equivalent program) provides benefits from the time of disability until the age specified in 49-21-403. Benefits from this separate fund are not covered by these Systems.
- c. Monthly Benefits Payable after Retirement: An unreduced service retirement benefit is payable. The member receives service credit for time while disabled (both for computing the benefit amount and for determining whether the member is eligible for an unreduced service retirement benefit). Final Average Monthly Salary is increased by the same factors used for automatic cost-of-living benefit increases. I.e., the FAMS is adjusted by a cost-of-living increase up to 2.75% per year.
- d. Payment Form: Same as for Service Retirement.
- e. Death while Disabled: A disabled member is treated as an active member for purposes of determining a death benefit for the period prior to retirement.

12. *Vesting and Refunds:*

- a. Eligibility: All members who are not vested are eligible for a refund when they terminate service. Members are vested after six years of service. Vested members may also elect to receive a refund in lieu of the deferred termination benefit described below. (Although all judges are now members in the noncontributory system, some

- retain member contribution accounts from their participation in the Judges' Contributory Retirement System.)
- b. Amount: The refund benefit is the accumulated value of the member's contributions plus interest credited by the fund. The amount of interest credited each year is set annually by the Board of Trustees.
13. *Deferred Termination Benefit*:
- a. Eligibility: Member must be vested (6 years of service) and must elect to leave his/her contributions on deposit.
 - b. Monthly Benefit: Same as the unreduced or reduced service retirement benefit, based on service and FAMS at termination, and commencing once the member is eligible.
 - c. Payment Form: Same as for unreduced service retirement.
 - d. Death Benefit: Same as for an active member.
14. *Death while an Active Member*: A refund of the member's accumulated contributions (with interest) is paid to the beneficiary of a deceased member. In addition, 65% of the member's FAMS (annualized) is paid to the spouse if the member was married. Alternatively, the spouse may waive these benefits and elect instead an annuity. The annuity is equal to 65% of the benefit determined using the unreduced service retirement formula, and based on current service and FAMS at the time of death.
15. *Optional Forms of Benefit*: The System permits married members to elect a reduced Joint and 75% Survivor annuity in lieu of the automatic Joint and 65% Survivor annuity. No other optional payment forms are available.
16. *Postretirement Death Benefit*: None, except for the Joint and Survivor annuities available to married members.
17. *Postretirement Benefit Increases*: Benefits are increased annually to take into account changes in the cost of living, with a maximum annual increase of 4% of the current benefit (i.e., a maximum 4% compound interest increase). In years in which the cost of living increases more than 4%, the excess increase is accumulated and used in later years in which the cost-of-living increase is less than 4%. This calculation is made separately for each individual. In addition, judges retired prior to July 1, 1983 received an increase of \$120 per month (\$60 for beneficiaries).
18. *3% Substantial Substitute*: All members whose service began before January 1, 1989, receive an additional annual payment equal to 3% of their benefit. These payments are made to offset the taxability of the retirement benefits under the State income tax provisions. Prior to July 1, 1995, this benefit was funded by annual appropriations made by the State on a pay-as-you go basis. Beginning July 1, 1995, this benefit is funded on an actuarial basis by increasing the employer contribution rate for those Funds which are funded by the State.

