

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM

ACTUARIAL VALUATION OF DEFINED BENEFIT ALLOWANCES –
TRADITIONAL, COMBINED AND MEMBER DIRECTED PLANS

DECEMBER 31, 2015

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August 29, 2016

The Retirement Board
Ohio Public Employees Retirement System
Columbus, Ohio

Ladies and Gentlemen:

The results of the *December 31, 2015 Annual Actuarial Valuation of Defined Benefit Allowances* of the Ohio Public Employees Retirement System, based upon Chapter 145 of the Code as amended, are presented in this report. The gain/loss analysis of experience by division, the annual actuarial valuation of retiree health and Medicare benefits, projections of defined benefit allowances and projections of retiree health and Medicare benefits are covered in separate reports. The purposes of the valuation are as follows:

- Measure the financial position of OPERS,
- Assist the Board in establishing employer and employee contribution rates necessary to fund the pension defined benefits provided by OPERS,
- Determine the number of years required to amortize the unfunded actuarial accrued liabilities based upon established contribution rates,
- Provide actuarial reporting and disclosure information for the System's financial report, and
- Analyze the experience of the System over the past year.

This report should not be relied on for any purpose other than those described above. It was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The signing actuaries are independent of the plan sponsor.

The individual member statistical data required for the valuations was furnished by your Executive Director and Staff, together with pertinent data on financial operations. Their cooperation in furnishing these materials is acknowledged with appreciation. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the data.

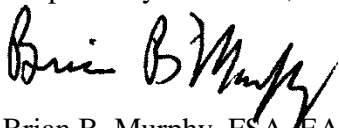
Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

The actuarial assumptions used in the valuations are summarized in Section X of this report. The assumptions are established by the Retirement Board after consulting with the actuary.

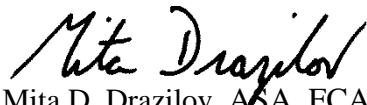
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the Ohio Public Employees Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

Brian B. Murphy and Mita D. Drazilov are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Brian B. Murphy, FSA, EA, FCA, MAAA, PhD



Mita D. Drazilov, ASA, FCA, MAAA

BBM/MDD:mrp

SECTION I
EXECUTIVE SUMMARY

INTRODUCTION

Section 145.22 of the Revised Code of Ohio (ORC) provides in part as follows:

“(A) The public employees retirement board shall have prepared annually by or under the supervision of an actuary an actuarial valuation of the pension assets, liabilities, and funding requirements of the public employees retirement system as established pursuant to this chapter.”

This report presents the results of the December 31, 2015 annual actuarial valuation of the Ohio Public Employees Retirement System (OPERS) Defined Benefit Allowances of the Traditional, Combined and Member Directed Plans. In conjunction with Chapter 145 of the ORC, the purposes of performing the annual valuation are as follows:

- Measure the financial position of OPERS,
- Assist the Board in establishing employer and employee contribution rates necessary to fund the pension defined benefits provided by OPERS,
- Determine the number of years required to amortize the unfunded actuarial accrued liabilities based upon established contribution rates,
- Provide actuarial reporting and disclosure information for the System’s financial report, and
- Analyze the experience of the System over the past year.

The report is presented as follows:

Section I	-	Executive Summary
Section II	-	Financial Information
Section III	-	Benefits and Conditions Evaluated
Section IV	-	Recommendations for Reserve Transfers
Section V	-	Active and Inactive Vested Valuation Results for State
Section VI	-	Active and Inactive Vested Valuation Results for Local Government
Section VII	-	Active and Inactive Vested Valuation Results for Public Safety
Section VIII	-	Active and Inactive Vested Valuation Results for Law Enforcement
Section IX	-	Allowances Being Paid to Retirees and Beneficiaries
Section X	-	Actuarial Methods and Assumptions
Section XI	-	Financial Principles
Section XII	-	Governmental Accounting Standards Board (GASB) Reporting

There have been no significant benefit changes since the last valuation. Please see Section III for a detailed description of the benefit provisions.

A summary of the primary valuation results as of December 31, 2015 are presented on the following pages.

SUMMARY OF PENSION DEFINED BENEFIT VALUATION RESULTS
TRADITIONAL, COMBINED, AND MEMBER DIRECTED PLANS
DECEMBER 31
(\$ IN MILLIONS)

	2015						2014	
	General			Law			Grand Total	Grand Total
	State	Local	Total General	Public Safety	Law Enforcement	Total Law		
A. Demographic Information								
1. Active Number Counts								
a. Traditional Plan	115,596	197,929	313,525	79	7,779	7,858	321,383	322,318
b. Combined Plan	2,776	4,850	7,626	0	0	0	7,626	7,455
c. Total	118,372	202,779	321,151	79	7,779	7,858	329,009	329,773
2. Active Payroll								
a. Traditional Plan	\$ 4,806	\$ 7,285	\$ 12,091	\$ 4	\$ 481	\$ 485	\$ 12,576	\$ 12,300
b. Combined Plan	155	220	375	0	0	0	375	354
c. Total	\$ 4,961	\$ 7,505	\$ 12,466	\$ 4	\$ 481	\$ 485	\$ 12,951	\$ 12,654
3. Retired Number Counts	72,500	133,699	206,199	174	4,928	5,102	211,301	208,809
4. Deferred/Inactive Number Counts	220,246	281,643	501,889	46	953	999	502,888	486,667
5. Member Directed Active Number Counts	4,062	7,219	11,281	0	0	0	11,281	10,851
6. Total Number Counts	415,180	625,340	1,040,520	299	13,660	13,959	1,054,479	1,036,100
B. Defined Benefit Assets								
1. Market Value (MV)	\$ 27,695	\$ 43,496	\$ 71,191	\$ 26	\$ 3,343	\$ 3,370	\$ 74,560	\$ 77,263
2. Rate of Return on MV							0.31 %	6.83 %
3. Funding Value (FV)	\$ 28,995	\$ 45,538	\$ 74,533	\$ 28	\$ 3,500	\$ 3,528	\$ 78,061	\$ 74,865
4. Rate of Return on FV							8.36 %	8.68 %
5. Ratio of FV to MV							104.7%	96.9%
C. Defined Benefit Actuarial Results								
1. Normal Cost as a % of Payroll	12.96%	12.67%	12.77%	16.07%	18.23%	18.23%	12.99%	13.05%
2. Actuarial Accrued Liability (AAL)								
a. Active	\$ 12,199	\$ 18,605	\$ 30,804	\$ 7	\$ 1,595	\$ 1,602	\$ 32,406	\$ 31,672
b. Retired	22,944	31,586	54,530	44	2,264	2,309	56,839	55,120
c. Deferred/Inactive	1,064	1,490	2,554	1	33	34	2,588	2,493
d. Total	\$ 36,207	\$ 51,681	\$ 87,888	\$ 52	\$ 3,892	\$ 3,944	\$ 91,832	\$ 89,285
3. Unfunded AAL (UAAL) (FV Basis)	\$ 7,211	\$ 6,143	\$ 13,355	\$ 25	\$ 392	\$ 417	\$ 13,771	\$ 14,420
4. Unfunded AAL (UAAL) (MV Basis)	\$ 8,512	\$ 8,185	\$ 16,697	\$ 26	\$ 549	\$ 574	\$ 17,272	\$ 12,022
5. Funded Ratio (FV Basis)	80.1 %	88.1 %	84.8 %	52.7 %	89.9 %	89.4 %	85.0 %	83.8 %
D. Amortization Years to Fully Amortize UAAL *	36	12	19	N/A	9	10	19	21
E. Contribution Rates								
	CY 2018						CY 2017	
1. Pension Contributions								
a. Employer Normal Cost	3.34%	3.01%	3.13%	4.07%	5.23%	5.24%	3.22%	3.27%
b. Member Contribution Rate #	9.62%	9.66%	9.64%	12.00%	13.00%	12.99%	9.77%	9.78%
c. UAAL Contribution Rate	6.66%	6.99%	6.87%	10.03%	8.87%	8.86%	6.94%	6.89%
d. Total	19.62%	19.66%	19.64%	26.10%	27.10%	27.09%	19.93%	19.94%
2. Retiree Health Contribution Rate	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
3. Total Employer Contribution Rate	14.00%	14.00%	14.00%	18.10%	18.10%	18.10%	14.16%	14.16%

* Based on i) schedule of employer and member contribution rates shown on page III-3. For the 2015 results, the amortization years shown are from December 31, 2016. For Actuarially Determined Employer Contribution (ADEC) purposes, amortization years are determined based upon scheduled contribution rate changes through 2018. See page XII-10 for additional explanation, and ii) Entry age actuarial cost method reflecting additional future normal cost savings anticipated to occur as Group A and Group B members are replaced by new hires subject to Group C benefit provisions.

2014 and 2015 results reflect 0% for Combined Plan members.

SUMMARY OF PENSION DEFINED BENEFIT VALUATION RESULTS
TRADITIONAL PLAN
DECEMBER 31
(\$ IN MILLIONS)

	2015						2014	
	General			Law			Grand Total	Grand Total
	State	Local	Total General	Public Safety	Law Enforcement	Total Law		
A. Demographic Information								
1. Active Number Counts	115,596	197,929	313,525	79	7,779	7,858	321,383	322,318
2. Active Payroll	\$ 4,806	\$ 7,284	\$ 12,090	\$ 4	\$ 481	\$ 485	\$ 12,575	\$ 12,300
3. Retired Number Counts	72,366	133,324	205,690	174	4,928	5,102	210,792	208,395
4. Deferred/Inactive Number Counts	219,446	280,459	499,905	46	953	999	500,904	484,857
5. Total Number Counts	407,408	611,712	1,019,120	299	13,660	13,959	1,033,079	1,015,570
B. Defined Benefit Assets								
1. Market Value (MV)	\$ 27,554	\$ 43,290	\$ 70,844	\$ 26	\$ 3,343	\$ 3,369	\$ 74,213	\$ 76,956
2. Rate of Return on MV							0.31 %	6.83 %
3. Funding Value (FV)	\$ 28,849	\$ 45,323	\$ 74,172	\$ 28	\$ 3,500	\$ 3,528	77,700	\$ 74,567
4. Rate of Return on FV							8.36 %	8.67 %
5. Ratio of FV to MV							104.7%	96.9%
C. Defined Benefit Actuarial Results								
1. Normal Cost as a % of Payroll	13.15%	12.82%	12.95%	16.07%	18.23%	18.23%	13.16%	13.22%
2. Actuarial Accrued Liability (AAL)								
a. Active	\$ 12,088	\$ 18,455	\$ 30,542	\$ 7	\$ 1,595	\$ 1,602	\$ 32,144	\$ 31,433
b. Retired	22,937	31,570	54,507	44	2,264	2,309	56,816	55,102
c. Deferred/Inactive	1,058	1,483	2,541	1	33	34	2,575	2,482
d. Total	\$ 36,083	\$ 51,507	\$ 87,590	\$ 52	\$ 3,892	\$ 3,944	\$ 91,535	\$ 89,017
3. Unfunded AAL (UAAL) (FV Basis)	\$ 7,235	\$ 6,184	\$ 13,418	\$ 25	\$ 392	\$ 417	\$ 13,835	\$ 14,450
4. Unfunded AAL (UAAL) (MV Basis)	\$ 8,529	\$ 8,217	\$ 16,746	\$ 26	\$ 549	\$ 575	\$ 17,322	\$ 12,061
5. Funded Ratio (FV Basis)	80.0 %	88.0 %	84.7 %	52.7 %	89.9 %	89.4 %	84.9 %	83.8 %
D. Amortization Years to Fully Amortize UAAL *	37	13	20	N/A	9	10	19	21
E. Contribution Rates								
	CY 2018						CY 2017	
1. Pension Contributions								
a. Employer Normal Cost	3.15%	2.82%	2.95%	4.07%	5.23%	5.24%	3.04%	3.11%
b. Member Contribution Rate	10.00%	10.00%	10.00%	12.00%	13.00%	12.99%	10.12%	10.11%
c. UAAL Contribution Rate	6.85%	7.18%	7.05%	10.03%	8.87%	8.86%	7.12%	9.05%
d. Total	20.00%	20.00%	20.00%	26.10%	27.10%	27.09%	20.28%	20.27%
2. Retiree Health Contribution Rate	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
3. Total Employer Contribution Rate	14.00%	14.00%	14.00%	18.10%	18.10%	18.10%	14.16%	14.16%

* Based on i) schedule of employer and member contribution rates shown on page III-3. For the 2015 results, the amortization years shown are from December 31, 2016. For Actuarially Determined Employer Contribution (ADEC) purposes, amortization years are determined based upon scheduled contribution rate changes through 2018. See page XII-10 for additional explanation, and ii) Entry age actuarial cost method reflecting additional future normal cost savings anticipated to occur as Group A and Group B members are replaced by new hires subject to Group C benefit provisions.

**SUMMARY OF PENSION DEFINED BENEFIT VALUATION RESULTS
COMBINED PLAN
DECEMBER 31
(\$ IN MILLIONS)**

	2015		2014	
	General		Grand Total	Grand Total
	State	Local		
A. Demographic Information				
1. Active Number Counts	2,776	4,850	7,626	7,455
2. Active Payroll	\$ 155	\$ 220	\$ 375	\$ 354
3. Retired Number Counts	87	237	324	259
4. Deferred/Inactive Number Counts	800	1,184	1,984	1,810
5. Total Number Counts	3,663	6,271	9,934	9,524
B. Defined Benefit Assets				
1. Market Value (MV)	\$ 138	\$ 199	\$ 337	\$ 298
2. Rate of Return on MV			0.40 %	7.97 %
3. Funding Value (FV)	\$ 143	\$ 207	\$ 350	\$ 289
4. Rate of Return on FV			7.97 %	9.23 %
5. Ratio of FV to MV			104%	97%
C. Defined Benefit Actuarial Results				
1. Normal Cost as a % of Payroll	7.52%	7.38%	7.44%	7.45%
2. Actuarial Accrued Liability (AAL)				
a. Active	\$ 111	\$ 151	\$ 262	\$ 238
b. Retired	4	9	13	10
c. Deferred/Inactive	5	7	13	11
d. Total	\$ 121	\$ 167	\$ 288	\$ 260
3. Unfunded AAL (UAAL) (FV Basis)	\$ (23)	\$ (40)	\$ (63)	\$ (29)
4. Unfunded AAL (UAAL) (MV Basis)	\$ (17)	\$ (32)	\$ (49)	\$ (38)
5. Funded Ratio (FV Basis)	118.7 %	123.8 %	121.7 %	111.2 %
D. Amortization Years to Fully Amortize UAAL *	0	0	0	0
E. Contribution Rates				
	CY 2018		CY 2017	
1. Total Normal Cost	7.52%	7.38%	7.44%	7.45%
2. Member Contribution Rate	0.00%	0.00%	0.00%	0.00%
3. Employer Normal Cost	7.52%	7.38%	7.44%	7.45%
4. Other Contributions #	6.48%	6.62%	6.56%	6.55%
5. Total Employer Contribution Rate	14.00%	14.00%	14.00%	14.00%

* Based on i) schedule of employer and member contribution rates shown on page III-3. For the 2015 results, the amortization years shown are from December 31, 2016. For Actuarially Determined Employer Contribution (ADEC) purposes, amortization years are determined based upon scheduled contribution rate changes through 2018. See page XII-10 for additional explanation, and ii) Entry age actuarial cost method reflecting additional future normal cost savings anticipated to occur as Group A and Group B members are replaced by new hires subject to Group C benefit provisions.

