# **Summary of Actuarial Assumptions** and Methods

as of January 1, 2018



## **Actuarial Assumptions and Methods**

a) The actuarial valuation was prepared using the entry age actuarial cost method. As described in the certification letter, the contribution rates are set based on the board's funding policy, which states the contribution rate will not be less than the amount needed to amortize the unfunded actuarial accrued liability of each System over a 20-year period from the valuation date (January 1, 2018).

In calculating this minimum, amortization payments are designed to remain level as a percent of payroll, and payroll is assumed to increase 3.00% per year. Under this method, actuarial gains and losses are identified and amortized as part of the unfunded actuarial accrued liability over a period that does not exceed 20 years.

- b) The future investment earnings of the assets of the Systems are assumed to accrue at an annual rate of 6.95%, compounded annually. This rate is made up of a 2.50% assumed inflation rate and a 4.45% assumed real rate of return. This assumption was adopted January 1, 2017.
- c) The total rates of assumed annual salary increase are shown on the actuarial schedule on page 163. The rates include increases due to promotion and longevity and a 3.25% per annum rate of increase in the general wage level of the membership. Salaries of judges are assumed to increase at 3.25%. All of these assumptions were adopted January 1, 2017.
- d) Post-retirement benefit increases are based on the consumer price index (CPI), limited by the provisions of each System. The increases are assumed to be 2.5% for all Systems. Increases are based on the member's original retirement allowance except in the Judges Retirement System where increases are compounded. For current retirees who have received cumulative COLAs less than the total of annual CPI increases since retirement, higher COLAs are assumed, subject to the annual maximum (2.5% or 4% for Public Safety and 4% for all other Systems), as long as the member has "banked" CPI increases remaining.
- e) Tables of mortality rates for male members retired for service and beneficiaries were developed from actual experience of URS retirees. Mortality rates for female members retired for service and beneficiaries were developed from actual experience of the URS retirees.

as of January 1, 2018

#### RETIRED MEMBER MORTALITY

Class of Member

#### **Educators and Judges**

Men 2017URSM (90%) 2017URSF (90%) Women

#### **Public Safety and Firefighters**

Men 2017URSM (110%) Women 2017URSF (110%)

#### Local Government, **Public Employees**

Men 2017URSM (110%) Women 2017URSF (110%)

2017URSM = Constructed mortality table based on actual experience of male URS retirees multiplied by given percentage

2017URSF = Constructed mortality table based on actual experience of female URS retirees multiplied by given percentage

> The mortality basis is adjusted based upon the member's class and gender as shown above. These base rates are adjusted for future improvement in mortality using published Scale AA projected from the year 2017. All of these rates were adopted January 1, 2017. Mortality rates for active members use the RP2014 employees mortality tables with white collar adjustment as the underlying assumption with scaling factors applied based on employee group and gender. The assumptions were adopted effective January 1, 2017.

f) Mortality among disabled members is based on 110% of the RP2014 disabled mortality table for males, and 120% of the RP2014 disabled mortality table for females. The rates for males and females are also adjusted for future improvement in mortality using published Scale AA projected from the year 2006.

g) Other demographic assumptions regarding retirement, mortality, disablement, and termination from employment are illustrated in the following actuarial schedules.

> The retirement assumptions illustrated are for members of the Systems who are eligible to retire with 30 years of service (35 years of service for Tier 2). For public employees the rates vary by age and eligibility for reduced or unreduced retirement. For Public Safety, Firefighters, and Judges the rates vary by age and service groupings.

Rates of assumed termination from employment are assumed to vary by years of service. All terminating members who are not eligible for vested benefits are assumed to withdraw their contributions immediately. Vested members are assumed to withdraw their contributions and forfeit the right to further benefits at the rates illustrated.