**SUMMARY OF BENEFIT PROVISIONS FOR THE
GOVERNORS AND LEGISLATIVE PENSION PLAN**

1. *Effective Date:* July 1, 1967.
2. *Plan Year:* Twelve-month period ending December 31st.
3. *Administration:* The System is administered by a Board of Trustees (which also administers the other Utah Retirement Systems). The Board of Trustees is responsible for both administration of the System and investment of the fund assets.
4. *Type of Plan:* This is a qualified governmental defined benefit retirement plan. Under GASB 25, it is considered to be a single-employer plan.
5. *Eligibility:* This System covers state legislators with four or more years of service, and governors of the state who enter office before July 1, 2011, or accrued service credit in a Tier I system before July 1, 2011.
6. *Employee Contributions:* None.
7. *Employer Contributions:* The state annually appropriates an actuarially determined contribution.
8. *Benefit base:* The benefit base is used to determine the benefits payable at retirement.
 - a. Legislators: The base was \$10.00 per month per year of service as of July 1, 1967. The base is increased 2% each six months after that date. As of July 1, 2015, the benefit base is therefore \$29.20.
 - b. Governors: The base was \$500.00 per month per term as of July 1, 1973. The base is increased 2% each six months after that date. As of July 1, 2015, the benefit base is therefore \$1,340.00.
 - c. Supplemental Benefit: An additional benefit of \$3.50 per month per year of service. This benefit is not indexed nor are COLAs granted on it. This benefit only applies to members of the System on March 1, 2000 and is effective March 1, 2000.
9. *Service Retirement (Unreduced):*
 - a. Eligibility: Age 65 with 4 years of service.
 - b. Monthly Benefit: Legislators receive the benefit base (see above) per year of service, while former governors receive the benefit base (see above) for each term served (maximum of two terms).
 - c. Payment Form: For married members, a Joint and 50% Survivor annuity. For unmarried members, a life annuity.

10. *Service Retirement (Reduced):*
 - a. Eligibility: A member may retire with a reduced benefit upon attaining age 62 with 10 years of service.
 - b. Reduction: 3% per year that retirement is prior to age 65.
 - c. Payment Form: Same as for unreduced service retirement.
11. *Disability Retirement*: This System has no provisions applying to disability retirement.
12. *Vesting and Refunds*: A vested member who made contributions in another System and withdraws them forfeits all benefits under this System.
13. *Deferred Termination Benefit*:
 - a. Eligibility: Same as for reduced or unreduced service retirement. The member must not have withdrawn his/her contributions under another System.
 - b. Monthly Benefit: Same as the unreduced or reduced service retirement benefit, based on service at termination, and commencing once the member is eligible.
 - c. Payment Form: Same as for unreduced service retirement.
 - d. Death Benefit: Same as for an active member.
14. *Death while an Active Member*:
 - a. Eligibility: Four years of service as a legislator or governor.
 - b. Monthly Benefit: 50% of the unreduced service retirement benefit that the member would have been entitled to upon reaching age 65 based on the current benefit base. Benefit is paid to surviving spouse only.
15. *Optional Forms of Benefit*: None.
16. *Postretirement Death Benefit*: None, except for the Joint and Survivor annuity available to married members.
17. *Postretirement Benefit Increases*: Benefits are increased annually to take into account changes in the cost of living, with a maximum annual increase of 4% of the original benefit (i.e., a maximum 4% simple interest increase). In years in which the cost of living increases more than 4%, the excess increase is accumulated and used in later years in which the cost-of-living increase is less than 4%. This calculation is made separately for each individual. Note that the supplemental \$3.50 per month per year of service benefit is not eligible for these increases.

18. *3% Substantial Substitute*: All members whose service began before January 1, 1989, receive an additional annual payment equal to 3% of their benefit. These payments are made to offset the taxability of the retirement benefits under the State income tax provisions. Prior to July 1, 1995, this benefit was funded by annual appropriations made by the State on a pay-as-you go basis. Beginning July 1, 1995, this benefit is funded on an actuarial basis by increasing the employer contribution rate for those Funds which are funded by the State.

SUMMARY OF BENEFIT PROVISIONS FOR TIER II PUBLIC EMPLOYEE HYBRID RETIREMENT SYSTEM

1. *Effective Date:* July 1, 2011.
2. *Plan Year:* Twelve-month period ending December 31st.
3. *Administration:* The Systems are administered by a Board of Trustees (which also administers the other Utah Retirement Systems). The Board of Trustees is responsible for both administration of the Systems and investment of the fund assets.
4. *Type of Plan:* This is a qualified governmental defined benefit retirement plan. Under GASB 25, it is considered to be a cost-sharing multiple-employer plan.
5. *Eligibility:* This System covers eligible employees (i.e. those employees first hired after June 30, 2011) of the State of Utah, most local government employees, and most public education employees. Generally all employees are covered, except for those covered by another System—public safety employees, firefighters, judges, legislators, and higher education employees covered under TIAA-CREF.