Other contributions include: amortization payments for the pension UAAL, mitigating contributions, and contributions to the retiree health care fund.

SUMMARY OF PENSION DEFINED BENEFIT VALUATION RESULTS
MEMBER DIRECTED PLAN
DECEMBER 31

	2015		2014	
	General		Grand Total	Grand Total
	State	Local		
A. Demographic Information				
1. Active Number Counts	4,062	7,219	11,281	10,851
2. Retired Number Counts	47	138	185	155
3. Deferred / Inactive Number Counts	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
4. Total Number Counts	4,109	7,357	11,466	11,006
B. Defined Benefit Assets				
1. Market Value (MV)	\$ 3,357,410	\$ 6,791,921	\$ 10,149,331	\$ 8,879,831
2. Rate of Return on MV			0.88 %	6.45 %
3. Funding Value (FV)	\$ 3,513,788	\$ 7,108,269	\$ 10,622,057	\$ 8,771,712
4. Rate of Return on FV			7.09 %	8.89 %
5. Ratio of FV to MV			104.7%	98.8%
C. Defined Benefit Actuarial Results				
1. Normal Cost as a % of Payroll				
2. Actuarial Accrued Liability (AAL)				
a. Active	\$ 0	\$ 0	\$ 0	\$ 0
b. Retired	2,875,965	6,891,199	9,767,164	8,291,077
c. Deferred/Inactive	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
d. Total	2,875,965	6,891,199	9,767,164	8,291,077
3. Unfunded AAL (UAAL) (FV Basis)	\$ (637,823)	\$ (217,070)	\$ (854,893)	\$ (480,635)
4. Unfunded AAL (UAAL) (MV Basis)	\$ (481,445)	\$ 99,278	\$ (382,167)	\$ (588,754)
5. Funded Ratio (FV Basis)			108.8 %	105.8 %

COMMENTS AND CONCLUSION

The December 31, 2015 actuarial valuations of members indicate the following about the portion of employer contribution rates allocated to financing retirement allowances:

- The employer rates are sufficient to fully fund the cost of benefit commitments being made to members for service currently being rendered.
- After satisfying current cost requirements, the remaining portion of the employer rates provides sufficient funds to amortize unfunded actuarial accrued liabilities over a period of 19 years for the System in total.

Experience. The computed amortization period, taking into account all scheduled increases in contribution rates, is 19 years compared with the 21-year period that had been reported in the December 31, 2014 valuation. The primary factors contributing to the change in the amortization years were:

- Measured on a funding value basis, investment return was 8.36%. This figure is based upon an actuarial calculation and may not agree with figures reported elsewhere. The return on the funding value was higher than 2015 market experience due to continued partial recognition of the overall net market gains in 2012 and 2013. Since the return on funding value of assets was more than the 8% assumed return, there was a decrease in the amortization period.
- Individual salary increases during 2015 were again less than expected on average which also further improved the amortization period.
- Payroll for active members again increased from last year by less than the 3.75% payroll increase assumption. This resulted in a slight increase in amortization years.
- The number of members to leave active membership as a result of retirement, disability, and death-in-service were less than expected during calendar year 2015 resulting in a liability gain, further reducing the amortization period.

Information concerning 2015 experience including other sources of gains and losses is presented on pages I-15 through I-17.

Conclusion. Based on the results of the December 31, 2015 regular annual actuarial valuation, it is our opinion that the Ohio Public Employees Retirement System continues to operate in accordance with actuarial principles of level percent of payroll financing.

OTHER OBSERVATIONS

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 8.0% on the actuarial value of assets), it is expected that:

- (1) The employer normal cost as a percentage of pay will decrease to the level of the Group C normal cost as time passes as the majority of the active population is comprised of Group C members,
- (2) The unfunded actuarial accrued liabilities will be fully amortized after 19 years, and
- (3) The funded status of the plan will increase gradually towards a 100% funded ratio.

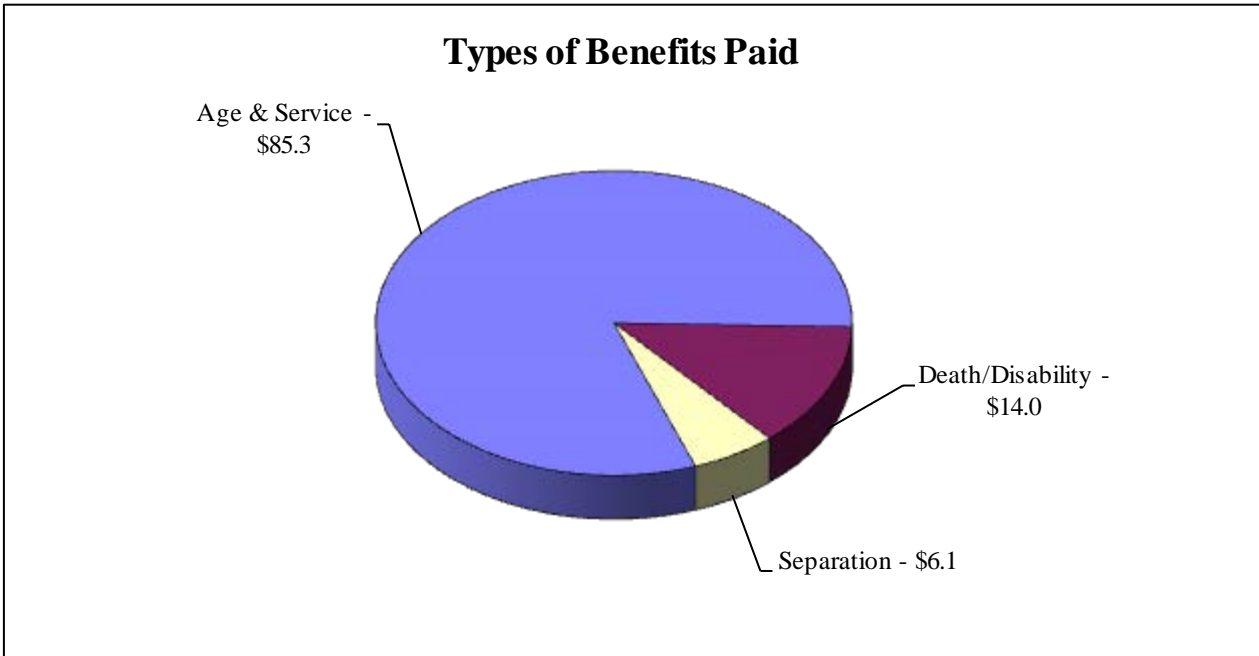
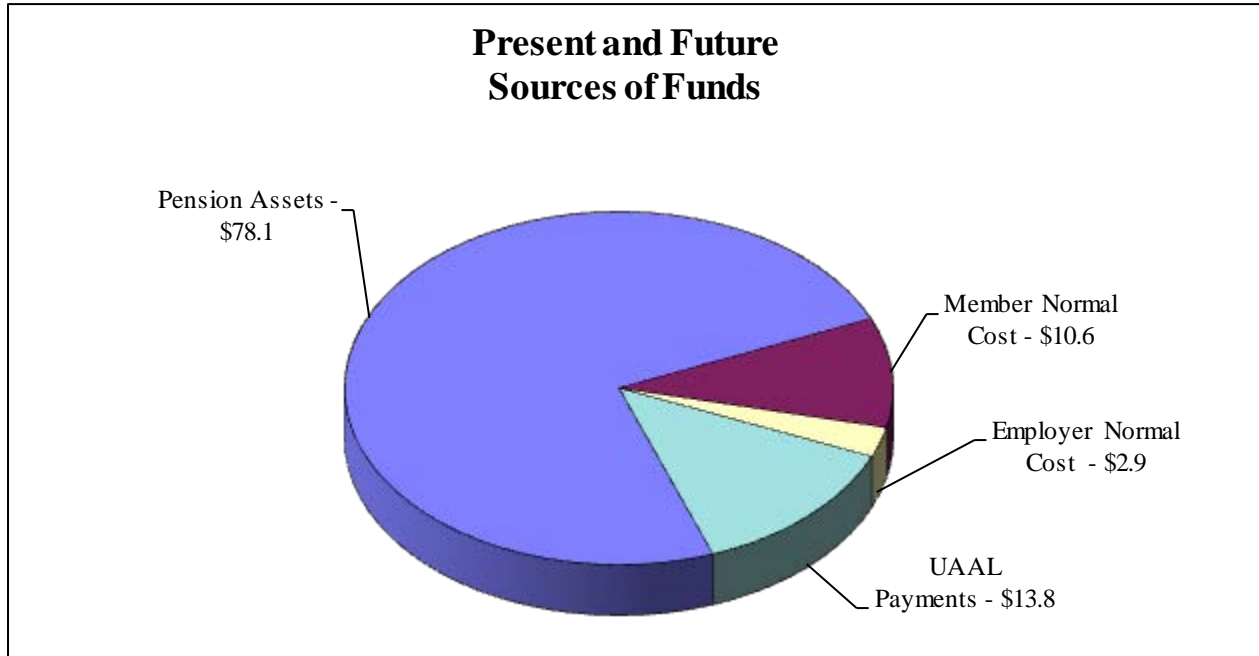
When selecting a contribution allocation procedure, the following three items should be considered, including the balance amongst the three items: (1) benefit security, (2) intergenerational equity, and (3) contribution stability and predictability. Generally, given the nature of public employee retirement systems (e.g., level contribution financing objective and perceived ongoing nature of the plan or plan sponsor), intergenerational equity and contribution stability and predictability have received more consideration than benefit security when contribution allocation procedures are selected. However, given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words, for transferring the obligations to an unrelated third party (e.g., insurance company) in a market value type transaction. In addition, the measurement is inappropriate for assessing benefit security for the membership.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

**FINANCING \$105.4 BILLION* OF DEFINED BENEFIT PROMISES
FOR PRESENT ACTIVE AND RETIRED MEMBERS
DECEMBER 31, 2015
(DOLLAR AMOUNTS IN BILLIONS)**



* Present value of future benefits – all divisions combined.

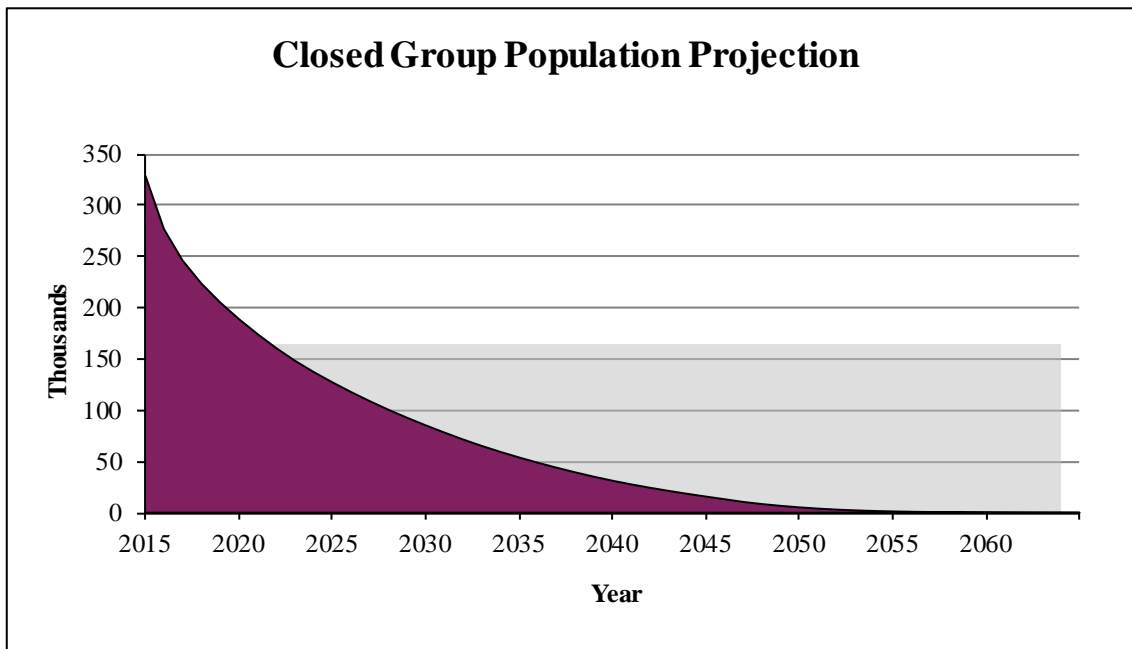
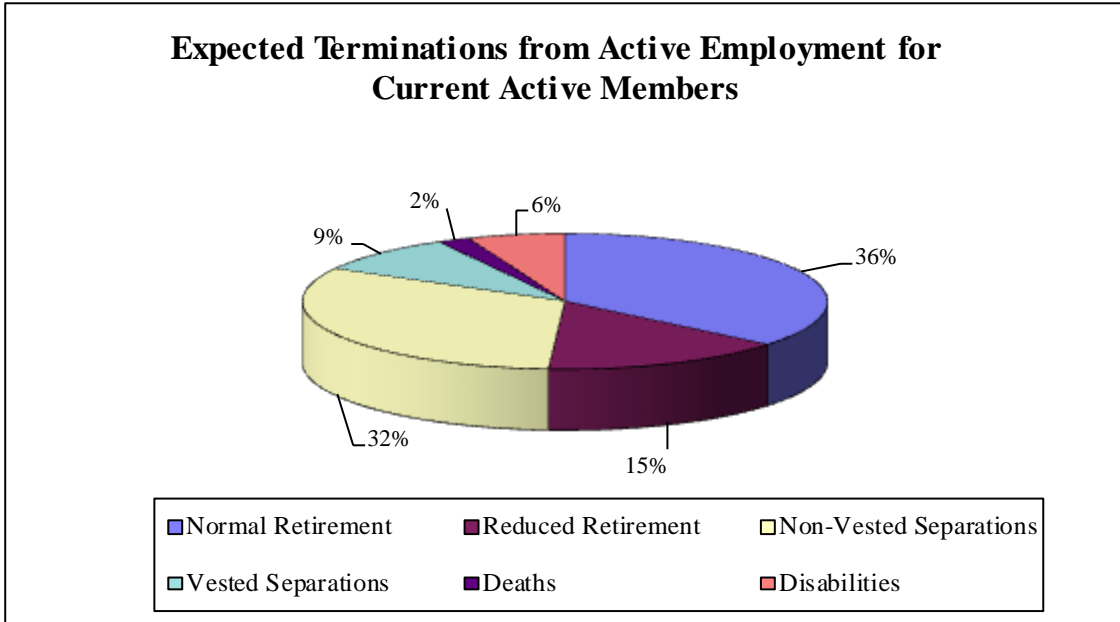
DEFINED BENEFIT ACTIVE MEMBERS IN VALUATION GROUP AVERAGES - COMPARATIVE STATEMENT