- h) The Retirement Board uses the expected rate of return method for calculating the actuarial value of assets. This method is based on the total earnings of the co-mingled investments and spreads the excess/shortfall of actual investment returns over or under the expected return over five years. One-fifth of the excess/shortfall is recognized each year. The actuarial values of assets under this method were calculated and reported to us by the Systems' staff.
- i) All of the actuarial assumptions were renewed or adopted by the Retirement Board in 2017, as recommended by the actuary. The assumptions for Tier 2 members are the same as the Tier 1 members, except for retirement rates.



as of January 1, 2018

		Percent Retiring Within Next Year Among Active Members Eligible for Retirement											
				84-1-		Eligib	le for R						
		Charles and Cal	a a I Divisia a	Male		a al Divisia		Female	Governors and				
	Retirement	State and Sch	Public	Local	State and Sch	Publ	_	Local vernment	Legislators Retirement				
	Age	Educators	Employees		Educators	Employe		Division	Plan				
Tier 1	50	20.00%	15.00	% 15.00%	30.00%	17.0	0%	20.00%	0.009	%			
Noncontributory	51	20.00	15.00	15.00	30.00	16.0	0	20.00	0.00				
and Contributory	52	20.00	15.00	15.00	30.00	16.0	0	20.00	0.00				
Retirement Systems	53	20.00	15.00	15.00	14.00	16.0	0	20.00	0.00				
Adopted January 1, 2017	54	15.00	15.00		14.00	16.0		20.00	0.00				
, , ,	55	15.00	16.00		14.00	16.0		25.00	0.00				
	56	15.00	16.00	15.00	18.00	16.0		25.00	0.00				
	57	15.00	16.00		18.00	16.0		25.00	0.00				
	58	15.00	16.00		18.00	20.0		25.00	0.00				
	59	15.00	16.00	15.00	18.00	20.0		25.00	0.00				
	60	23.00	20.00		30.00	25.0		30.00	0.00				
	61	23.00	20.00		30.00	25.0		30.00	0.00				
	62	33.00	30.00	23.00	35.00	33.0		30.00	100.00				
	63	33.00	30.00		35.00	33.0		30.00	100.00				
	64	33.00	30.00		35.00	33.0		30.00	100.00				
	65	33.00	22.00		35.00	28.0		25.00	100.00				
	66	33.00	22.00		35.00	28.0		25.00	100.00				
	67	30.00	22.00		35.00	28.0		25.00	100.00				
	68	30.00	22.00	22.00	23.00	22.0		25.00	100.00				
	69	25.00	22.00		23.00	22.0		25.00	100.00				
	70	20.00	22.00		23.00	22.0		20.00	100.00				
	71	20.00	22.00				2.00 15.00		100.00				
	72	20.00	22.00		23.00	22.0		15.00	100.00				
	73	20.00	22.00		23.00	22.0		15.00	100.00				
	74	20.00	22.00	10 00									
				18.00	23.00	22.0		15.00	100.00				
	75	100.00	100.00		100.00	100.0		100.00	100.00				
	75	100.00	100.00	100.00 Perce	100.00	100.0	0 ear Am	100.00	100.00 Nembers Eligi				
			100.00	100.00	100.00	100.0	0 ear Am	100.00	100.00 Nembers Eligi	ible for rement Age			
Tier 1	75 Retirement	100.00	100.00	100.00 Perce	100.00	100.0 hin Next Yo ment Age	0 ear Am	100.00 ong Active N etirement Age	100.00 Nembers Eligi	rement			
Tier 1 Public Safety	Retirement Age	100.00	100.00	Perce Retirement Age	100.00 ent Retiring Wit Retire	100.0 hin Next Youngent Age 59 20	0 ear Am	100.00 ong Active N etirement Age	100.00 Members Eligi Reti	rement Age			
	Retirement Age 45	100.00  Retirer  15.00%	100.00 ment Age 50 15.	100.00  Perce Retirement Age  00% 55 00 56	100.00 ent Retiring Wit Retire	hin Next Your Ment Age 59 20 60 20	0 ear Am R	ong Active Metirement Age	100.00 Nembers Eligi Retii	rement Age 67	50.00%		