Eligible employees are required to make an election within their first 30 days after employment to participate in this Plan or to participate in the Tier II Defined Contribution System. This election is irrevocable beginning 1 year after employment.

6. *Employee Contributions:* Member contributions are required only when the certified contribution rate of the defined benefit portion of the Plan exceeds 10% in which case they must pay the excess. Employers may not elect to pay all or part of any required employee contributions.
7. *Employer Contributions:* Contribution rates are set by the Board of Trustees, based upon the actuarial valuation report for this preceding year, and the employers must pay up to 10% of employee compensation towards this rate. If the certified contribution rate is less than 10%, they must make a contribution to the member's 401(k) account equal to the difference. Finally, employers must pay the corresponding Tier I amortization rate on Tier II employees' compensation to be applied to the employer's corresponding Tier I System liability.
8. *Final Average Monthly Salary (FAMS):* The monthly average of the member's five highest years of annual compensation preceding retirement.
9. *Service Retirement (Unreduced):*
 - a. Eligibility: A member may retire with an unreduced benefit at age 65 with four years of service or after 35 years of service if earlier.
 - b. Monthly Benefit (Contributory): 1.50% times Final Average Monthly Salary (FAMS) times years of service.

c. Payment Form: Life annuity.

10. *Service Retirement (Reduced)*:

- a. Eligibility: A member may retire with a reduced benefit upon attaining age 62 with 10 years of service or age 60 with 20 years of service.
- b. Reduction: A full actuarial reduction is applied for each year of retirement prior to age 65 if a member has less than 35 years of service. The early retirement reduction factors are shown below:

Age	Factor	Age	Factor
64	90.51%	61	67.80%
63	82.07%	60	61.75%
62	74.54%		

c. Payment Form: Life annuity.

11. *Disability Retirement*:

- a. Eligibility: Member must be eligible for retirement under the Disability Act and must not be eligible for a 35-year service retirement at time of disability. Note that not all political subdivisions cover their members under a disability program or provide LTD benefit protection contracts covering their Tier II members.
- b. Monthly Benefits Payable Prior to Retirement: A separate fund established under the Disability Act provides benefits from the time of disability until the age specified in 49-21-403. Benefits from this separate fund are not covered by these Systems.
- c. Monthly Benefits Payable after Retirement:
1. Member is covered by an LTD benefit protection contract: An unreduced service retirement benefit is payable at eligibility for an unreduced retirement benefit. The member receives service credit for time while disabled (both for computing the benefit amount and for determining whether the member is eligible for an unreduced service retirement benefit). Final Average Monthly Salary is increased by the same factors used for automatic cost-of-living benefit increases. I.e., the FAMS is adjusted by a cost-of-living increase up to 2.5% per year (simple interest). Employers are required to contribute the full contribution rate on the imputed pay of the disabled member to the Retirement System while the member is disabled.
 2. Member is not covered by an LTD benefit protection contract: An unreduced service retirement benefit is payable at eligibility for an unreduced retirement benefit. The benefit is determined using the member's service and Final Average Monthly Salary as of the date of their disability. Employers do not make contributions to the retirement system on the imputed pay of their disabled members.
- d. Payment Form: Life annuity.