Valuation Group	Dec. 31	No. of Active Members	Group Averages					
			Attained Age	Accrued Service Yrs.	Annual Payroll			
					Average	Increase		
STATE	1975	83,220	40.6 yrs.	6.5 yrs.	\$ 9,441	6.4 %	@	
	1980	92,872	39.4	7.3	13,934	8.1 %	@	
	1985	89,256	39.2	8.4	18,677	7.4 %	@	
	1990	98,939	40.7	8.1	25,281	6.2 %	@	
	1995	114,596	40.4	8.8	27,962	2.0 %	@	
	2000	113,099	41.6	9.7	34,201	4.1 %	@	
	2005	114,620	42.0	10.1	37,858	2.1 %	@	
	2010	118,240	41.0	9.6	40,691	1.5 %	@	
	2011	118,273	40.5	9.2	40,952	0.6 %		
	2012	117,430	40.4	9.1	39,938	(2.5)%		
	2013	117,370	40.2	9.1	40,433	1.2 %		
	2014	118,114	39.8	8.8	40,862	1.1 %		
	2015	118,372	39.9	8.9	41,911	2.6 %		
	LOCAL GOVT	1975	149,557	40.8 yrs.	6.1 yrs.	8,771	4.3 %	@
		1980	160,797	40.7	7.4	13,035	8.2 %	@
1985		158,285	40.1	8.3	15,983	6.2 %	@	
1990		173,220	41.5	7.9	19,506	4.1 %	@	
1995		223,431	41.2	7.6	20,384	0.9 %	@	
2000		245,831	41.8	8.1	24,401	3.7 %	@	
2005		236,073	43.3	9.2	29,933	4.2 %	@	
2010		215,144	44.6	10.1	33,447	2.2 %	@	
2011		209,452	44.9	10.2	33,968	1.6 %		
2012		208,188	44.7	10.1	33,918	(0.1)%		
2013		207,416	44.6	10.0	34,396	1.4 %		
2014		203,955	44.3	10.0	36,087	4.9 %		
2015		202,779	44.4	10.0	37,008	2.6 %		
LAW * (Includes Public Safety and Law Enforcement)		1975	2,111	35.0 yrs.	4.9 yrs.	10,467	-	
		1980	3,019	36.1	6.8	16,846	10.0 %	@
	1985	4,207	36.5	8.4	20,103	5.5 %	@	
	1990	5,804	38.6	9.9	26,936	6.0 %	@	
	1995	6,605	39.3	11.1	32,441	3.2 %	@	
	2000	8,045	39.3	11.7	40,387	4.5 %	@	
	2005	8,111	39.9	12.6	49,472	4.1 %	@	
	2010	7,790	41.2	14.0	56,801	2.8 %	@	
	2011	7,629	41.3	14.1	57,836	1.8 %		
	2012	7,557	41.3	14.2	58,522	1.2 %		
	2013	7,634	41.3	14.2	59,117	1.0 %		
	2014	7,704	41.2	14.0	60,680	2.6 %		
	2015	7,858	41.3	14.2	61,710	1.7 %		
	TOTAL	2005	358,804	42.8 yrs.	9.5 yrs.	32,906	2.1 %	
		2010	341,174	43.3	10.0	36,491	1.2 %	
2011		335,354	43.2	9.9	36,974	1.3 %		
2012		333,175	43.1	9.8	36,598	(1.0)%		
2013		332,420	43.0	9.8	37,095	1.4 %		
2014		329,773	42.6	9.7	38,372	3.4 %		
2015		329,009	42.7	9.7	39,362	2.6 %		

@ 5-year annual compound rate.

* Beginning with the December 31, 2005 valuation report, valuation results for the Law division are shown separately for Public Safety and Law Enforcement.

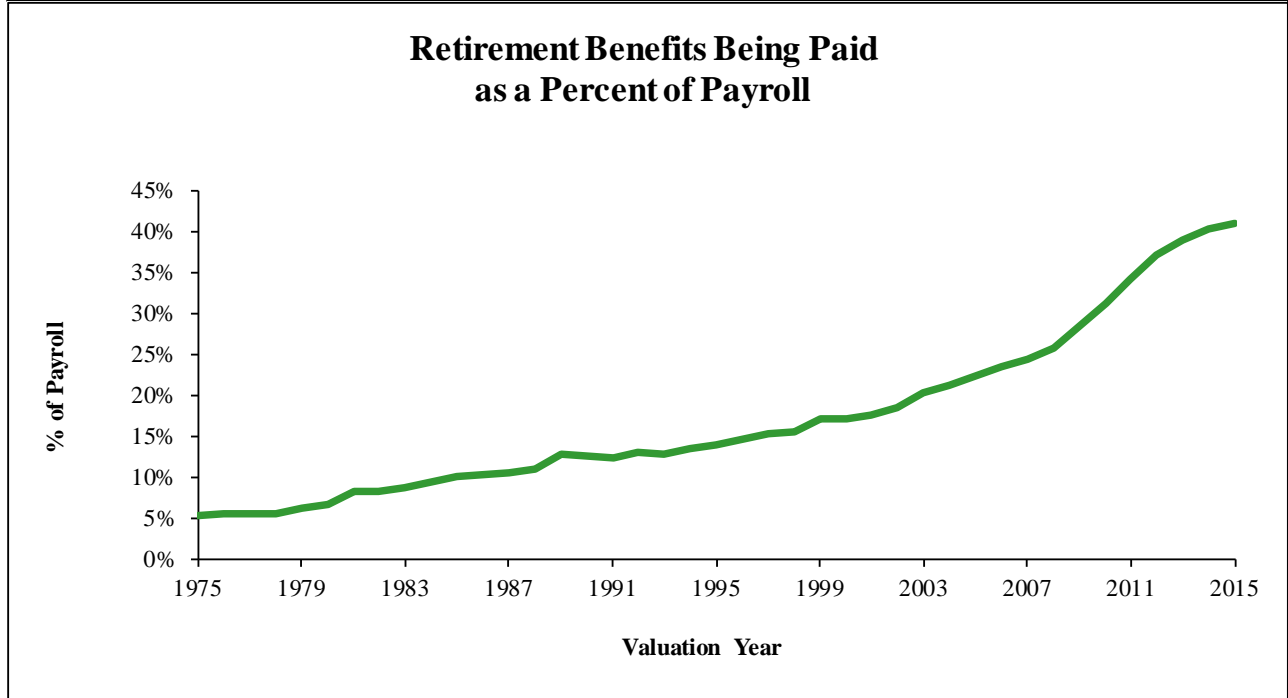
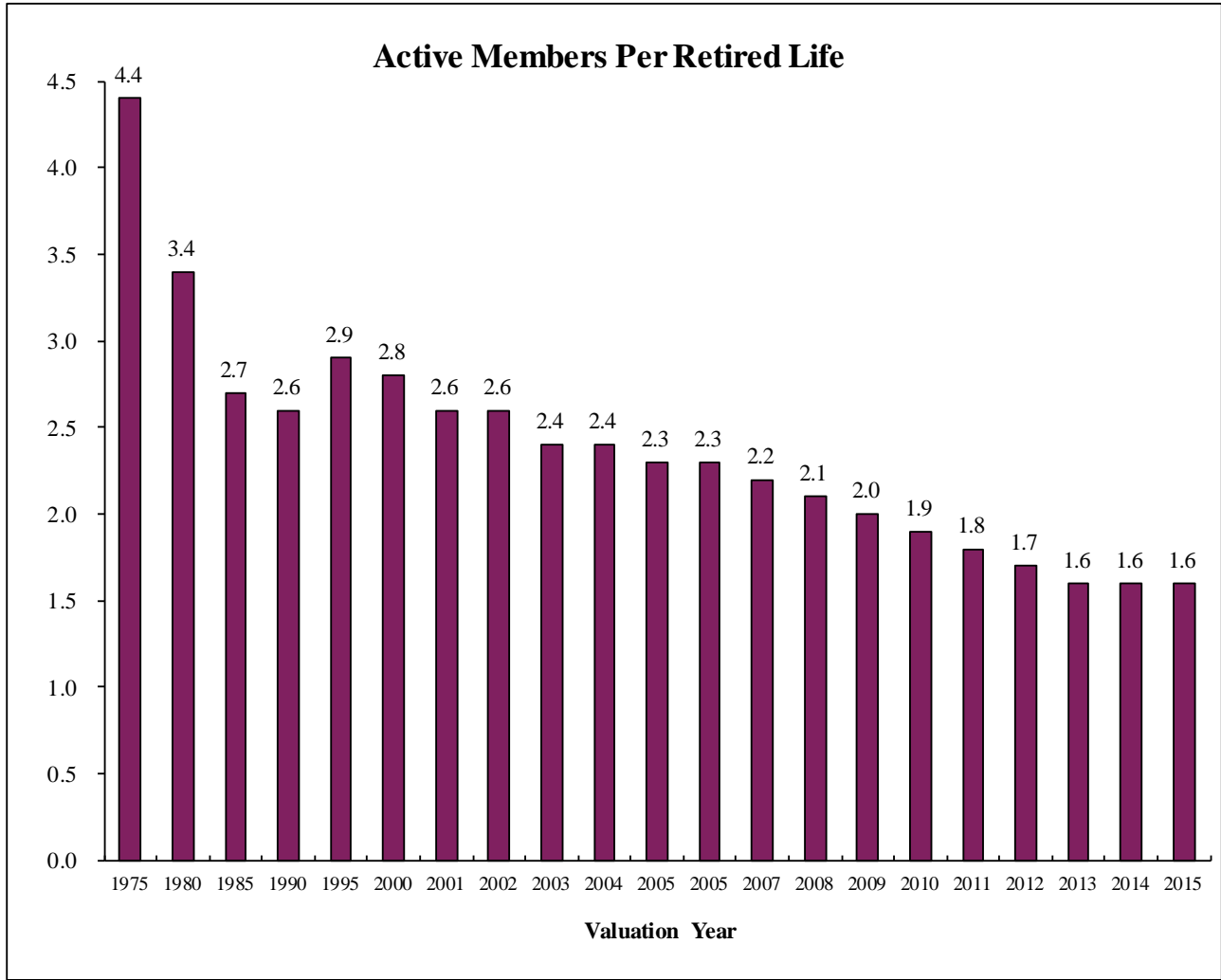
DEVELOPMENT OF PRESENT DEFINED BENEFIT POPULATION DECEMBER 31, 2015



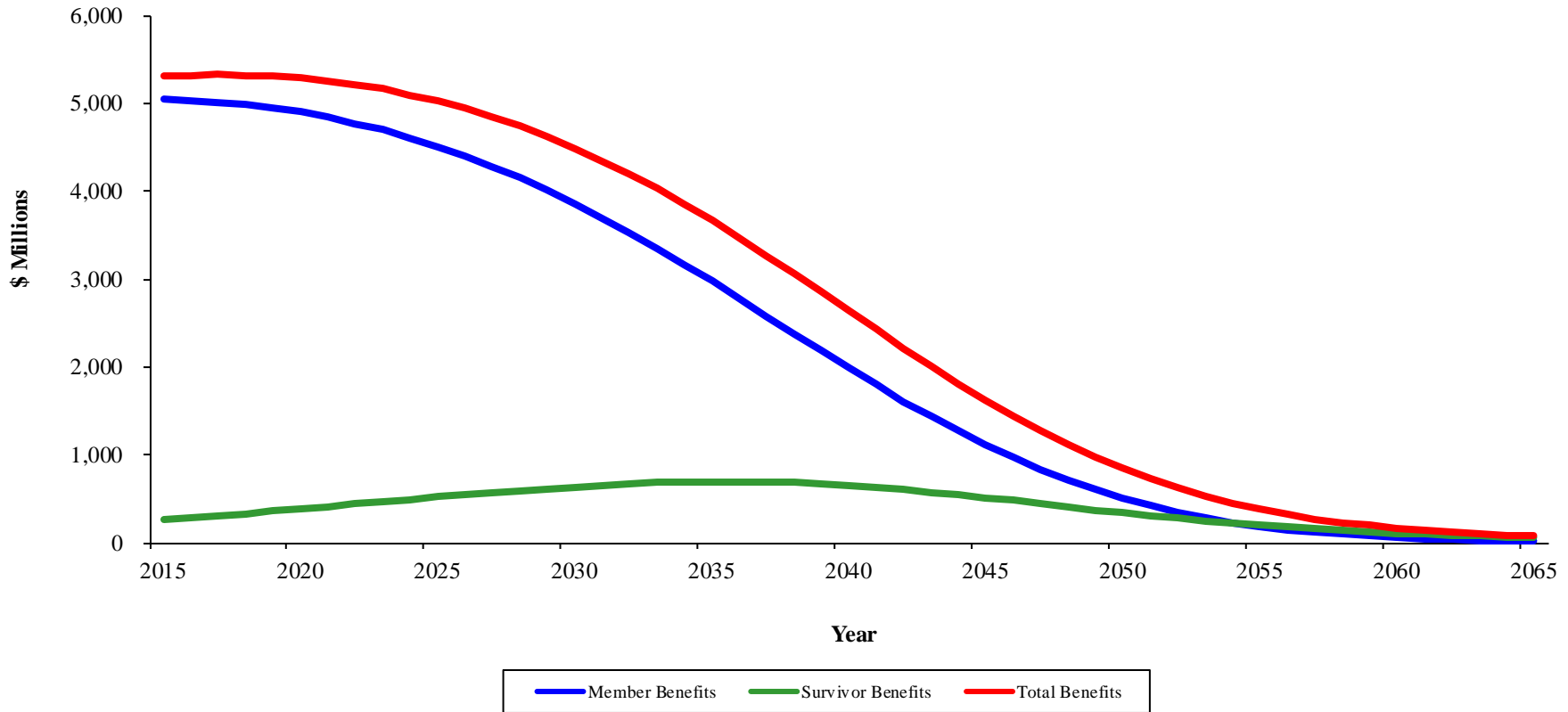
The charts above show the expected future development of the present population in simplified terms. The defined benefit portion of the Retirement System presently covers 329,009 active members. Eventually, 32% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for a monthly benefit. 60% of the present population is expected to receive monthly retirement benefits either by retiring directly from active service, or by separating from service without withdrawing contributions. 8% of the present population is expected to become eligible for death-in-service or disability benefits. Within 7 years, over half of the covered membership is expected to consist of new hires.