Public Safety	Retirement Age 45 46	100.00  Retirer  15.00% 15.00	100.00 ment Age 50 15. 51 15.	100.00  Perce Retirement Age  00% 55 00 56 00 57	100.00 ent Retiring Wit Retire  15.00% 15.00	100.0 hin Next Your Ment Age 59 20 60 20 61 20	0 ear Ame Ro 0.00% 0.00	ong Active Metirement Age 63 64 65	100.00 Nembers Eligi Retir 35.00% 35.00	rement Age 67 68	50.00% 50.00 50.00		
Public Safety Retirement System	Retirement Age 45 46 47	100.00  Retirer  15.00% 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15.	100.00  Retirement Age  00% 55 00 56 00 57 00 58	100.00  ent Retiring Wit  Retire  15.00%  15.00  15.00	100.0 hin Next Your Ment Age 59 20 60 20 61 20	0 ear Am R 0.00% 0.00 0.00	ong Active Metirement Age 63 64 65	100.00  Members Eligi Retii  35.00% 35.00 35.00	rement Age 67 68 69	50.00% 50.00 50.00		
Public Safety Retirement System	75  Retirement Age 45 46 47 48	100.00  Retirer  15.00% 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15.	100.00  Retirement Age  00% 55 00 56 00 57 00 58	100.00  ent Retiring Wit  Retire  15.00%  15.00  15.00	100.0 hin Next Your Ment Age 59 20 60 20 61 20 62 35	0 Rear Ame 0.00% 0.00 0.00 0.00 5.00	100.00  ong Active Metirement Age  63 64 65 66	100.00  Nembers Eligi Reti  35.00% 35.00 35.00 50.00	67 68 69 70	50.00% 50.00 50.00 100.00		
Public Safety Retirement System	75  Retirement Age 45 46 47 48	100.00  Retirer  15.00% 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.	100.00  Retirement Age  00% 55 00 56 00 57 00 58	100.00  ent Retiring Wit  Retire  15.00%  15.00  15.00  15.00	100.0 hin Next Your Ment Age	0 ear Ame R.O.00% 0.00 0.00 5.00	100.00  ong Active Metirement Age  63 64 65 66	100.00  Nembers Eligi Reti  35.00% 35.00 35.00 50.00	67 68 69 70	50.00% 50.00 50.00 100.00		
Public Safety Retirement System	Retirement Age 45 46 47 48 49	100.00  Retires 15.00% 15.00 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age	100.00  Perce Retirement Age  00% 55 00 56 00 57 00 58 00  Perce Retirement	100.00  ent Retiring Wit  Retire  15.00%  15.00  15.00  15.00	100.0 hin Next Younger	0 ear Ame R.O.00% 0.00 0.00 5.00	ong Active Metirement Age 65 66 66 66 66 66 66 66 66 66 66 66 66	100.00  Nembers Eligi Reti  35.00% 35.00 35.00 50.00	67 68 69 70	50.00% 50.00 50.00 100.00		
Public Safety Retirement System Adopted January 1, 2017	Retirement Age 45 46 47 48 49	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 Retirer	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age	100.00  Perce Retirement Age  00% 55 00 56 00 57 00 58 00  Perce Retirement Age  00% 55	100.00  ent Retiring Wit Retires  15.00% 15.00 15.00 15.00 ent Retiring Wit Retires	100.0 hin Next Younger	0 ear Ame 0.00% 0.00 0.00 5.00	ong Active Metirement Age  63 64 65 66  ong Active Metirement Age 63 64 65 66	100.00  Nembers Eligi Reti  35.00% 35.00 35.00 50.00	67 68 69 70 sible for	50.00% 50.00 50.00 100.00		
Public Safety Retirement System Adopted January 1, 2017 Tier 1	Retirement Age 45 46 47 48 49  Retirement Age	100.00  Retirer  15.00% 15.00 15.00 15.00 Retirer  15.00%	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15.	100.00    Perce	100.00  ent Retiring Wit Retires  15.00%  15.00  15.00  15.00  ent Retiring Wit Retires	100.0 hin Next Y. ment Age  59 20 60 20 61 20 62 35 hin Next Y. ment Age  59 20 60 20	0 ear Am R 0.00% 0.00 0.00 5.00 ear Am R 0.00%	ong Active Metirement Age  63 64 65 66  ong Active Metirement Age 63 64 65 66	100.00  Nembers Eligi Reti  35.00% 35.00 35.00 50.00  Nembers Eligi Reti  25.00%	67 68 69 70 sible for rement Age	50.00% 50.00 50.00 100.00		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters Retirement System	Retirement Age  45 46 47 48 49  Retirement Age  45 46 47	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00 15.00% 15.00% 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15. 