- e. Death while Disabled: A disabled member is treated as an active member for purposes of determining a death benefit for the period prior to retirement.
12. *Vesting and Refunds*:
- a. Eligibility: All members who are not vested are eligible for a refund when they terminate service. Members are vested after four years of service. Vested members may also elect to receive a refund in lieu of the deferred termination benefit described below.
- b. Amount: The refund benefit is the accumulated value of the member's contributions plus interest credited by the fund. The amount of interest credited each year is set annually by the Board of Trustees.
13. *Deferred Termination Benefit*:
- a. Eligibility: Member must be vested (4 years of service) and must elect to leave his/her contributions on deposit.
- b. Monthly Benefit: Same as the unreduced or reduced service retirement benefit, based on service and FAMS at termination, and commencing once the member is eligible.
- c. Payment Form: Life annuity.
- d. Death Benefit: The beneficiary of an inactive member who dies is entitled to receive a benefit as described in 14.2.a or 14.2.b below.
14. *Death while an Active Member*:
- a. Members will receive benefits 1. and 2. described below.
1. Death Benefit Insurance: A lump-sum payment that is equal to 75% of the member's highest annual salary.
- 2.a. In General: A refund of the member's accumulated contributions (with interest) is paid to the beneficiary of a deceased member.
- 2.b. Spousal Annuity: If the deceased member was married at the time of death and was either (i) eligible for reduced or unreduced service retirement, or (ii) had 25 years of service (15 years of service in the noncontributory system), the spouse may elect an annuity benefit in lieu of the refund benefit. The annuity is equal to the reduced or unreduced service retirement benefit payable as though Option 3 (a Joint and 100% Survivor annuity) were elected. If the member had 25 years of service or more, no reduction factor is applied in determining the service retirement benefit. If a member of the noncontributory system is not eligible for a retirement benefit and has less than 25 years of service, then the death benefit is equal to 1/3 of Option 3 benefit if the member has at least 15 and less than 20 years of service, and 2/3 of the Option 3 benefit if the member has at least 20 and less than 25 years of service.

15. *Optional Forms of Benefit:* The Systems permit members to elect from six forms of benefit at retirement. In each case the benefit amount is adjusted to be actuarially equivalent to the "Option 1" form. The six optional forms are:
- Option 1 - A life annuity with no benefits due following the member's death.
- Option 2 - Modified Cash Refund Annuity. A reduced annuity payable for the member's lifetime, plus a death benefit equal to the excess of the member's accumulated contributions (determined at retirement) over the sum of the member's annuity payments from retirement. (The annuity payments are that part of the original benefit derived from the member's own accumulated contributions.)
- Option 3 - Joint and 100% Survivor Annuity. An annuity payable as long as either the member or his/her spouse is living.
- Option 4 - Joint and 50% Survivor Annuity. An annuity payable during the member's lifetime, and after the member's death if the member's spouse is still living, an annuity to the spouse of 50% of the original benefit.
- Option 5 - Joint and 100% Pop-up Annuity. Same as Option 3, except that the benefit amount reverts to the Option 1 (life annuity) amount if the member's spouse predeceases the member.
- Option 6 - Joint and 50% Pop-up Annuity. Same as Option 4, except that the benefit amount reverts to the Option 1 (life annuity) amount if the member's spouse predeceases the member.
16. *Postretirement Death Benefit:* None, except as elected by the member. See Optional Forms of Benefit above.
17. *Postretirement Benefit Increases:* Benefits are increased annually to take into account changes in the cost of living, with a maximum annual increase of 2.5% of the original benefit (i.e., a maximum 2.5% simple interest increase). In years in which the cost of living increases more than 2.5%, the excess increase is accumulated and used in later years in which the cost-of-living increase is less than 2.5%. This calculation is made separately for each individual.

**SUMMARY OF BENEFIT PROVISIONS FOR
TIER II PUBLIC SAFETY AND FIREFIGHTERS HYBRID RETIREMENT SYSTEM**

1. *Effective Date:* July 1, 2011.
2. *Plan Year:* Twelve-month period ending December 31st.
3. *Administration:* The Systems are administered by a Board of Trustees (which also administers the other Utah Retirement Systems). The Board of Trustees is responsible for both administration of the Systems and investment of the fund assets.
4. *Type of Plan:* These are qualified governmental defined benefit retirement plans. Under GASB 25, it is considered to be a cost-sharing multiple-employer plan.
5. *Eligibility:* This System covers eligible public safety employees (i.e. those employees first hired after June 30, 2011) of the State of Utah as well as eligible public safety employees and firefighters employed by participating local governments.