ACTIVE/RETIRED MEMBER STATISTICS

DECEMBER 31, 2015



PROJECTED FUTURE BENEFIT PAYMENTS ON BEHALF OF PRESENT RETIRED LIVES



Total future payments:	\$137.5 billion
From present assets:	\$56.8 billion
From future earnings:	\$80.7 billion

ALL DIVISIONS
DEFINED BENEFIT ACTIVE MEMBERS IN VALUATION
DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	11,261							11,261
Tot. Pay	\$102,040,057							\$102,040,057
Avg. Pay	\$9,061							\$9,061
20-24	36,645	213						36,858
Tot. Pay	\$502,368,383	\$4,850,650						\$507,219,033
Avg. Pay	\$13,709	\$22,773						\$13,761
25-29	25,119	3,858	182					29,159
Tot. Pay	\$719,387,497	\$155,547,994	\$6,799,966					\$881,735,457
Avg. Pay	\$28,639	\$40,318	\$37,362					\$30,239
30-34	17,696	8,579	3,332	210				29,817
Tot. Pay	\$559,784,188	\$394,791,430	\$163,032,811	\$9,547,215				\$1,127,155,644
Avg. Pay	\$31,633	\$46,018	\$48,929	\$45,463				\$37,802
35-39	11,847	7,038	7,373	3,499	117			29,874
Tot. Pay	\$397,628,805	\$332,903,815	\$392,026,402	\$189,269,492	\$6,165,740			\$1,317,994,254
Avg. Pay	\$33,564	\$47,301	\$53,171	\$54,092	\$52,699			\$44,118
40-44	9,903	5,820	6,033	7,580	2,638	108		32,082
Tot. Pay	\$327,729,720	\$275,414,919	\$323,146,929	\$434,249,830	\$152,287,722	\$6,012,281		\$1,518,841,401
Avg. Pay	\$33,094	\$47,322	\$53,563	\$57,289	\$57,728	\$55,669		\$47,342
45-49	9,625	5,880	5,848	7,179	7,087	3,188	95	38,902
Tot. Pay	\$306,354,704	\$265,832,919	\$301,998,366	\$402,928,472	\$444,706,959	\$193,840,471	\$5,748,834	\$1,921,410,725
Avg. Pay	\$31,829	\$45,210	\$51,641	\$56,126	\$62,750	\$60,803	\$60,514	\$49,391
50-54	8,420	5,429	5,741	6,521	5,964	7,227	1,712	41,014
Tot. Pay	\$255,023,813	\$233,559,715	\$278,928,044	\$344,111,805	\$348,540,515	\$459,915,241	\$110,021,607	\$2,030,100,740
Avg. Pay	\$30,288	\$43,021	\$48,585	\$52,770	\$58,441	\$63,638	\$64,265	\$49,498
55-59	7,005	4,930	5,604	6,465	5,671	5,697	2,841	38,213
Tot. Pay	\$200,926,445	\$196,904,100	\$257,024,530	\$327,705,523	\$312,712,593	\$350,379,243	\$189,641,051	\$1,835,293,485
Avg. Pay	\$28,683	\$39,940	\$45,864	\$50,689	\$55,142	\$61,502	\$66,752	\$48,028
60-64	4,700	3,399	3,802	4,305	3,903	3,709	1,999	25,817
Tot. Pay	\$113,625,632	\$131,542,444	\$168,879,876	\$207,804,513	\$205,790,684	\$218,046,482	\$134,279,699	\$1,179,969,330
Avg. Pay	\$24,176	\$38,700	\$44,419	\$48,271	\$52,726	\$58,788	\$67,173	\$45,705
65-69	2,802	1,529	1,435	1,477	1,323	1,202	863	10,631
Tot. Pay	\$45,450,517	\$47,335,929	\$55,895,841	\$66,895,164	\$67,497,468	\$69,058,013	\$57,830,521	\$409,963,453
Avg. Pay	\$16,221	\$30,959	\$38,952	\$45,291	\$51,018	\$57,453	\$67,011	\$38,563
70 & Over	2,062	988	765	508	408	309	341	5,381
Tot. Pay	\$24,108,988	\$15,646,195	\$15,913,399	\$15,168,131	\$15,498,388	\$14,665,288	\$17,759,091	\$118,759,480
Avg. Pay	\$11,692	\$15,836	\$20,802	\$29,859	\$37,986	\$47,460	\$52,079	\$22,070
Totals	147,085	47,663	40,115	37,744	27,111	21,440	7,851	329,009
Tot. Pay	\$3,554,428,749	\$2,054,330,110	\$1,963,646,164	\$1,997,680,145	\$1,553,200,069	\$1,311,917,019	\$515,280,803	\$12,950,483,059
Avg. Pay	\$24,166	\$43,101	\$48,950	\$52,927	\$57,290	\$61,190	\$65,633	\$39,362

**ALL DIVISIONS
DEFINED BENEFIT ACTIVE MEMBERS IN VALUATION
DECEMBER 31, 2015
BY GENDER AND YEARS OF SERVICE**

Service Years	Active Member Count			Active Member Pays	
	Males	Females	Total	Total	Average
0	32,673	37,822	70,495	\$ 1,134,621,462	\$16,095
1	13,127	15,297	28,424	747,658,022	26,304
2	9,363	10,947	20,310	644,086,487	31,713
3	7,196	8,654	15,850	570,858,000	36,016
4	5,701	6,305	12,006	457,204,778	38,081
5	4,751	5,406	10,157	408,550,876	40,224
6	4,000	4,032	8,032	330,349,161	41,129
7	4,092	5,143	9,235	393,400,786	42,599
8	4,741	5,522	10,263	454,697,432	44,305
9	4,546	5,430	9,976	467,331,855	46,846
10	4,071	4,957	9,028	422,961,745	46,850
11	3,751	4,455	8,206	397,535,378	48,444
12	3,593	3,894	7,487	370,342,414	49,465
13	3,363	4,046	7,409	373,405,414	50,399
14	3,648	4,337	7,985	399,401,213	50,019
15 & Up	45,271	48,875	94,146	5,378,078,036	57,125
Totals	153,887	175,122	329,009	\$ 12,950,483,059	\$39,362

SUMMARY OF PENSION EXPERIENCE
TRADITIONAL, COMBINED, AND MEMBER DIRECTED PLANS
(\$ IN MILLIONS)

	2015		2014	
	Total \$	% of Accrued Liabilities	Total \$	% of Accrued Liabilities
Beginning of Year				
1. Total Accrued Liabilities	\$ 89,285.24	100.0 %	\$ 86,644.58	100.0 %
2. Valuation Assets	74,864.75	83.8 %	71,411.24	82.4 %
3. Unfunded Actuarial Accrued Liabilities	\$ 14,420.49	16.2 %	\$ 15,233.34	17.6 %
Experience Gains(Losses)				
4. Gains (losses) in economic risk areas				
a. Pay increases	\$ 373.01	0.4 %	\$ 466.74	0.5 %
b. Investment return	261.38	0.3 %	474.42	0.5 %
c. Total	\$ 634.39	0.7 %	\$ 941.16	1.0 %
5. Gains (losses) from decrement experience				
a. Service retirement	71.63	0.1 %	(92.07)	(0.1)%
b. Disability retirement	87.05	0.1 %	99.62	0.1 %
c. Death-in-service	41.37	0.0 %	41.41	0.0 %
d. Other separations	22.37	0.0 %	4.02	0.0 %
e. Total	\$ 222.42	0.2 %	\$ 52.98	0.0 %
6. Gains (losses) from retiree mortality	\$ 74.73	0.1 %	\$ 95.86	0.1 %
7. Total experience gains (losses): (4c) + (5e) + (6)	\$ 931.54	1.0 %	\$ 1,090.00	1.1 %
End of Year				
8. Total Actuarial Accrued Liabilities	\$ 91,832.27	100.0 %	\$ 89,285.24	100.0 %
9. Valuation Assets	78,060.95	85.0 %	74,864.75	83.8 %
10. Unfunded Actuarial Accrued Liabilities	\$ 13,771.32	15.0 %	\$ 14,420.49	16.2 %

SUMMARY OF PENSION EXPERIENCE
TRADITIONAL PLAN
(\$ IN MILLIONS)

	2015		2014	
	Total \$	% of Accrued Liabilities	Total \$	% of Accrued Liabilities
Beginning of Year				
1. Total Accrued Liabilities	\$ 89,017.35	100.0 %	\$ 86,407.23	100.0 %
2. Valuation Assets	74,567.26	83.8 %	71,175.05	82.4 %
3. Unfunded Actuarial Accrued Liabilities	\$ 14,450.09	16.2 %	\$ 15,232.18	17.6 %
Experience Gains (Losses)				
4. Gains (losses) in economic risk areas				
a. Pay increases	\$ 367.09	0.4 %	\$ 461.82	0.5 %
b. Investment return	261.55	0.3 %	471.29	0.5 %
c. Total	628.64	0.7 %	933.11	1.0 %
5. Gains (losses) from decrement experience				
a. Service retirement	71.57	0.1 %	(91.91)	(0.1)%
b. Disability retirement	83.12	0.1 %	94.96	0.1 %
c. Death-in-service	40.96	0.0 %	40.38	0.0 %
d. Other separations	22.12	0.0 %	4.76	0.0 %
e. Total	\$ 217.77	0.2 %	\$ 48.19	0.1 %
6. Gains (losses) from retiree mortality	\$ 74.44	0.1 %	\$ 95.80	0.1 %
7. Total experience gains (losses): (4c) + (5e) + (6)	\$ 920.85	1.0 %	\$ 1,077.10	1.2 %
End of Year				
8. Total Actuarial Accrued Liabilities	\$ 91,534.58	100.0 %	\$ 89,017.35	100.0 %
9. Valuation Assets	77,699.90	84.9 %	74,567.26	83.8 %
10. Unfunded Actuarial Accrued Liabilities	\$ 13,834.68	15.1 %	\$ 14,450.09	16.2 %

**SUMMARY OF PENSION EXPERIENCE
COMBINED PLAN
(\$ IN MILLIONS)**

	2015		2014	
	Total \$	% of Accrued Liabilities	Total \$	% of Accrued Liabilities
Beginning of Year				
1. Total Accrued Liabilities	\$ 259.60	100.0 %	\$ 230.47	100.0 %
2. Valuation Assets	288.72	111.2 %	229.37	99.5 %
3. Unfunded Actuarial Accrued Liabilities	\$ (29.12)	(11.2)%	\$ 1.10	0.5 %
Experience Gains (Losses)				
4. Gains (losses) in economic risk areas				
a. Pay increases	\$ 5.92	2.3 %	\$ 4.92	2.1 %
b. Investment return	(0.08)	0.0 %	3.05	1.3 %
c. Total	5.84	2.3 %	7.97	3.4 %
5. Gains (losses) from decrement experience				
a. Service retirement	0.07	0.0 %	(0.16)	(0.1)%
b. Disability retirement	3.93	1.5 %	4.66	2.0 %
c. Death-in-service	0.42	0.2 %	1.04	0.5 %
d. Other separations	0.23	0.1 %	(0.74)	(0.3)%
e. Total	\$ 4.65	1.8 %	\$ 4.80	2.1 %
6. Gains (losses) from retiree mortality	\$ 0.29	0.1 %	\$ 0.04	0.0 %
7. Total experience gains (losses): (4c) + (5e) + (6)	\$ 10.78	4.1 %	\$ 12.81	5.5 %
End of Year				
8. Total Actuarial Accrued Liabilities	\$ 287.92	100.0 %	\$ 259.60	100.0 %
9. Valuation Assets	350.43	121.7 %	288.72	111.2 %
10. Unfunded Actuarial Accrued Liabilities	\$ (62.51)	(21.7)%	\$ (29.12)	(11.2)%

SUMMARY OF RISK MEASURES

TRADITIONAL PLAN

Valuation Year	Funded Ratio		UAAL Amortization Period	UAAL/ Total Payroll	Funding Value		Standard Deviation of Investment Return / Total Payroll
	Based on FVA	Based on MVA			of Assets / Total Payroll	Total AAL / Total Payroll	
2006	93 %	99 %	25	0.4	5.1	5.5	N/A
2007	96	100	14	0.2	5.4	5.6	50 %
2008	75	67	30	1.4	4.4	5.8	33
2009	75	75	30	1.5	4.7	6.2	47
2010	79	79	25	1.4	5.2	6.6	56
2011	77	73	30	1.6	5.4	7.0	57
2012	81	81	26	1.3	5.7	7.0	74
2013	82	86	25	1.3	5.9	7.2	80
2014	84	86	21	1.2	6.1	7.2	83
2015	85	81	19	1.1	6.2	7.3	83

COMBINED PLAN

Valuation Year	Funded Ratio		UAAL Amortization Period	UAAL/ Total Payroll	Funding Value		Standard Deviation of Investment Return / Total Payroll
	Based on FVA	Based on MVA			of Assets / Total Payroll	Total AAL / Total Payroll	
2006	85 %	84 %	N/A	0.1	0.3	0.4	N/A
2007	88	88	N/A	0.0	0.4	0.4	3 %
2008	71	63	4	0.1	0.3	0.5	2
2009	74	70	3	0.1	0.4	0.6	4
2010	76	75	3	0.2	0.5	0.6	5
2011	79	75	2	0.1	0.5	0.7	6
2012	86	87	1	0.1	0.6	0.7	8
2013	100	105	0	0.0	0.7	0.7	9
2014	111	115	0	-0.1	0.8	0.7	11
2015	122	117	0	-0.2	0.9	0.8	13

MEMBER DIRECTED PLAN

Valuation Year	Funded Ratio		UAAL Amortization Period	UAAL/ Total Payroll	Funding Value		Standard Deviation of Investment Return / Total Payroll
	Based on FVA	Based on MVA			of Assets / Total Payroll	Total AAL / Total Payroll	
2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2007	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2008	89 %	79 %	N/A	0.0	0.0	0.0	N/A
2009	81	82	N/A	0.0	0.0	0.0	N/A
2010	92	92	N/A	0.0	0.0	0.0	N/A
2011	99	95	N/A	0.0	0.0	0.0	N/A
2012	95	97	N/A	0.0	0.0	0.0	N/A
2013	99	103	N/A	0.0	0.0	0.0	N/A
2014	106	107	N/A	0.0	0.0	0.0	N/A
2015	109	104	N/A	0.0	0.0	0.0	N/A