51 15. 52 15.	Perce Retirement Age 00% 55 00 56 00 57 00 58 00 Perce Retirement Age 00% 55 00 56	100.00  ent Retiring Wit Retire  15.00% 15.00 15.00 15.00 ent Retiring Wit Retire  15.00% 15.00% 15.00 15.00	100.0  hin Next Y. ment Age  59 20 60 20 61 20 62 35  hin Next Y. ment Age  59 20 60 20 61 20 61 20	00  Rin	ong Active Metirement Age  ong Active Metirement Age	100.00  Nembers Eligi Reti  35.00% 35.00 35.00 50.00  Members Eligi Reti  25.00% 25.00 50.00	67 68 69 70 sible for rement Age 67 68 69	50.00% 50.00 50.00 100.00 Retirement 50.00% 50.00		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters	Retirement Age 45 46 47 48 49  Retirement Age	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00  Retirer  15.00% 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15. 51 15.	Perce Retirement Age  00% 55 00 56 00 57 00 58 00  Perce Retirement Age  00% 55 00 56 00 57 00 58	100.00  ent Retiring Wit Retires  15.00% 15.00 15.00 15.00 ent Retiring Wit Retires  15.00% 15.00% 15.00%	100.0  hin Next Y. ment Age  59 20 60 20 61 20 62 35  hin Next Y. ment Age  59 20 60 20 61 20 61 20	0 ear Ame 0.00% 0.00 0.00 0.00 6.00 0.00 0.00% 0.00% 0.00% 0.00% 0.00%	ong Active Metirement Age  ong Active Metirement Age	100.00  Nembers Eligi Reti  35.00% 35.00 35.00 50.00  Nembers Eligi Reti  25.00% 25.00	67 68 69 70 sible for rement Age 67	50.00% 50.00 100.00 Retirement 50.00% 50.00		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters Retirement System	Retirement Age  45 46 47 48 49  Retirement Age  45 46 47 48	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15. 51 15. 52 15. 53 15.	100.00    Perce	100.00  ent Retiring Wit Retire  15.00% 15.00 15.00 15.00 ent Retiring Wit Retire  15.00% 15.00% 15.00 15.00	100.0 hin Next Y. ment Age  59 20 60 20 61 20 62 35 hin Next Y. ment Age  59 20 60 20 61 20 62 25	00 Ri	ong Active Metirement Age  63 64 65 66  ong Active Metirement Age 65 66	100.00  Nembers Eligi Reti  35.00% 35.00 50.00  Nembers Eligi Reti  25.00% 25.00 50.00	67 68 69 70 ble for rement Age 67 68 69 70	50.00% 50.00 100.00 100.00 Retirement 50.00% 50.00 50.00 100.00		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters Retirement System	Retirement Age  45 46 47 48 49  Retirement Age  45 46 47 48	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.	100.00    Perce	100.00  ent Retiring Wit Retire  15.00% 15.00 15.00 15.00 ent Retiring Wit Retire  15.00% 15.00% 15.00% 15.00 20.00	100.0 hin Next Y. ment Age  59 20 60 20 61 20 62 35 hin Next Y. ment Age  59 20 60 20 61 20 62 25	00 Ri	ong Active Metirement Age  63 64 65 66  ong Active Metirement Age 65 66	100.00    Nembers Eligi   Reti	67 68 69 70 ble for rement Age 67 68 69 70	50.00% 50.00 100.00 100.00 Retirement 50.00% 50.00 100.00		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters Retirement System Adopted January 1, 2017	Retirement Age  45 46 47 48 49  Retirement Age  45 46 47 48 49  Retirement Age	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 Retirer	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.	