Eligible employees are required to make an election within their first 30 days after employment to participate in this Plan or to participate in the Tier II Defined Contribution System. This election is irrevocable beginning 1 year after employment.

6. *Employee Contributions:* Member contributions are required only when the certified contribution rate of the defined benefit portion of the Plan exceeds 12% in which case they must pay the excess. Employers may not elect to pay all or part of required employee contributions.
7. *Employer Contributions:* Contribution rates are set by the Board of Trustees, based upon the actuarial valuation report for this preceding year, and the employers must pay up to 12% of employee compensation towards this rate. If the certified contribution rate is less than 12%, they must make a contribution to the member's 401(k) account equal to the difference. Finally, employers must pay the corresponding Tier I amortization rate on Tier II employees' compensation to be applied to the employer's corresponding Tier I System liability.
8. *Final Average Monthly Salary (FAMS):* The monthly average of the member's highest five salaries preceding retirement.
9. *Service Retirement:*
 - a. Eligibility: A member may retire with an unreduced benefit at age 65 with four years of service or at any age with 25 years of service.
 - b. Monthly Benefit: 1.50% of Final Average Monthly Salary (FAMS) times years of service.
 - c. Payment Form: Life annuity

10. *Service Retirement (Reduced):*

- a. Eligibility: A member may retire with a reduced benefit upon attaining age 62 with 10 years of service or age 60 with 20 years of service.
- b. Reduction: A full actuarial reduction is applied for each year of retirement prior to age 65 if a member has less than 25 years of service. The early retirement reduction factors are shown below:

Age	Factor	Age	Factor
64	90.21%	61	66.99%
63	81.55%	60	60.87%
62	73.85%		

11. *Disability Retirement:*

- a. Eligibility: Member must be eligible for retirement under the Disability Act (or a substantially equivalent program) and must not be eligible for a 25-year service retirement at time of disability. Note that not all political subdivisions cover their members under a disability program or provide LTD benefit protection contracts covering their Tier II members.
- b. Monthly Benefits Payable Prior to Retirement: A separate fund established under the Disability Act (or an equivalent program) provides benefits from the time of disability until the age specified in 49-21-403. Benefits from this separate fund are not covered by these Systems.
- c. Monthly Benefits Payable after Retirement:
 - 1. Member is covered by an LTD benefit protection contract: An unreduced service retirement benefit is payable at eligibility for an unreduced retirement benefit. The member receives service credit for time while disabled (both for computing the benefit amount and for determining whether the member is eligible for an unreduced service retirement benefit). Final Average Monthly Salary is increased by the same factors used for automatic cost-of-living benefit increases. I.e., the FAMS is adjusted by a cost-of-living increase up to 2.5% per year (simple interest). Employers are required to contribute the full contribution rate on the imputed pay of the disabled member to the Retirement System while the member is disabled.
 - 2. Member is not covered by an LTD benefit protection contract: An unreduced service retirement benefit is payable at eligibility for an unreduced retirement benefit. The benefit is determined using the member’s service and Final Average Monthly Salary as of the date of their disability. Employers do not make contributions to the retirement system on the imputed pay of their disabled members.
- d. Payment Form: Life annuity.