SECTION II
FINANCIAL INFORMATION

FINANCIAL DATA FOR CALENDAR YEAR 2015

CONSOLIDATED ASSET RECONCILIATION

ALL PLANS, ALL DIVISIONS

	Traditional Pension Plan	DB Portion of Combined Pension Plan	DB Portion of Member- Directed Plan	Total Pension Defined Benefit	401(h) Health Care	115 Health Care Trust	Member Directed VEBA	Total Health Care	DC Portion of Combined Pension Plan	Member Directed	Total Defined Contribution	Total
Beginning Market Value @ 12/31/14												
Assets Held in Trust for Benefits	\$ 76,828,120,939	\$ 298,072,839	\$ 8,879,094	\$ 77,135,072,872	\$ 12,440,522,790	\$ 386,080,172	\$ 175,520,701	\$ 13,002,123,663	\$ 352,147,957	\$ 626,392,782	\$ 978,540,739	\$ 91,115,737,274
Gain/Loss on Security Lending	8,356,703	28,932	737	8,386,372	-	-	18,461	18,461	-	-	-	8,404,833
2014 Error Correction in Finance Workbook	-	(1)	-	(1)	-	-	2	2	-	-	-	1
Assets Held for Upcoming Year Budget	119,753,000	-	-	119,753,000	-	-	-	-	-	-	-	119,753,000
Total Beginning Market Value @ 12/31/14	\$ 76,956,230,642	\$ 298,101,770	\$ 8,879,831	\$ 77,263,212,243	\$ 12,440,522,790	\$ 386,080,172	\$ 175,539,164	\$ 13,002,142,126	\$ 352,147,957	\$ 626,392,782	\$ 978,540,739	\$ 91,243,895,108
External Cash Flows:												
Revenues:												
Member Contributions/Deposits	\$ 1,246,732,014	\$ -	\$ -	\$ 1,246,732,014	\$ -	\$ -	\$ -	\$ -	\$ 36,685,161	\$ 48,891,819	\$ 85,576,980	\$ 1,332,308,994
Employer Contributions	1,498,679,737	44,022,120	-	1,542,701,857	-	253,673,333	-	253,673,333	-	46,447,275	46,447,275	1,842,822,465
Employer Contributions - MD Loan Repayment	-	-	22,001,276	22,001,276	-	-	-	-	-	-	-	22,001,276
Contract and Other Receipts	75,209,820	133,572	1,047	75,344,439	9,435	95,860,582	-	95,870,017	358,688	494,493	853,181	172,067,637
Retiree Paid Health Care Premiums	-	-	-	-	248,601,375	-	-	248,601,375	-	-	-	248,601,375
Refund from HC Vendors (Formulary & Guarantees)	-	-	-	-	-	-	-	-	-	-	-	-
Federal Subsidies (Med D, ERRP & Direct Subsidy)	-	-	-	-	-	175,930,875	-	175,930,875	-	-	-	175,930,875.00
Other Income/Cancelled Warrants	(4,887,369)	-	-	(4,887,369)	-	10	-	10	-	-	-	(4,887,359)
Total Revenues	\$ 2,815,734,202	\$ 44,155,692	\$ 22,002,323	\$ 2,881,892,217	\$ 248,610,810	\$ 525,464,800	\$ -	\$ 774,075,610	\$ 37,043,849	\$ 95,833,587	\$ 132,877,436	\$ 3,788,845,263
Disbursements:												
Refunds of Member Accounts	\$ (405,320,800)	\$ (2,421,476)	\$ -	\$ (407,742,276)	\$ -	\$ -	\$ -	\$ -	\$ (10,156,468)	\$ (31,366,666)	\$ (41,523,134)	\$ (449,265,410)
Retirement Benefits	(5,398,844,664)	(1,256,757)	(775,680)	(5,400,877,101)	-	-	-	-	(534,358)	(469,533)	(1,003,891)	(5,401,880,992)
Retiree Paid Post Retirement Health Care	-	-	-	-	(248,601,375)	-	-	(248,601,375)	-	-	-	(248,601,375)
ER Paid Post Retirement Health Care	-	-	-	-	(1,431,909,896)	-	(2,396,973)	(1,434,306,869)	-	-	-	(1,434,306,869)
ER Paid PCORI	-	-	-	-	(150,864)	-	-	(150,864)	-	-	-	(150,864)
ER Paid Post Retirement Medicare	-	-	-	-	(77,867,474)	-	-	(77,867,474)	-	-	-	(77,867,474)
RMA Funding	-	-	-	-	(1,172,270)	-	-	(1,172,270)	-	-	-	(1,172,270)
CTD Clean up of RMA per account Admin Fees	-	-	-	-	(15,287,957)	-	-	(15,287,957)	-	-	-	(15,287,957)
HRA Funding	-	-	-	-	-	(45,184,620)	-	(45,184,620)	-	-	-	(45,184,620)
Administrative Expenses	(82,557,970)	-	-	(82,557,970)	(24,966,802)	(2,477,828)	(1,406,479)	(28,851,109)	(2,896,658)	(2,587,724)	(5,484,382)	(116,893,461)
Total Disbursements	\$ (5,886,723,434)	\$ (3,678,233)	\$ (775,680)	\$ (5,891,177,347)	\$ (1,799,956,638)	\$ (47,662,448)	\$ (3,803,452)	\$ (1,851,422,538)	\$ (13,587,484)	\$ (34,423,923)	\$ (48,011,407)	\$ (7,790,611,292)
Net External Cash Flow	\$ (3,070,989,232)	\$ 40,477,459	\$ 21,226,643	\$ (3,009,285,130)	\$ (1,551,345,828)	\$ 477,802,352	\$ (3,803,452)	\$ (1,077,346,928)	\$ 23,456,365	\$ 61,409,664	\$ 84,866,029	\$ (4,001,766,029)
Inter-Plan Activity												
Member Balance Transfers & Plan Switches	\$ 6,567,183	\$ (3,041,879)	\$ -	\$ 3,525,304	\$ -	\$ -	\$ -	\$ -	\$ (1,169,097)	\$ (2,356,207)	\$ (3,525,304)	\$ -
DCP Fixed Assets Advanced by TP	(3,843,300)	-	-	(3,843,300)	-	-	-	-	1,884,069	1,959,231	3,843,300	-
Mitigation Rate	6,589,876	(2,825,004)	-	3,764,872	-	-	-	-	-	(3,764,872)	(3,764,872)	-
Interest on 12/31/14 Advance Balance	782,638	-	-	782,638	-	-	-	-	(153,170)	(629,468)	(782,638)	-
Income Applied to Advance (Loan) Balance	-	2,597,090	(20,040,522)	(17,443,432)	-	-	-	-	(2,597,090)	20,040,522	17,443,432	(0)
Intraplan Transfer (DC to DB)	19,759,373	(3,269,793)	(20,040,522)	(3,550,942)	-	-	(5,992,744)	(5,992,744)	(3,871,478)	13,415,164	9,543,686	(0)
Total Inter-Plan Activity	\$ 19,759,373	\$ (3,269,793)	\$ (20,040,522)	\$ (3,550,942)	\$ -	\$ -	\$ (5,992,744)	\$ (5,992,744)	\$ (3,871,478)	\$ 13,415,164	\$ 9,543,686	\$ (0)
Investment Income:												
Interest and Dividends	\$ 703,254,121	\$ 2,923,531	\$ 190,944	\$ 706,368,596	\$ (188,934,613)	\$ (21,517,340)	\$ 1,612,477	\$ (208,839,476)	\$ (7,149,104)	\$ (12,351,110)	\$ (19,500,214)	\$ 478,028,906
Other Ordinary Investment Income	-	-	-	-	-	-	-	-	-	-	-	-
Realized Capital Value Changes	-	-	-	-	-	-	-	-	-	-	-	-
Unrealized Income on Security Lending	(522,594)	(2,179)	(142)	(524,915)	-	-	(1,202)	(1,202)	-	-	-	(526,117)
Soft Dollars	-	-	-	-	-	-	-	-	-	-	-	-
External Asset Management Fees	(394,411,958)	(1,644,719)	(107,422)	(396,164,099)	(29,174,168)	(1,253,144)	(907,438)	(31,334,750)	(255,400)	(475,802)	(731,202)	(428,230,051)
Rounding	-	1	(1)	-	-	-	1	1	(1)	1	-	1
Investment Return	\$ 308,319,569	\$ 1,276,634	\$ 83,379	\$ 309,679,582	\$ (218,108,781)	\$ (22,770,484)	\$ 703,838	\$ (240,175,427)	\$ (7,404,505)	\$ (12,826,911)	\$ (20,231,416)	\$ 49,272,739
Ending Market Value @ 12/31/15	\$ 74,213,320,352	\$ 336,586,070	\$ 10,149,331	\$ 74,560,055,753	\$ 10,671,068,181	\$ 841,112,040	\$ 166,446,806	\$ 11,678,627,027	\$ 364,328,339	\$ 688,390,699	\$ 1,052,719,038	\$ 87,291,401,818

DEVELOPMENT OF FUNDING VALUE OF PENSION DEFINED BENEFIT ASSETS TRADITIONAL, COMBINED, AND MEMBER DIRECTED PLANS

Year Ended December 31	2014	2015	2016	2017	2018
A. Funding Value Beginning of Year	\$ 71,411,242,059	\$ 74,864,744,525			
B. Market Value End of Year	77,263,212,244	74,560,055,753			
C. Market Value Beginning of Year	74,866,595,845	77,263,212,244			
D. Non-Investment/Administrative Net Cash Flow					
D1. Member Contributions	1,259,689,257	1,246,732,014			
D2. Employer and other Non-Member Contributions	1,613,571,281	1,621,481,643			
D3. Refund of Member Accounts	(391,685,595)	(407,742,276)			
D4. Retirement Benefits	(5,110,495,274)	(5,400,877,101)			
D5. Member Balance Transfers	257,620	3,525,304			
D6. Total Net Cash Flow: D1+D2+D3+D4+D5	(2,628,662,711)	(2,936,880,416)			
E. Investment Return					
E1. Market Total: B-C-D6	5,025,279,110	233,723,925			
E2. Assumed Rate of Return	8.00%	8.00%			
E3. Assumed Amount of Return	5,607,752,856	5,871,704,345			
E4. Amount Subject to Phase-In: E1-E3	(582,473,746)	(5,637,980,420)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	(145,618,437)	(1,409,495,105)			
F2. First Prior Year	1,018,826,375	(145,618,437)	\$ (1,409,495,105)		
F3. Second Prior Year	797,670,280	1,018,826,375	(145,618,437)	\$ (1,409,495,105)	
F4. Third Prior Year	(1,196,465,897)	797,670,280	1,018,826,373	(145,618,435)	\$ (1,409,495,105)
F5. Total Phase-Ins	474,412,321	261,383,113	(536,287,169)	(1,555,113,540)	(1,409,495,105)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D6+E3+F5	\$ 74,864,744,525	\$ 78,060,951,567			
G2. Upper Corridor Limit: 112% x B	86,534,797,714	83,507,262,443			
G3. Lower Corridor Limit: 88% x B	67,991,626,774	65,612,849,063			
G4. Funding Value End of Year	\$ 74,864,744,525	\$ 78,060,951,567			
H. Difference Between Market and Funding Value	2,398,467,719	(3,500,895,814)	(2,964,608,645)	(1,409,495,105)	-
I. Recognized Rate of Return	8.68 %	8.36 %			
J. Market Rate of Return	6.83 %	0.31 %			
K. Ratio of Funding Value to Market Value	97 %	105 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

DEVELOPMENT OF FUNDING VALUE OF PENSION DEFINED BENEFIT ASSETS TRADITIONAL PLAN

Year Ended December 31	2014	2015	2016	2017	2018
A. Funding Value Beginning of Year	\$ 71,175,050,279	\$ 74,567,256,413			
B. Market Value End of Year	76,956,230,642	74,213,320,352			
C. Market Value Beginning of Year	74,618,532,269	76,956,230,642			
D. Non-Investment/Administrative Net Cash Flow					
D1. Member Contributions	1,259,470,753	1,246,732,014			
D2. Employer and other Non-Member Contributions	1,570,323,570	1,575,592,064			
D3. Refund of Member Accounts	(389,707,612)	(405,320,800)			
D4. Retirement Benefits	(5,109,100,939)	(5,398,844,664)			
D5. Member Balance Transfers	2,582,400	6,567,183			
D6. Total Net Cash Flow: D1+D2+D3+D4+D5	(2,666,431,828)	(2,975,274,203)			
E. Investment Return					
E1. Market Total: B-C-D6	5,004,130,201	232,363,913			
E2. Assumed Rate of Return	8.00%	8.00%			
E3. Assumed Amount of Return	5,587,346,749	5,846,369,544			
E4. Amount Subject to Phase-In: E1-E3	(\$583,216,548)	(\$5,614,005,631)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	(\$145,804,137)	(\$1,403,501,407)			
F2. First Prior Year	1,015,531,306	(145,804,137)	\$ (1,403,501,407)		
F3. Second Prior Year	795,324,026	1,015,531,306	(145,804,137)	\$ (1,403,501,407)	
F4. Third Prior Year	(1,193,759,982)	795,324,027	1,015,531,307	(145,804,137)	\$ (1,403,501,410)
F5. Total Phase-Ins	471,291,213	261,549,789	(533,774,237)	(1,549,305,544)	(1,403,501,410)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D6+E3+F5	\$ 74,567,256,413	\$ 77,699,901,543			
G2. Upper Corridor Limit: 112% x B	86,190,978,319	83,118,918,794			
G3. Lower Corridor Limit: 88% x B	67,721,482,965	65,307,721,910			
G4. Funding Value End of Year	\$ 74,567,256,413	\$ 77,699,901,543			
H. Difference Between Market and Funding Value	2,388,974,229	(3,486,581,191)	(2,952,806,954)	(1,403,501,410)	-
I. Recognized Rate of Return	8.67 %	8.36 %			
J. Market Rate of Return	6.83 %	0.31 %			
K. Ratio of Funding Value to Market Value	97 %	105 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

DEVELOPMENT OF FUNDING VALUE OF PENSION DEFINED BENEFIT ASSETS COMBINED PLAN

Year Ended December 31	2014	2015	2016	2017	2018
A. Funding Value Beginning of Year	\$ 229,365,244	\$ 288,716,400			
B. Market Value End of Year	298,101,771	336,586,070			
C. Market Value Beginning of Year	240,964,406	298,101,771			
D. Non-Investment/Administrative Net Cash Flow					
D1. Member Contributions	218,504	-			
D2. Employer and Other Non-Member Contributions	41,345,627	43,927,778			
D3. Refund of Member Accounts	(1,977,983)	(2,421,476)			
D4. Retirement Benefits	(773,394)	(1,256,757)			
D5. Member Balance Transfers	(2,324,780)	(3,041,879)			
D6. Total Net Cash Flow: D1+D2+D3+D4+D5	36,487,974	37,207,666			
E. Investment Return					
E1. Market Total: B-C-D6	20,649,391	1,276,633			
E2. Assumed Rate of Return	8.00%	8.00%			
E3. Assumed Amount of Return	19,808,738	24,585,619			
E4. Amount Subject to Phase-In: E1-E3	840,653	(23,308,986)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	210,163	(5,827,247)			
F2. First Prior Year	3,219,516	210,163	\$ (5,827,247)		
F3. Second Prior Year	2,315,851	3,219,516	210,163	\$ (5,827,247)	
F4. Third Prior Year	(2,691,086)	2,315,850	3,219,515	210,164	\$ (5,827,245)
F5. Total Phase-Ins	3,054,444	(81,718)	(2,397,569)	(5,617,083)	(5,827,245)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D6+E3+F5	\$ 288,716,400	\$ 350,427,967			
G2. Upper Corridor Limit: 112% x B	333,873,984	376,976,398			
G3. Lower Corridor Limit: 88% x B	262,329,558	296,195,742			
G4. Funding Value End of Year	\$ 288,716,400	\$ 350,427,967			
H. Difference Between Market and Funding Value	9,385,371	(13,841,897)	(11,444,328)	(5,827,245)	-
I. Recognized Rate of Return	9.23 %	7.97 %			
J. Market Rate of Return	7.97 %	0.40 %			
K. Ratio of Funding Value to Market Value	97 %	104 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