100.00    Perce	100.00  ent Retiring Wit Retire  15.00% 15.00 15.00 15.00 ent Retiring Wit Retire  15.00% 15.00 20.00 ent Retiring Wit Retire	100.0 hin Next Younger   100.0 hin Next Younge	00 Ri	ong Active National Age	100.00    Numbers Eligi	rement Age 67 68 69 70 68 69 70 68 69 70 67 68 69 70 68 69 70	50.00% 50.00 100.00 100.00 Retirement 50.00% 50.00 100.00		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters Retirement System Adopted January 1, 2017  Judges	Retirement Age  45 46 47 48 49  Retirement Age  45 46 47 48 49  Retirement Age 45 46 47 48 49  Retirement Age	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15. 52 15. 53 15. 54 15.  ment Age  50 10.	100.00    Perce	100.00  ent Retiring Wit Retire  15.00% 15.00 15.00 15.00 ent Retiring Wit Retire  15.00% 15.00 20.00  ent Retiring Wit Retire  10.00%	100.0 hin Next Y. ment Age  59 20 60 20 61 20 62 35 hin Next Y. ment Age  59 20 61 20 62 25 hin Next Y. ment Age  59 10	00 Ri	ong Active Metirement Age  of 63 64 65 66  ong Active Metirement Age 63 64 65 66  ong Active Metirement Age 63 64 65 66	100.00    Numbers Eliginary	rement Age 67 68 69 70 bble for rement Age 67 68 69 70 67 68 69 67 67 68 69 67 67	50.00% 50.00 100.00 100.00 Retirement 50.00% 50.00 100.00		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters Retirement System Adopted January 1, 2017  Judges Retirement System	Retirement Age  45 46 47 48 49  Retirement Age  45 46 47 48 49  Retirement Age  45 46 47 48 49	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 10. 51 10.	100.00    Perce	100.00  ent Retiring Wit Retire  15.00% 15.00 15.00 15.00 ent Retiring Wit Retire  15.00% 15.00 20.00  ent Retiring Wit Retire  10.00% 10.00%	100.0 hin Next Younger   59 20 60 20 61 20 62 35 60 20 61 20 62 25 60 20 61 20 62 25 61 20 62 25 61 20 62 25 61 20 62 25 61 20	00  ear Am  Ri  Ri  0.00%  Ri  Ri  0.00%  Ri  Ri  0.00%  Ri  0.00%  Ri  0.00%  Ri  0.00%  Ri  0.00%  Ri  0.00%	ong Active Metirement Age of 63 64 65 66 ong Active Metirement Age of 63 64 65 66 ong Active Metirement Age of 63 64 65 66	100.00    Numbers Eliginary	67 68 67 68	50.00% 50.00 100.00 100.00 Retirement 50.00% 50.00 100.00 Retirement		
Public Safety Retirement System Adopted January 1, 2017  Tier 1 Firefighters Retirement System Adopted January 1, 2017  Judges	Retirement Age  45 46 47 48 49  Retirement Age  45 46 47 48 49  Retirement Age 45 46 47 48 49  Retirement Age	100.00  Retirer  15.00% 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00	100.00  ment Age  50 15. 51 15. 52 15. 53 15. 54 15.  ment Age  50 15. 52 15. 53 15. 54 15.  ment Age  50 10.	100.00  Perce Retirement Age  00% 55 00 56 00 57 00 58 00  Perce Retirement Age  00% 55 00 56 00 57 00 58 00  Perce Retirement Age  00% 55 00 56 00 57 00 58 00  00% 55 00 56 00 57	100.00  ent Retiring Wit Retire  15.00% 15.00 15.00 15.00 ent Retiring Wit Retire  15.00% 15.00 20.00  ent Retiring Wit Retire  10.00%	100.0 hin Next Younger September 100.0 hin Next Younger September 100.0 hin Next Younger September 100.0 hin Next Younger 100.0 hin Next	00 Ri	ong Active Metirement Age  of 63 64 65 66  ong Active Metirement Age 63 64 65 66  ong Active Metirement Age 63 64 65 66	100.00    Numbers Eliginary	rement Age 67 68 69 70 bble for rement Age 67 68 69 70 67 68 69 67 67 68 69 67 67	50.00% 50.00 50.00 100.00 Retirement 50.00% 50.00 100.00 Retirement 20.00% 20.00 20.00		

