## Summary of Actuarial Assumptions

	Noncontributory	Contributory	Public Safety	Firefighters	Judges	Governors and Legislators	Tier 2 Public Employees	Tier 2 Public Safety and Firefighter	
Valuation date	1/1/17	1/1/17	1/1/17	1/1/17	1/1/17	1/1/17	1/1/17	1/1/17	
Actuarial cost method	Entry Age	Entry Age	Entry Age	Entry Age	Entry Age	Entry Age	Entry Age	Entry Age	
Actuarial assumptions:									
Investment rate of return	6.95%	6.95%	6.95%	6.95%	6.95%	6.95%	6.95%	6.95%	
Projected salary increases	3.25-9.75%	3.25-9.75%	3.25-7.25%	3.25-8.75%	3.25%	None	3.25-9.75%	3.25-8.75%	
Inflation rate	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	
Post-retirement cost-of-living adjustment	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	
Mortality: (Non-educators)	Male: 110% of 2017 Public Retirees of Utah (PR Utah) Mortality Table for males, projected with Scale AA from the year 2017. Female: 110% of 2017 Public Retirees of Utah (PR Utah) Mortality Table for females, projected with Scale AA from the year 2017.								
Mortality: (Educators)	Male: 90% of 2017 Public Retirees of Utah (PR Utah) Mortality Table for males, projected with Scale AA from the year 2017. Female: 90% of 2017 Public Retirees of Utah (PR Utah) Mortality Table for females, projected with Scale AA from the year 2017.								

Note: All post-retirement cost-of-living adjustments are noncompounding and are based on the original benefit except for Judges, which is a compounding benefit. The cost-of-living adjustments are also limited to the actual CPI increase for the year, although unused CPI increases not met may be carried forward to subsequent years.



_	Expected Return Arithmetic Basis				
Target Asset Class Alloc		Real Return Arithmetic Basis	Long-term Expected Portfolio Real Rate of Return*		
Equity securities	40%	6.15%	2.46%		
Debt securities	20	0.40	0.08		
Real assets	15	5.75	0.86		
Private equity	9	9.95	0.89		
Absolute return	16	2.85	0.46		
Cash and					
cash equivalents	0	0.00	0.00		
Totals	100%		4.75%		
Inflation			2.50		
Expected arit	rn 7.25%				

\*The total URS Defined Benefit long-term expected rate of return is 6.95%, which is comprised of a 2.50% inflation assumption and a 4.45% net real rate of return.

in the assumed rate of inflation, both the payroll growth and wage inflation assumptions were each decreased by 0.10% from the prior year's assumption.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimates ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the Systems target asset allocation as of December 31, 2017, are summarized in table to the left.

The discount rate used to measure the total pension liability was 6.95%. The projection of cash flows used to determine the discount rate assumed contributions from participating employers will be made based on the actuarially determined rates based on the Board's funding policy, which establishes the contractually required rates under Utah State Code. Based on those assumptions, the Systems' fiduciary net position was projected to be available to make all the projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

## Changes in Discount Rate

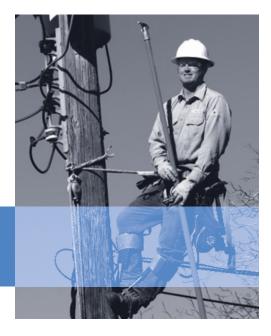
(dollars in thousands)	Net Pension Liability/(Asset) 1% Decrease (5.95%)	Net Pension Liability/(Asset) Current Discount Rate (6.95%)	Net Pension Liability/(Asset) 1% Increase (7.95%)
Noncontributory Retirement System	\$ 6,524,169	\$ 2,883,492	\$ (156,134)
Contributory Retirement System	141,894	14,717	(92,965)
Public Safety Retirement System	1,090,853	508,686	33,689
Firefighters Retirement System	141,720	(28,680)	(168,271)
Judges Retirement System	58,168	32,586	10,782
Utah Governors and Legislative Retirement Plan	3,134	1,854	766
Tier 2 Public Employees System	103,813	8,817	(64,439)
Tier 2 Public Safety and Firefighters System	10,247	(1,157)	(9,870)
Total	\$ 8,073,998	\$ 3,420,315	\$ (446,442)

In accordance with GASB Statement No. 67 regarding the disclosure of the sensitivity of the net pension liability to changes in the discount rate, the table above presents the net pension liability/(asset) of the participating employers calculated using the discount rate of 6.95%, as well as what the employers' net pension liability/(asset) would be if it were calculated using a discount rate that is 1.00% lower (5.95%) or 1.00% higher (7.95%) than the current rate.



Employer contribution rates consist of (1) an amount for normal cost, the estimated amount necessary to finance benefits earned by the members during the current year, and (2) an amount for amortization of the unfunded or excess funded actuarial accrued liability over an open 20-year amortization period. The rates are determined using the entry age actuarial cost method.

The top schedule on page 85 summarizes contribution rates in effect as of December 31, 2017. Contributions made by employers and members were in accordance with actuarially computed funding requirements. Fire insurance



premium taxes and court fees are considered as part of employer contributions in the schedule shown on page 85 for the Firefighters and Judges Systems, respectively. These contribution rates also include rates for a 3% benefit enhancement that is funded by the State. For contribution rate purposes the actuary evaluates the assets of the Systems based on a 5-year smoothed expected return wherein 20% of a year's excess or shortfall of expected return is recognized each year for five years.