DEVELOPMENT OF FUNDING VALUE OF PENSION DEFINED BENEFIT ASSETS MEMBER DIRECTED PLAN

Year Ended December 31	2014	2015	2016	2017	2018
A. Funding Value Beginning of Year	\$ 6,826,536	\$ 8,771,712			
B. Market Value End of Year	8,879,831	10,149,331			
C. Market Value Beginning of Year	7,099,170	8,879,831			
D. Non-Investment/Administrative Net Cash Flow					
D1. Member Contributions	-	-			
D2. Employer and Other Non-Member Contributions	1,902,084	1,961,801			
D3. Refund of Member Accounts	-	-			
D4. Retirement Benefits	(620,941)	(775,680)			
D5. Member Balance Transfers	-	-			
D6. Total Net Cash Flow: D1+D2+D3+D4+D5	1,281,143	1,186,121			
E. Investment Return					
E1. Market Total: B-C-D6	499,518	83,379			
E2. Assumed Rate of Return	8.00%	8.00%			
E3. Assumed Amount of Return	597,369	749,182			
E4. Amount Subject to Phase-In: E1-E3	(97,851)	(665,803)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	(24,463)	(166,451)			
F2. First Prior Year	75,553	(24,463)	\$ (166,451)		
F3. Second Prior Year	30,403	75,553	(24,463)	\$ (166,451)	
F4. Third Prior Year	(14,829)	30,403	75,551	(24,462)	\$ (166,450)
F5. Total Phase-Ins	66,664	(84,958)	(115,363)	(190,913)	(166,450)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D6+E3+F5	\$ 8,771,712	\$ 10,622,057			
G2. Upper Corridor Limit: 112% x B	9,945,411	11,367,251			
G3. Lower Corridor Limit: 88% x B	7,814,251	8,931,411			
G4. Funding Value End of Year	\$ 8,771,712	\$ 10,622,057			
H. Difference Between Market and Funding Value	108,119	(472,726)	(357,363)	(166,450)	-
I. Recognized Rate of Return	8.89 %	7.09 %			
J. Market Rate of Return	6.45 %	0.88 %			
K. Ratio of Funding Value to Market Value	99 %	105 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

**ALLOCATION OF FUNDING VALUE OF ASSETS AMONG DIVISIONS
DECEMBER 31, 2015
TRADITIONAL, COMBINED AND MEMBER DIRECTED PLANS**

	Total DB System				
	State	Local	Public Safety	Law Enforcement	Total
(1) Employer Accumulation Fund					
(a) Allocated Amounts	\$ (206,969,517)	\$ 4,702,636,870	\$ (24,200,908)	\$ 537,869,342	\$ 5,009,335,787
(b) Unallocated Amounts Allocated by (1)(a)	32,414,012	(428,496,217)	2,298,450	(51,083,446)	(444,867,201)
(c) Total EAF (1)(a) + (1)(b)	\$ (174,555,505)	\$ 4,274,140,653	\$ (21,902,458)	\$ 486,785,896	\$ 4,564,468,586
(2) Employee Savings Fund (ESF)					
(a) Total Member Deposits	\$ 5,471,963,622	\$ 8,434,162,999	\$ 3,728,216	\$ 645,466,734	\$ 14,555,321,571
(b) ESF Allocated by (2)(a)	\$ 5,064,636,066	\$ 7,805,663,066	\$ 3,450,084	\$ 597,313,633	\$ 13,471,062,849
(3) Retired Assets					
(a) Allocated Amounts	\$ 22,758,343,455	\$ 31,283,790,427	\$ 44,818,332	\$ 2,253,430,634	\$ 56,340,382,848
(b) Additional and DC Annuities	210,717	59,139,753	0	0	59,350,470
(c) Total Retiree Assets	\$ 22,758,554,172	\$ 31,342,930,180	\$ 44,818,332	\$ 2,253,430,634	\$ 56,399,733,318
(4) Subtotal: (1)(c) + (2)(b) + (3)(c)	\$ 27,648,634,733	\$ 43,422,733,899	\$ 26,365,958	\$ 3,337,530,163	\$ 74,435,264,753
(5) Assets Held For Upcoming Year Budget Allocated According to (4)	46,332,642	72,792,381	44,409	5,621,568	124,791,000
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	\$ 27,694,967,375	\$ 43,495,526,280	\$ 26,410,367	\$ 3,343,151,731	\$ 74,560,055,753
(7) Market Value Adjustment Allocated According to (6)	1,300,317,428	2,042,274,570	1,240,773	157,063,043	3,500,895,814
(8) Funding Value of Defined Benefit Assets (6)+(7)	\$ 28,995,284,803	\$ 45,537,800,850	\$ 27,651,140	\$ 3,500,214,774	\$ 78,060,951,567

**ALLOCATION OF FUNDING VALUE OF ASSETS AMONG DIVISIONS
DECEMBER 31, 2015
TRADITIONAL PLAN**

	Traditional Plan				
	State	Local	Public Safety	Law Enforcement	Total
(1) Employer Accumulation Fund (EAF)					
(a) Allocated Amounts	\$ (339,099,048)	\$ 4,514,778,123	\$ (24,200,908)	\$ 537,869,342	\$ 4,689,347,509
(b) Unallocated Amounts Allocated by (1)(a)	32,205,494	(428,785,218)	2,298,450	(51,083,446)	(445,364,720)
(c) Total EAF (1)(a) + (1)(b)	\$ (306,893,554)	\$ 4,085,992,905	\$ (21,902,458)	\$ 486,785,896	\$ 4,243,982,789
(2) Employee Savings Fund (ESF)					
(a) Total Member Deposits	\$ 5,471,502,068	\$ 8,433,791,054	\$ 3,728,216	\$ 645,466,734	\$ 14,554,488,072
(b) ESF Allocated by (2)(a)	\$ 5,063,317,138	\$ 7,804,613,478	\$ 3,450,084	\$ 597,313,633	\$ 13,468,694,333
(3) Retired Assets					
(a) Allocated Amounts	\$ 22,751,097,267	\$ 31,267,155,527	\$ 44,818,332	\$ 2,253,430,634	\$ 56,316,501,760
(b) Additional Annuities	210,717	59,139,753	0	0	59,350,470
(c) Total Retiree Assets	\$ 22,751,307,984	\$ 31,326,295,280	\$ 44,818,332	\$ 2,253,430,634	\$ 56,375,852,230
(4) Subtotal: (1)(c) + (2)(b) + (3)(c)	\$ 27,507,731,568	\$ 43,216,901,663	\$ 26,365,958	\$ 3,337,530,163	\$ 74,088,529,352
(5) Assets Held For Upcoming Year Budget Allocated According to (4)	46,332,642	72,792,381	44,409	5,621,568	124,791,000
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	\$ 27,554,064,210	\$ 43,289,694,044	\$ 26,410,367	\$ 3,343,151,731	\$ 74,213,320,352
(7) Market Value Adjustment Allocated According to (6)	1,294,504,565	2,033,772,810	1,240,773	157,063,043	3,486,581,191
(8) Funding Value of Defined Benefit Assets (6)+(7)	\$ 28,848,568,775	\$ 45,323,466,854	\$ 27,651,140	\$ 3,500,214,774	\$ 77,699,901,543

**ALLOCATION OF FUNDING VALUE OF ASSETS AMONG DIVISIONS
DECEMBER 31, 2015
COMBINED PLAN**

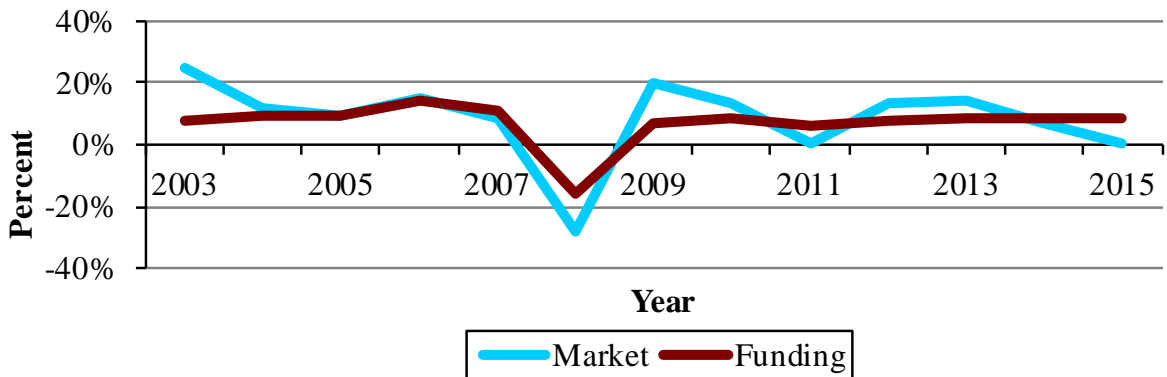
	Combined Plan				
	State	Local	Public Safety	Law Enforcement	Total
(1) Employer Accumulation Fund					
(a) Allocated Amounts	\$ 131,773,604	\$ 188,602,470	\$0	\$0	\$ 320,376,074
(b) Unallocated Amounts Allocated by (1)(a)	205,836	294,605	0	0	500,441
(c) Total EAF	\$ 131,979,440	\$ 188,897,075	\$0	\$0	\$ 320,876,515
(2) Employee Savings Fund					
(a) Total Member Deposits	\$ 439,894	\$ 348,964	\$0	\$0	\$ 788,858
(b) ESF Allocated by (2)(a)	\$ 1,306,620	\$ 1,036,529	\$0	\$0	\$ 2,343,149
(3) Retired Assets					
(a) Allocated Amounts	\$ 4,259,695	\$ 9,106,711	\$0	\$0	\$ 13,366,406
(b) DC Annuities	0	0	0	0	0
(c) Total Retiree Assets	\$ 4,259,695	\$ 9,106,711	\$0	\$0	\$ 13,366,406
(4) Subtotal: (1)(c)+ (2)(b)+ (3)(c)	\$ 137,545,755	\$ 199,040,315	\$0	\$0	\$ 336,586,070
(5) Assets Held For Upcoming Year Budget Allocated According to (4)	0	0	0	0	0
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	\$ 137,545,755	\$ 199,040,315	\$0	\$0	\$ 336,586,070
(7) Market Value Adjustment Allocated According to (6)	5,656,485	8,185,412	0	0	13,841,897
(8) Funding Value of Defined Benefit Assets (6)+(7)	\$ 143,202,240	\$ 207,225,727	\$0	\$0	\$ 350,427,967

**ALLOCATION OF FUNDING VALUE OF ASSETS AMONG DIVISIONS
DECEMBER 31, 2015
MEMBER DIRECTED PLAN**

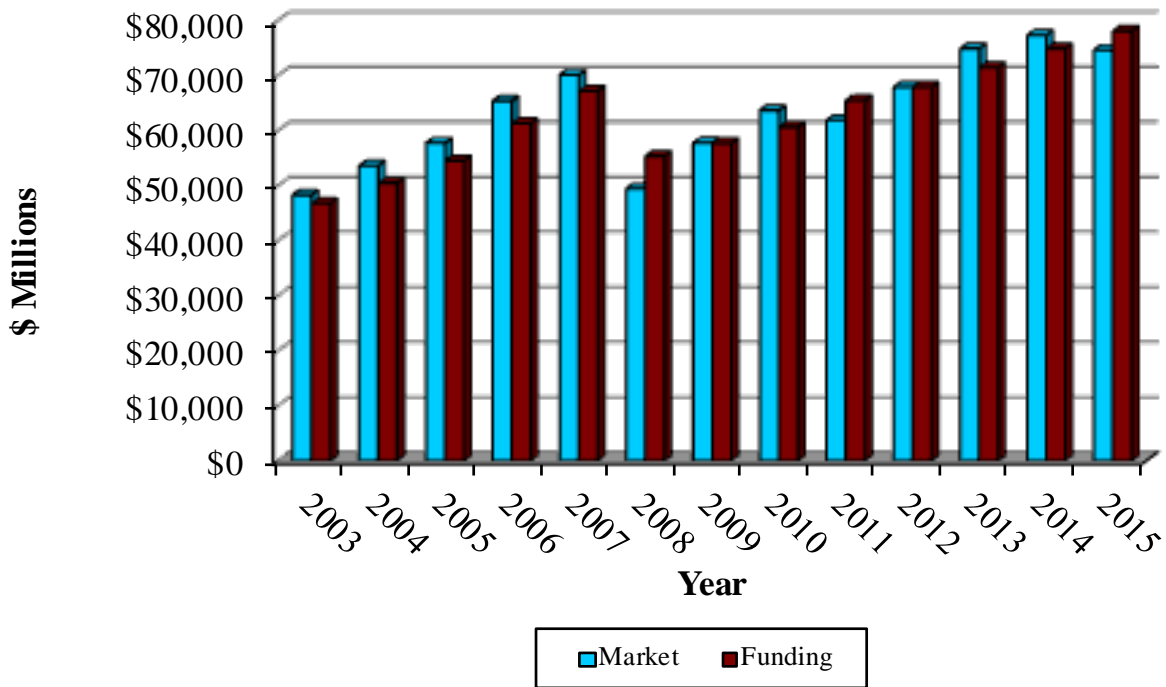
	Member Directed Plan				
	State	Local	Public Safety	Law Enforcement	Total
(1) Employer Accumulation Fund					
(a) Allocated Amounts	\$ 355,927	\$ (743,723)	\$0	\$0	\$ (387,796)
(b) Unallocated Amounts Allocated by 1(a)	2,682	(5,604)	0	0	(2,922)
(c) Total EAF	\$ 358,609	\$ (749,327)	\$0	\$0	\$ (390,718)
(2) Employee Savings Fund					
(a) Total Member Deposits	\$ 21,660	\$ 22,981	\$0	\$0	\$ 44,641
(b) ESF Allocated by (2)(a)	\$ 12,308	\$ 13,059	\$0	\$0	\$ 25,367
(3) Retired Assets					
(a) Allocated Amounts	\$ 2,986,493	\$ 7,528,189	\$0	\$0	\$ 10,514,682
(b) No Division	0	0	0	0	0
(c) Total Retiree Assets	\$ 2,986,493	\$ 7,528,189	\$0	\$0	\$ 10,514,682
(4) Subtotal: (1)(c)+ (2)(b)+ (3)(c)	\$ 3,357,410	\$ 6,791,921	\$0	\$0	\$ 10,149,331
(5) Assets Held For Upcoming Year Budget Allocated According to (4)	0	0	0	0	0
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	\$ 3,357,410	\$ 6,791,921	\$0	\$0	\$ 10,149,331
(7) Market Value Adjustment Allocated According to (6)	156,378	316,348	0	0	472,726
(8) Funding Value of Defined Benefit Assets (6)+(7)	\$ 3,513,788	\$ 7,108,269	\$0	\$0	\$ 10,622,057

COMPARISON OF DEFINED BENEFIT PENSION ASSETS

Comparison of Rates of Return



Comparison of Defined Benefit Pension Asset Values



SECTION III

BENEFITS AND CONDITIONS EVALUATED

BENEFITS AND CONDITIONS EVALUATED

PLANS

Traditional Pension Plan. The Traditional Pension Plan is a defined benefit plan under which a member's retirement benefit is based on a formula. The formula is determined by years of contributing service and the average of the three (or five if a member of Group C as defined on page III-4) highest years of earnable salary (or final average salary). OPERS investment professionals manage the investment of employee and employer contributions to ensure that funds are available to pay the formula benefit.

Combined Plan. The Combined Plan is a retirement plan with both a defined benefit and a defined contribution component. Under the defined benefit portion of the Combined Plan, the member's benefit is determined by a reduced formula (similar to the Traditional Pension Plan). OPERS investment professionals manage the investment of employer contributions to ensure that funds are available to pay the reduced formula benefit. Under the defined contribution portion of the Combined Plan, employee contributions are deposited into the member's individual defined contribution account and invested as directed by the member. The member's retirement benefit under this portion of the Combined Plan is based on employee contributions and the gains and losses on those contributions. The member directs the investment by selecting from among the nine professionally-managed OPERS Investment Options.