as of January 1, 2018

		Percent Retiring Within Next Year Among Active Members										
						Eligible 1	for Retirement					
				Male			Female	Governors				
		State and Sch	ool Division	Local	State and Sch	ool Division	Local	and Legislators				
	Retirement Age	Educators	Public Employees	Government Division	Educators	Public Employees	Government Division	Retirement Plan				
Tier 2	50	20.00%	15.00%	15.00%	30.00%	17.00%	6 20.00%	0.00%				
Public Employees	51	20.00	15.00	15.00	30.00	16.00	20.00	0.00				
Retirement System	52	20.00	15.00	15.00	30.00	16.00	20.00	0.00				
Adopted January 1, 2014	53	20.00	15.00	15.00	14.00	16.00	20.00	0.00				
	54	12.00	15.00	15.00	14.00	16.00	20.00	0.00				
	55	12.00	16.00	15.00	14.00	16.00	25.00	0.00				
	56	12.00	16.00	15.00	18.00	16.00	25.00	0.00				
	57	12.00	16.00	15.00	18.00	16.00	25.00	0.00				
	58	12.00	16.00	15.00	18.00	20.00	25.00	0.00				
	59	12.00	16.00	15.00	18.00	20.00	25.00	0.00				
	60	23.00	20.00	20.00	30.00	30.00	30.00	0.00				
	61	23.00	20.00	20.00	30.00	30.00	30.00	0.00				
	62	30.00	33.00	23.00	35.00	30.00	30.00	100.00				
	63	30.00	33.00	23.00	35.00	30.00	30.00	100.00				
	64	30.00	30.00	23.00	30.00	30.00	30.00	100.00				
	65	30.00	22.00	23.00	30.00	26.00	25.00	100.00				
	66	30.00	22.00	30.00	30.00	26.00	25.00	100.00				
	67	30.00	22.00	22.00	30.00	22.00	25.00	100.00				
	68	30.00	22.00	22.00	23.00	22.00	25.00	100.00				
	69	25.00	22.00	22.00	23.00	22.00	25.00	100.00				
	70	20.00	22.00	22.00	23.00	22.00	20.00	100.00				
	71	20.00	22.00	18.00	23.00	22.00	15.00	100.00				
	72	20.00	22.00	18.00	23.00	22.00	15.00	100.00				
	73	20.00	22.00	18.00	23.00	22.00	15.00	100.00				
	74	20.00	22.00	18.00	23.00	22.00	15.00	100.00				
	75	100.00	100.00	100.00	100.00	100.00	100.00	100.00				

Tier 2 Public Safety and Firefighter	Retirement Age	Retir	ement Age	Reti	Pero rement Age		ithin Nerement Age	ext Year Amon Reti	g Active rement Age		ible for F rement Age	Retirement
Retirement System	45	12.00%	50	12.00%	55	12.00%	59	12.00%	63	35.00%	67	50.00%
	46	12.00	51	12.00	56	12.00	60	25.00	64	35.00	68	50.00
Public Safety	47	12.00	52	12.00	57	12.00	61	30.00	65	50.00	69	50.00
Adopted January 1, 2014	48	12.00	53	12.00	58	12.00	62	35.00	66	50.00	70	100.00
	49	12.00	54	12.00								
					Pero	ent Retiring W	/ithin Ne	xt Year Amon	g Active	Members Elig	ible for F	Retirement
	Retirement Age	Retir	ement Age	Reti	Pero rement Age		/ithin Ne rement Age		g Active rement Age		ible for F rement Age	Retirement
Firefighters		Retir 9.00%		Reti	rement		rement		rement		rement	
<b>Firefighters</b> Adopted January 1, 2014	Age		Age		rement Age	Reti	rement Age	Reti	rement Age	Reti	rement Age	
•	45	9.00%	Age 50	9.00%	rement Age	12.00%	rement Age	12.00%	rement Age	Reti	rement Age 67	60.00%
•	45 46	9.00% 9.00	50 51	9.00% 9.00	rement Age 55 56	12.00% 12.00	rement Age 59 60	12.00% 40.00	rement Age 63 64	40.00% 40.00	rement Age 67 68	60.00% 60.00