- e. Death while Disabled: A disabled member is treated as an active member for purposes of determining a death benefit for the period prior to retirement.
12. *Vesting and Refunds*:
- a. Eligibility: All members who are not vested are eligible for a refund when they terminate service. Members are vested after four years of service. Vested members may also elect to receive a refund in lieu of the deferred termination benefit described below.
- b. Amount: The refund benefit is the accumulated value of the member's contributions credited by the fund. Interest is credited on the member's contribution account, and the amount of interest credited each year is set annually by the Board of Trustees.
13. *Deferred Termination Benefit*:
- a. Eligibility: Member must be vested (4 years of service) and must elect to leave his/her contributions on deposit.
- b. Monthly Benefit: Same as the service retirement benefit, based on service and FAMS at retirement, and commencing once the member is eligible.
- c. Payment Form: Life annuity.
- d. Death Benefit: The beneficiary of an inactive member who dies is entitled to receive a benefit as described in 14.2.a or 14.2.b below.
14. *Death while an Active Member*: All members who die while an active member receive a lump-sum payment that is equal to 75% of the member's highest annual salary. Members also receive death benefits described below depending on whether their death was duty related or non-duty related.
- a. *Death while an Active Member (On Duty)*: If death occurs in the line of duty, the lump-sum and annuity benefits described below will be paid to the spouse. (The benefits are not applicable to unmarried members)
1. Less than 20 years of service: \$1,000 lump sum payment plus an annuity equal to 30% of FAMS.
 2. 20 or more years of service: The option 1 benefit (life annuity) is calculated and paid to the spouse with no actuarial reduction.
- b. *Death of an Active Member (Off Duty)*: If the deceased member was married at the time of death and had (i) 15 or more years of service or (ii) attained age 62 with 10 or more years of service or (iii) attained age 65 with 4 or more years of service, the spouse may elect an annuity benefit in lieu of the refund benefit. The annuity is equal to the reduced or unreduced service retirement benefit payable as though Option 3 (a Joint and 100% Survivor annuity) were elected. If the member had 25 years of service or more, no reduction factor is applied in determining the service retirement benefit (the "full

allowance”). If a member has 20 to 24 years of service but is not 60 or older, then the death benefit is equal to $\frac{2}{3}$ of the “full allowance”. If the member has at least 15 but less than 20 years of service and is below age 62, the benefit is $\frac{1}{3}$ of the “full allowance”. If the member is age 60 or older with at least 20 years of service, age 62 or older with at least 10 years of service, or age 65 with 4 or more years of service, the spouse will receive the Option 3 benefit with actuarial reductions.

15. *Optional Forms of Benefit:* The Systems permit members to elect from six forms of benefit at retirement. In each case the benefit amount is adjusted to be actuarially equivalent to the "Option 1" form. The six optional forms are:

Option 1 - A life annuity with no benefits due following the member's death.

Option 2 - Modified Cash Refund Annuity. A reduced annuity payable for the member's lifetime, plus a death benefit equal to the excess of the member's accumulated contributions (determined at retirement) over the sum of the member's annuity payments from retirement. (The annuity payments are that part of the original benefit derived from the member's own accumulated contributions.)

Option 3 - Joint and 100% Survivor Annuity. An annuity payable as long as either the member or his/her spouse is living.

Option 4 - Joint and 50% Survivor Annuity. An annuity payable during the member's lifetime, and after the member's death if the member's spouse is still living, an annuity to the spouse of 50% of the original benefit.

Option 5 - Joint and 100% Pop-up Annuity. Same as Option 3, except that the benefit amount reverts to the Option 1 (life annuity) amount if the member's spouse predeceases the member.

Option 6 - Joint and 50% Pop-up Annuity. Same as Option 4, except that the benefit amount reverts to the Option 1 (life annuity) amount if the member's spouse predeceases the member.

16. *Postretirement Death Benefit:* None, except as elected by the member. See Optional Forms of Benefit above.

17. *Postretirement Benefit Increases:* Benefits are increased annually to take into account changes in the cost of living. The maximum annual increase is 2.50% of the original benefit (i.e., a maximum 2.50% simple interest increase). However, in years in which the cost of living increases more than the maximum COLA, the excess increase is accumulated and used in later years in which the cost-of-living increase is less than the maximum COLA. This calculation is made separately for each individual.

APPENDIX 3

GLOSSARY

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

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

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

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

Actuarial Gain or Actuarial Loss: A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund'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 decrease the calculated contribution rates while actuarial losses will increase the calculated contribution rates.

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

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

- a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)
- b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
- c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GASB: Governmental Accounting Standards Board.

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

percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 20 years, the same 20-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

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

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