Member-Directed Plan. The Member-Directed Plan is a defined contribution plan under which employee and employer contributions are deposited into a member's individual defined contribution account and invested as directed by the member. The member's retirement benefit is based on employee and employer contributions and the gains and losses on those contributions. Under the Member-Directed Plan, the member directs the investment by selecting from several professionally-managed OPERS Investment Options.

BENEFITS AND CONDITIONS EVALUATED

TERMS

Final Average Salary (“FAS”) means the average of the annual earnings for the 3 highest calendar years of compensation for Transition Group A and B members. The highest 5 calendar years is used for Transition Group C members.

Participant Contribution Account is the account for each Participant in the Combined or Member-Directed Plan to which shall be credited the employee contributions.

Miscellaneous Contribution Account is the account to which shall be credited any voluntary after-tax contributions for members in the Combined and Member-Directed Plans.

Rollover Account is the account to which shall be credited any rollover amounts for members in the Combined or Member-Directed Plans.

Employers’ Accumulation Fund is the fund to which shall be credited employer contributions for members in the Traditional or Combined Plan. There are separate accounts in the Employers’ Accumulation Fund for the Combined Plan and the Traditional Pension Plan.

Employer Contribution Account is the fund to which shall be credited a portion of the employer contributions for members in the Member-Directed Plan.

CONTRIBUTIONS

Member Contributions. Member contribution rates as a % of earnable salary are presented on page III-3.

Employer Contributions. Each employer contributes the remaining amounts necessary to finance OPERS benefits. Employer contributions are expressed as percents of member-covered payroll. The maximum statutory rate for state and local government employers is 14.0%. The maximum statutory rate for law enforcement employers is 18.1% (H.B. 416, effective 1/1/2001).

BENEFITS AND CONDITIONS EVALUATED

CONTRIBUTIONS (CONCLUDED)

Health Care Preservation Plan (HCPP). The following table shows total scheduled employer contribution rates (includes contributions for both the pension and retiree health programs):

Year	State	Local Government	Law Enforcement	Public Safety
2016 and Later	14.00%	14.00%	18.10%	18.10%

The portion of the above employer contribution rates scheduled to be allocated to the retiree health program are as follows:

Year	All Divisions
2016	2.0%
2017	3.0%
2018 and Later	4.0%

Health care funding portion of contribution rates are according to the Board adopted schedule.

Member contribution rates scheduled to be allocated to the pension program are as follows:

Year	State	Local Government	Law Enforcement	Public Safety
2016 and Later	10.00%	10.00%	13.00%	12.00%

SENATE BILL 343

Senate Bill 343. Senate Bill (SB) 343 became effective January 7, 2013. The benefit changes enacted by SB 343 do not apply to members who retired with an effective date of January 1, 2013 or earlier. The benefit provisions enumerated on pages III-9 through the end of Section III are the provisions that were applicable prior to the enactment of SB 343. Changes to the benefit provisions resulting from Senate Bill 343 are enumerated on pages III-4 through III-8.

Transition Groups. A transition plan was developed as part of the SB 343 benefit changes. The transition group to which a member belongs is dependent upon the date at which that member is first eligible to retire with a reduced or unreduced benefit.

A member is in Group A if the member is eligible to retire under the retirement eligibility conditions in place prior to the passage of SB 343 on or before January 7, 2018.

A member is in Group B if the member is not in Group A and satisfies either of the following conditions:

- (1) The member has 20 years of service credit as of January 7, 2013, or
- (2) The member is eligible to retire under the retirement eligibility conditions in place prior to the passage of SB 343 on or before January 7, 2023.

A member is in Group C if the member satisfies either of the following conditions:

- (1) The member was hired prior to January 7, 2013 but was not in Group A or Group B, or
- (2) The member was hired on or after January 7, 2013.

Key Benefit Changes. There are five key components that were affected by SB 343:

- (1) Age and service retirement eligibility conditions,
- (2) Benefit formula,
- (3) Cost-of-living Allowance (COLA),
- (4) Final Average Salary (FAS) period, and
- (5) Early retirement reduction factors

SENATE BILL 343

KEY BENEFIT CHANGES FOR TRANSITION GROUP A

COLAs. COLAs provided up to December 31, 2018 will be based upon a simple (i.e., not compound), 3 percent COLA. COLAs provided after December 31, 2018 continue to be simple, but the simple COLA percentage applicable in a year will be based upon the annual percentage change in the Consumer Price Index (CPI), but not greater than 3%.

KEY BENEFIT CHANGES FOR TRANSITION GROUP B

Retirement Eligibility. The table below shows retirement eligibility conditions for Group B members:

<u>Valuation Group</u>	<u>Unreduced</u>		<u>Reduced</u>	
	<u>Age</u>	<u>Service</u>	<u>Age</u>	<u>Service</u>
State / Local Government	52	31	55	25
	Any	32		
	66	5	60	5
Law Enforcement	50	25	48	25
	64	15	52	15
Public Safety	54	25	48	25
	64	15	52	15

Early Retirement Reduction Factors. Presented below are the reduction factors, expressed as a percentage of the base amount, applicable to a Group B member who retires with a reduced benefit:

State and Local Government:

<u>Service</u>	<u>Ages</u>										
	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	<u>59</u>	<u>60</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>
30	75%	76%	78%	79%	80%	82%	83%	85%	86%	88%	89%
29	69	70	72	73	74	75	76	78	79	80	89
28	64	65	66	67	68	69	70	71	72	80	89
27	59	60	61	62	62	63	64	65	72	80	89
26	55	55	56	57	57	58	59	65	72	80	89
25	50	51	51	52	52	53	59	65	72	80	89
24 & Under						53	59	65	72	80	89

SENATE BILL 343

Law Enforcement and Public Safety:

Law Enforcement		Public Safety	
Age	Factor	Age	Factor
48	84%	48	58%
49	92	49	64
50	100	50	70
		51	76
		52	83
		53	91
		54	100

COLAs. COLAs continue to be simple (i.e., not compound), but the simple COLA percentage applicable in a year will be based upon the annual percentage change in the Consumer Price Index (CPI), but not greater than 3%.

KEY BENEFIT CHANGES FOR TRANSITION GROUP C

Retirement Eligibility. The table below shows retirement eligibility conditions for Group C members:

Valuation Group	Unreduced		Reduced	
	Age	Service	Age	Service
State / Local Government	55	32	57	25
	67	5	62	5
Law Enforcement	52	25	48	25
	64	15	56	15
Public Safety	56	25	52	25
	64	15	56	15

SENATE BILL 343

Early Retirement Reduction Factors. Presented below are the reduction factors, expressed as a percentage of the base amount, applicable to a Group C member that retires with a reduced benefit:

State and Local Government:

<u>Service</u>	<u>Ages</u>									
	<u>57</u>	<u>58</u>	<u>59</u>	<u>60</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>66</u>
31	80%	80%	81%	82%	83%	85%	86%	87%	88%	89%
30	73	74	75	75	76	77	78	79	80	89
29	67	68	68	69	70	70	71	72	80	89
28	61	62	62	63	63	64	64	72	80	89
27	56	57	57	57	58	58	64	72	80	89
26	51	52	52	52	52	58	64	72	80	89
25	47	47	47	47	52	58	64	72	80	89
24 & Under						58	64	72	80	89

Law Enforcement and Public Safety:

<u>Law Enforcement</u>		<u>Public Safety</u>	
<u>Age</u>	<u>Factor</u>	<u>Age</u>	<u>Factor</u>
48	70%	52	69%
49	76	53	76
50	84	54	83
51	91	55	91
52	100	56	100

COLAs. COLAs continue to be simple (i.e., not compound), but the simple COLA percentage applicable in a year will be based upon the annual percentage change in the Consumer Price Index (CPI), but not greater than 3%.

SENATE BILL 343

FAS Period. Final average salary is based on the average of the annual earnings for the 5 highest calendar years of compensation.

Benefit Formula. Service breakpoint for the 2.50% benefit multiplier in the Traditional Plan or 1.25% benefit multiplier in the Combined Plan for State and Local Government members increased from 30 years to 35 years.

OTHER BENEFIT CHANGES FOR ALL TRANSITION GROUPS

Minimum Benefit. The \$86 minimum benefit provision has been eliminated.

Long Interest Calculation. The minimum allowance calculation based upon twice the member's savings funding balance at retirement together with interest credits, annuitized with unisex factors that reflect plan interest and mortality assumptions, but not the plan's COLA, has been eliminated.

Disability Program. The definition of disability was changed to a more restrictive definition which is expected to result in a reduction in future disability cases.

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

AGE & SERVICE BENEFITS - STATE AND LOCAL GOVERNMENT MEMBERS

Age and service eligibility. A member who (i) has attained age 60 years and has 5 or more years of service credit or 60 contributing months, or (ii) has attained age 55 years and has 25 or more years of service credit, or (iii) has 30 or more years of service credit, may retire with an age and service retirement allowance.

Age and service allowance. A retiring member’s age and service allowance is equal to Ohio service credit times the greater of \$86, or 2.2% of FAS for the first 30 years of service plus 2.5% for years of service over 30 years (H.B. 628). The allowance is then adjusted by factors based on attained age or years of service (whichever yields the higher percentage) as determined in the following schedule:

Attained Age	OR	Years of Service Credit	Percentage of Base Amount
58		25	75%
59		26	80
60		27	85
61		N/A	88
N/A		28	90
62		N/A	91
63		N/A	94
N/A		29	95
64		N/A	97
65		30 or more	100

Maximum allowance is 100% of FAS or the limits under IRC Section 415(b). Minimum allowance is based upon twice the member’s savings funding balance at retirement together with interest credits, annuitized with unisex factors that reflect plan interest and mortality assumptions, but not the plan’s COLA.

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

AGE & SERVICE BENEFITS – LAW MEMBERS (PUBLIC SAFETY) ELIGIBLE TO RETIRE UNDER OHIO REVISED CODE SECTION 145.33(B)(2)(B)

Age and service eligibility. A law member whose secondary duties are to preserve the peace, to protect life and property, and to enforce the laws of the state and who (i) has attained age 52 and has 25 or more years of credited service, or (ii) has attained age 62 and has 15 or more years of credited service, or (iii) has attained age 52 and has 15 or more years of credited service, may retire with an age and service allowance. A member covered by these provisions may retire early at age 48 with 25 or more years of service and receive the following percentage of the base benefit: 75%, 80%, 86%, or 93% at retirement ages 48, 49, 50 and 51 respectively.

Age and service allowance. A retiring member's age and service allowance under eligibility (i) or (ii) above is equal to 2.5% of FAS times the first 25 years of service credit plus 2.1% of FAS times service credit in excess of 25 years (H.B. 628). Maximum allowance is 90% of FAS or the limits under IRC Section 415(b). A retiring member's age and service allowance under eligibility (iii) above is equal to 1.5% of FAS times years of service credit. Minimum allowance for all law members is based upon twice the member's savings fund balance at retirement together with interest credits.

AGE & SERVICE BENEFITS - LAW MEMBERS (LAW ENFORCEMENT) ELIGIBLE TO RETIRE UNDER OHIO REVISED CODE SECTION 145.33(B)(2)(A)

Age and service eligibility. A law member whose primary duties are to preserve the peace, to protect life and property, and to enforce the laws of the state and who (i) has attained age 48 and has 25 or more years of credited service, or (ii) has attained age 62 and has 15 or more years of credited service, or (iii) has attained age 52 and has 15 or more years of credited service, may retire with an age and service allowance.

Age and service allowance. A retiring member's age and service allowance under eligibility (i) or (ii) above is equal to 2.5% of FAS times the first 25 years of service credit plus 2.1% of FAS times service credit in excess of 25 years (H.B. 628). Maximum allowance is 90% of FAS or the limits under IRC Section 415(b). A retiring member's age and service allowance under eligibility (iii) above is equal to 1.5% of FAS times years of service credit. Minimum allowance for all law members is based upon twice the member's savings fund balance at retirement together with interest credits.

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

DISABILITY RETIREMENT

The disability program was revised in 1992, in order to comply with the Older Workers Benefit Protection Act. Employees becoming members after July 29, 1992 are covered by the post July 29, 1992 program. Other members were able to elect coverage under the pre July 29, 1992 program (original plan) or elect to be covered by the post July 29, 1992 program (revised plan).

Features of the original plan are:

- a) Upon becoming permanently disabled after completion of at least 5 years or 60 contributing months of service but before attaining age 60, a member is eligible for a disability allowance. The service requirement is waived for Law Enforcement members with an on-duty illness or injury.
- b) The amount of the allowance is the service the member would have had if employment had continued to age 60 times (i) 2.2% of FAS (H.B. 628), or (ii) \$86, whichever produces the greater benefit.
- c) Maximum allowance is 75% of FAS, minimum allowance is 30% of FAS.

Features of the revised plan are:

- a) A member may apply at any age after completion of 5 years or 60 contributing months of service. The service requirement is waived for Law Enforcement members with an on-duty illness or injury.
- b) A disability benefit equal to the greater of 45% of FAS or the actual service credit times 2.2% of FAS (H.B. 628) with no early retirement reduction (maximum 60% of FAS). The disability benefit period is to age 65 if the member is disabled prior to age 60. The benefit period declines gradually from 60 months for members disabled at ages 60 and 61 to 12 months for members disabled at age 69 or older.
- c) After the disability benefit ends, a service retirement benefit equal to the greater of (i) the accrued benefit based on actual service, or (ii) 2.2% of FAS (H.B. 628) times service credit including the period of disability (maximum 45% of FAS). In addition, an amount equal to the cost-of-living increases the member would have received had the member retired on the basis of age and service is paid.

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

SURVIVOR BENEFITS

Death while eligible to retire. If a member dies in service after becoming eligible to retire with an age and service allowance and leaves a surviving spouse or other sole dependent beneficiary, the survivor receives the same amount that would have been paid had the member retired the last day of the month of death and elected the 100% joint and survivor form of payment.

Survivor (death-in-service) allowances. If a deceased member had at least 1-1/2 years of contributing service credit, with at least 1/4 year of such service occurring within the 2-1/2 years prior to death, or was receiving a disability benefit, qualified survivors may receive the following monthly benefits. The benefit paid will be the greater of the applicable benefits paid under the following two schedules (H.B. 628):

Schedule 1

<u>Number of Qualified Survivors Affecting the Benefit</u>	<u>Annual Benefit as a % of Deceased Member's FAS</u>	<u>Minimum Monthly Benefit</u>
1	25%	\$250
2	40%	\$400
3	50%	\$500
4	55%	\$500
5 or more	60%	\$500

Schedule 2

<u>Years of Service</u>	<u>Annual Benefit as a % of Deceased Member's FAS</u>
20	29%
21	33%
22	37%
23	41%
24	45%
25	48%
26	51%
27	54%
28	57%
29 or more	60%

Qualifying survivors who are paid benefits under Schedule 2 share equally in the benefits, except that if there is a surviving spouse, the spouse receives the greater of 25% of FAS or \$250.