as of January 1, 2018

			er Terminatio	Male			Female	Governors	
		State and Sch	ool Division		State and Sch	ool Division		and	
	Years of Service	Educators	Public Employees	Local - Government Division	Educators	Public Employees	Local Government Division	Legislators Retirement Plan	
Noncontributory	0	14.00%	25.00%	17.00%	16.00%	28.00%	22.00%	10.00%	
and Contributory	1	11.00	20.00	13.00	15.00	23.00	18.00	10.00	
Retirement Systems	2	8.00	14.00	9.00	12.00	17.00	13.00	10.00	
Adopted January 1, 2017	3	7.00	10.00	8.00	10.00	13.00	11.00	10.00	
	4	6.50	10.00	7.50	9.00	12.50	10.50	10.00	
	5	6.00	10.00	7.00	8.00	11.00	10.00	10.00	
	6	5.50	9.00	6.50	7.50	10.00	9.50	10.00	
	7	4.00	7.50	6.00	6.00	7.50	9.00	10.00	
	8	3.50	6.00	5.50	5.00	6.50	7.50	10.00	
	9	3.00	5.50	4.75	4.50	6.00	7.00	10.00	
	10	2.75	5.00	4.50	4.00	5.50	6.00	10.00	
	11	2.50	4.50	4.00	3.50	4.75	5.50	10.00	
	12	2.50	4.00	3.50	3.25	4.50	5.25	10.00	
	13	2.25	3.75	3.00	3.00	4.25	5.00	10.00	
	14	2.00	3.50	3.00	2.50	3.75	4.50	10.00	
	15	2.00	3.00	2.75	2.25	3.50	4.00	10.00	
	16	1.75	2.75	2.75	2.00	3.00	3.75	10.00	
	17	1.75	2.50	2.75	1.75	2.75	3.50	10.00	
	18	1.75	2.00	2.50	1.50	2.75	3.00	10.00	
	19	1.50	2.00	2.50	1.25	2.75	3.00	10.00	
	20	1.00	2.00	2.00	1.25	2.75	2.50	10.00	
	21	1.00	2.00	2.00	1.25	2.50	2.50	10.00	
	22	1.00	2.00	1.75	1.25	2.25	2.25	10.00	
	23	1.00	1.50	1.50	1.25	2.00	2.00	10.00	
	24	1.00	1.50	1.25	1.25	2.00	2.00	10.00	
	25+	1.00	1.00	1.00	1.00	1.00	1.00	10.00	

				arating Within N	Next Year					
Public Safety	Years of Service		Years of Service		Years of Service		Years of Service		Years of Service	
	0	12.00%	5	4.50%	9	3.25%	13	2.25%	17	1.50%
Retirement System	1	6.50	6	4.25	10	3.00	14	1.50	18	1.50
Adopted January 1, 2014	2	5.50	7	4.00	11	2.75	15	1.50	19	1.50
	3	5.25	8	3.50	12	2.50	16	1.50	20+	1.00
	4	5.00								

			Other Termination of Employment of Active Members Separating Within Nex										
Firefighters	Years of Serv	Years of Service		Years of Service		Years of Service		Years of Service		ice			
	0	6.00%	5	2.50%	9	1.50%	13	0.50%	17	0.50%			
Retirement System	1	5.00	6	2.25	10	1.50	14	0.50	18	0.50			
Adopted January 1, 2010	2	4.00	7	2.00	11	1.50	15	0.50	19	0.50			
	3 4	3.50 3.00	8	1.75	12	0.50	16	0.50	20+	0.50			

Other Termination of Employment of Active Members Separating Within Next Year

Judges **Retirement System** Adopted January 1,1993

None assumed.

											Total	Annual Incre	
	Years of Service			Local ernment Division	Public Safety Retirement System	Firefight Retirem	ent	Years of Service	Sch		Loca Governmen Divisio	Public al Safety at Retirement	Firefighters Retirement
All Retirement	0	9.75%	8.50%	8.75%	6 7.25°		 75%	13	4.75%		% 4.00		
Systems	1	9.00	7.75	7.25	6.25	8		14	4.50	4.00	4.00		
Adopted	2	8.00	6.75	6.50	6.00	8.0		15	4.25	3.75	4.00		
•	3	7.50	6.00	6.00	5.75	7.	75	16	4.00	3.75	3.75	4.25	4.50
January 1, 2017	4	7.25	5.75	5.50	5.75	7.	50	17	3.75	3.75	3.75	4.00	4.25
	5	7.00	5.25	5.25	5.75	7.	25	18	3.75	3.75	3.75	4.00	4.00
	6	7.00	5.00	5.00	5.75	7.	25	19	3.75	3.75	3.75	4.00	4.00
	7	6.75	4.75	4.75	5.50	6.	75	20	3.75	3.50	3.50	4.00	4.00
	8	6.75	4.75	4.50	5.25	6.		21	3.75	3.50	3.50		
	9	6.50	4.50	4.50	5.25	6.		22	3.75	3.50	3.50		
	10	6.00	4.50	4.25	5.00	5.	75	23	3.75	3.50	3.25		
	11	5.50	4.25	4.00	4.75	5.0		24	3.50	3.25	3.25		
	12	5.25	4.25	4.00	4.50	5.0	00	25-	+ 3.25	3.25	3.25	3.25	3.25
								Prob	ability of Mo	ortality Wit		t Year for Act	
			Mal			Fem	_				Male		Female
			Loca Governmen		(	Lo Governme				Gove	Local rnment		Local Government
	Age	Educators	and Publi Employee		ucators	and Pub Employe	lic	Ag	je Educai		l Public ployees	Educators	and Public Employees
Noncontributory	20	0.02289	6 0.028	5% 0	.0069%	0.01	10%	5	0.09	46% 0	.1182%	0.0465%	0.0744
and Contributory	25	0.0271	0.0339	9 0	.0073	0.01	17	5	5 0.15	64 0	.1955	0.0706	0.1130
<b>Retirement Systems</b>	30	0.0254	0.0317		.0092	0.014		6			.3288	0.1030	0.1648
Adopted January 1, 2017	, 35	0.0294	0.0367		.0121	0.019		6			.5805	0.1560	0.2495
, , , , , ,	40 45	0.0352 0.0546	0.0440 0.0682		.0167 .0277	0.026 0.044		7	0 0.82	23 1	.0279	0.2717	0.4346
							Percen	t Electin	g a Refund o	of Contribu	tions Upon	Termination <sup>1</sup>	While Vested
				-					Male				Female
				Years of Service		ors	Public Employees		Local vernment Division	Educat	ors En	Public nployees	Local Government Division
Noncontributory an	d Con	tributory		0-3		00%	100		100%		00%	100%	1009
Retirement Systems		ti ibutoi y		4		75	86		75		65	80	77
•				5		73	83		73		64	79	75
Adopted January 1, 1993	)			10		54	73		61		53	64	61
				15		33	63		49		32	52	40
				19		9	29	)	23		8	22	13
				20		0	0		0		0	0	0
								Prob	ability of M				ive Members
				Age			Age			Pub Age	olic Safety a	nd Firefighte Age	rs Employees
Public Safety Retire				20	0.0285		35	0.036			0.1182%		0.58059
and Firefighters Ret		nt System	1	25	0.0339		40	0.044			0.1955	70	1.0279
Adopted January 1, 2017	7			30	0.0317	7	45	0.068	32	60	0.3288		
				Percer	nt Electing a				on Termina				
				Ye	ears of Servi		ıc Safety aı	nd Firefi	ghters Retire Years of S		loyees		
								_					
					0-3		100%		15		35%		
Public Safety Retire			1		4		76		19	)	15		
	ireme		1							)			