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

A *qualified spouse* is the surviving spouse of a deceased member who is age 62 or at any age if the deceased member had 10 or more years of Ohio service credit or if the surviving spouse is caring for a qualified child or is adjudged physically or mentally incompetent.

A *qualified child* is a child who has never been married and under the age of 18 (or 22 if attending an approved school), or regardless of age is adjudged physically or mentally incompetent at the time of the member's death.

A *qualified parent* is a dependent parent aged 65 or older (earlier if mentally or physically incompetent) who received at least one-half support from the member during the 12-month period immediately preceding the member's death.

Qualified *survivors of disability benefit recipients* have the FAS used in calculating their benefits adjusted for each year between the effective date of the disability benefit and the recipient's date of death. The FAS is adjusted by the lesser of (1) 3% or (2) the actual average percentage change in the CPI.

BENEFITS AT RETIREMENT

Optional Benefit Forms. Retiring members may elect to have benefits paid in straight life form, in a form that guarantees a minimum number of monthly payments, or in a form that provides a continuation of all or a portion of the monthly benefit to a beneficiary after the death of the retiree. If a retiring member elects benefits in other than straight life form, the monthly amount is adjusted. The adjustment is based upon interest, COLA, and mortality assumptions (with a blend of male and female mortality rates to produce unisex election factors consistent with the gender distribution of members electing optional forms of payment).

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

PLOP. Effective 01/01/2004, retiring members may also elect to receive a Partial Lump Sum Option Payment (PLOP) (S.B.247). The PLOP is an option that allows a retiree to initially receive a partial lump sum benefit payment along with a reduced monthly retirement allowance. The lump sum payment cannot be less than 6 times or more than 36 times the monthly amount that would be payable to the member under the plan of payment selected and shall not result in a monthly allowance that is less than 50% of the monthly benefit. The total amount paid as a lump sum and monthly benefit shall be the actuarial equivalent of the amount that would have been paid had the lump sum not been selected.

QEBA. Qualified Excess Benefit Arrangement was established 01/01/2004 (H.B.190). The QEBA is operated in accordance with Internal Revenue Code Section 415(m). Under this arrangement the recipient may be paid the portion of his/her retirement benefit that was previously limited due to IRC Section 415(b).

Post-retirement increases. Each July after June 30, 1971 or the annual anniversary established 12 months after the initial date of retirement, each allowance is increased by 3.0% of the corresponding base allowance, except that no allowance shall exceed the limits established by Section 415 of the Internal Revenue Code.

Post-retirement death benefit. Upon the death of an age and service or disability retiree, a death benefit in the following amount is payable:

Service Credit at Retirement	Amount of Death Benefit
5 to 9 years	\$ 500
10 to 14 years	1,000
15 to 19 years	1,500
20 to 24 years	2,000
25 or more years	2,500

Deferred benefits. A member with at least 5 years of service credit who leaves service before being eligible for an immediate allowance and who does not withdraw accumulated contributions will be entitled to a deferred allowance at age 60. For law members, the age at which benefits commence depends on the amount of service credit. The amount of the allowance will be based on credited service and final average salary at time of leaving service.

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

REFUND OF MEMBERS ACCUMULATED CONTRIBUTIONS

In the event a member leaves service prior to retirement, the member may elect to receive a refund of contributions with interest and may be eligible to receive an additional amount as described below. These refund provisions are available to all members. If a member dies prior to retirement and survivor benefits are not payable, the member's contributions with interest are paid to a designated beneficiary or other survivor. Interest is credited annually to member contribution balances. The rate of interest credited is determined by the OPERS Board and will not be greater than 6%. At the present time, 1% interest is credited to member contribution balances.

If the member has, or had at the time of death, at least 5 years but less than 10 years of qualified service, an additional 33% of the member's eligible contributions will be paid to the member or survivor. If the member has, or had at the time of death, at least 10 years of qualified service credit, an additional 67% of the member's eligible contributions will be paid to the member or survivor. The additional amount is not paid if the member is a re-employed retiree, or in the case of a deceased member, was receiving disability benefits at the time of death.

SUPPLEMENTAL BENEFITS

Health Care Coverage. Health care coverage is available to persons meeting retiree health care eligibility requirements. Members retiring with a normal or early service retirement allowance after January 1, 2015 must have 20 or more years of qualified service credit to be eligible for this benefit.

TRADITIONAL PENSION PLAN – PRE SENATE BILL 343

ADDITIONAL ANNUITY PROGRAM

The additional annuity program provides Traditional Plan and re-employed retiree members the opportunity of supplementing their retirement income. Members make additional contributions (independent of the contributions described on page III-2) to an account that earns investment income based upon the return of the OPERS Stable Value Fund. At termination, the member may take the additional annuity account balance either as a lump sum or annuitized in monthly payments.

RE-EMPLOYED RETIREES

Re-employed age and service retirees contribute to the “Money Purchase Plan”. In most instances, re-employed retirees will continue to receive their retirement allowance during re-employment. Upon termination of re-employment, members are eligible to apply for either a refund of contributions prior to age 65 or a Money Purchase Plan benefit as a lump sum or annuity after age 65. The Money Purchase Plan benefit is equal to member contributions and allowable interest plus an additional 67% matching amount. If monthly benefits are elected, joint and survivor options are also available.

COMBINED PLAN – PRE SENATE BILL 343

AGE & SERVICE BENEFITS - STATE AND LOCAL GOVERNMENT MEMBERS*

Eligibility. A member who (i) has attained age 60 years and has 5 or more years of service credit in the Plan or 60 contributing months in the Plan, or (ii) has attained age 55 years and has 25 or more years of service credit, or (iii) has 30 or more years of service credit, may retire under the Combined Plan with an age and service retirement allowance under the defined benefit portion of the Plan and with a retirement benefit under the defined contribution portion of the Plan.

**Law Enforcement and Public Safety members must contribute to the Traditional Pension Plan only.*

Age and service retirement allowance (Defined Benefit portion of the Plan). A retiring member's age and service retirement allowance is equal to Ohio service credit in the Plan times 1.0% of FAS for the first 30 years of service plus 1.25% for years of service over 30 years. The allowance is then adjusted by factors based on attained age or years of service (whichever yields the higher percentage) as determined in the following schedule:

Attained Age	OR	Years of Service Credit	Percentage of Base Amount
58		25	75%
59		26	80
60		27	85
61		N/A	88
N/A		28	90
62		N/A	91
63		N/A	94
N/A		29	95
64		N/A	97
65		30 or more	100

Maximum allowance is 100% of FAS or the limits under IRC Section 415(b).

Retirement benefit (Defined Contribution portion of the Plan). The member's retirement benefit under this portion of the Combined Plan is based on the amounts credited to the Participant Contribution Account, Rollover Account, and Miscellaneous Account and the gains and losses on the amounts in those Accounts.

COMBINED PLAN – PRE SENATE BILL 343

DISABILITY RETIREMENT

A Combined Plan member may apply after completion of 5 years in the Plan or 60 contributing months of service in the Plan. Combined Plan members may be covered under the original or revised disability plan. Combined Plan members who apply for disability may:

- 1) Take a lump sum distribution of the Participant Contribution Account, Rollover Account, and Miscellaneous Account and any additional amount they are entitled to from the Employers' Accumulation Fund, or
- 2) Transfer all service credit and the Participant's Accounts (as listed above) in the Combined Plan to the Traditional Pension Plan to be paid a disability benefit under the Traditional Pension Plan guidelines.

SURVIVOR BENEFITS

Combined Plan members are eligible for the same survivor benefits as those listed under the Traditional Pension Plan and must qualify for survivor benefits under the same guidelines as those members in the Traditional Pension Plan.

BENEFITS AT RETIREMENT

Optional Benefit Forms under the Defined Benefit portion of the Plan. Retiring members may elect to have their age and service retirement allowance in straight life form, in a form that guarantees a minimum number of monthly payments, or in a form that provides a continuation of all or a portion of the monthly benefit to a beneficiary after the death of the retiree. If a retiring member elects benefits in other than straight life form, the monthly amount is adjusted. The adjustment is based upon interest, COLA, and mortality assumptions (with a blend of male and female mortality rates to produce unisex election factors consistent with the gender distribution of members electing optional forms of payment).

COMBINED PLAN – PRE SENATE BILL 343

Optional Benefit Forms under the Defined Contribution portion of the Plan. Retiring members may elect to have retirement benefits paid in a partial lump sum, subject to any rules adopted by the Board; monthly annuity payments (with joint and survivor options) similar to those offered under the defined benefit portion of the Plan; periodic payments over a period certain; periodic payments of a specific monthly amount; payments with a deferred start date; or a combination of these options.

QEBA. Qualified Excess Benefit Arrangement was established 01/01/2004 (H.B.190). The QEBA is operated in accordance with Internal Revenue Code Section 415(m). Under this arrangement the recipient may be paid the portion of his/her retirement benefit that was previously limited due to IRC Section 415(b). The QEBA is available to Combined Plan members for the age and service retirement allowance under the defined benefit portion of the Plan.

Post-retirement increases. Each July after June 30, 1971 or the annual anniversary established 12 months after the initial date of retirement, each age and service retirement allowance under the defined benefit portion of the plan is increased by 3.0% of the corresponding base allowance, except that no allowance shall exceed the limits established by Section 415 of the Internal Revenue Code.

Post-retirement death benefit. Upon the death of an age and service retiree, a death benefit in the following amount is payable:

Service Credit at Retirement	Amount of Death Benefit
5 to 9 years	\$ 500
10 to 14 years	1,000
15 to 19 years	1,500
20 to 24 years	2,000
25 or more years	2,500

COMBINED PLAN – PRE SENATE BILL 343

REFUNDS AND VESTING

A participant in the Combined Plan shall at all times be 100% vested in the Participant Contribution Account, Miscellaneous Contribution Account, and the Rollover Account.

If the member has at least 5 years but less than 10 years of qualified service credit in the Plan, an additional 33% of the member's eligible contributions will be paid from the Employers' Accumulation Fund. If the member has at least 10 years of qualified service credit in the Plan, an additional 67% of the member's eligible contributions will be paid to the member. Amounts paid to purchase service credit earn interest at the same rates as the Traditional Pension Plan and are payable as a refund.

In the event a member leaves service prior to retirement, the member may elect to receive a refund of their Participant Contribution Account, the Rollover Account, the Miscellaneous Account, and any additional amounts they are entitled to from the Employers' Accumulation Fund (as described above).

SUPPLEMENTAL BENEFITS

Health Care Coverage. Health care coverage is available to persons meeting retiree health care eligibility requirements. Members retiring with a normal or early service retirement allowance after January 1, 2015 must have 20 or more years of qualified service credit to be eligible for this benefit.

MEMBER-DIRECTED PLAN

AGE & SERVICE BENEFITS - STATE AND LOCAL GOVERNMENT MEMBERS. (Law Enforcement and Public Safety members must contribute to the Traditional Pension Plan Only.)

Eligibility. A participant who has attained age fifty-five (55) may retire under the Member-Directed Plan.

Retirement Benefits. The member's retirement benefit is based on the value of the Participant Contribution Account, the Rollover Account, the Miscellaneous Account, and any vested portion of the Employer Contribution Account.

DISABILITY RETIREMENT

Not available under the Member-Directed Plan. Members may:

- 1) If age fifty-five (55), terminate employment and begin receiving retirement benefits, or
- 2) Take a lump sum distribution of their Participant Contribution Account, Rollover Account, Miscellaneous Account and any vested portion of the Employer Contribution Account.

SURVIVOR BENEFITS

Not available under the Member-Directed Plan. Survivors must take a lump sum distribution of the member's Participant Contribution Account, Rollover Account, Miscellaneous Account and any vested portion of the Employer Contribution Account.

BENEFITS AT RETIREMENT

Optional Benefit Forms. Retiring members may elect to have retirement benefits paid in a partial lump sum, subject to any rules adopted by the Board; monthly annuity payments (with joint and survivor options) similar to those offered under the defined benefit portion of the Combined Plan; periodic payments over a period certain; periodic payments of a specific monthly amount; payments with a deferred start date; or a combination of these options.

MEMBER-DIRECTED PLAN

REFUNDS AND VESTING.

A participant shall at all times be 100% vested in the Participant Contribution Account, Miscellaneous Contribution Account, and the Rollover Account. A participant shall vest in the Employer Contribution Account according to the Participant's attained years of participation in the Plan as follows:

One year of participation	20%
Two years of participation	40%
Three years of participation	60%
Four years of participation	80%
Five years of participation	100%

In the event a member leaves service prior to retirement, the member may elect to receive a refund of their Participant Contribution Account, Rollover Account, and Miscellaneous Account and any vested amounts in the Employer Contribution Account (as described above).

SUPPLEMENTAL BENEFITS

Health Care Coverage. A portion of the employer contribution for Member-Directed participants is credited to a Retiree Medical Account (RMA). Amounts contributed to the RMA may be used after separation from service and a refund or retirement distribution is made to pay qualified health, dental and vision care expenses. Beginning January 1, 2009, members vest in their RMA based on their attained years of participation in the Plan as follows:

Less than 1 year	0%
1 year	20%
2 years	40%
3 years	60%
4 years	80%
5 years	100%

SAMPLE BENEFIT COMPUTATION – TRADITIONAL PLAN
STATE OR LOCAL MEMBER (TRANSITION GROUP A) - NORMAL RETIREMENT
RETIRING DECEMBER 31, 2015
UNDER BENEFIT PROVISIONS EVALUATED

Data:

A.	<u>\$32,000</u>	Final Average Earnings
B.	<u>33</u>	Years of Credited Service
C.	<u>59</u>	Age of Retiree
D.	<u>56</u>	Age of Spouse
E.	<u>100%</u>	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit: $(0.022 \times 30 \text{ years} + 0.025 \times 3 \text{ years}) \times \$32,000 =$	\$ 23,520
G.	Reduction for Line E Election: $\# (1 - 0.85714) \times (F) =$	<u>3,360</u>
H.	Benefit Payable to Retiree while Spouse is Alive: $(F) - (G) =$	20,160
I.	Benefit Payable to Spouse after Retiree's Death	20,160
J.	Benefit Payable to Retiree after Spouse's Death	23,520

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2016	\$ 20,160	\$ 20,160	\$ 23,520
2017	20,765	20,765	24,226
2018	21,370	21,370	24,931
2019	21,974	21,974	25,637
2020	22,579	22,579	26,342
2021	23,184	23,184	27,048
2022	23,789	23,789	27,754
2023	24,394	24,394	28,459
2024	24,998	24,998	29,165
2025	25,603	25,603	29,870

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.
Based on conversion factors for optional forms of payment in effect December 31, 2015.

**SAMPLE BENEFIT COMPUTATION – TRADITIONAL PLAN
STATE OR LOCAL MEMBER (TRANSITION GROUP A) - EARLY RETIREMENT
RETIRING DECEMBER 31, 2015
UNDER BENEFIT PROVISIONS EVALUATED**

Data:

A.	\$32,000	Final Average Earnings
B.	26	Years of Credited Service
C.	59	Age of Retiree
D.	56	Age of Spouse
E.	100%	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit: $0.022 \times 26 \text{ years} \times \$32,000 =$	\$ 18,304
G.	Adjustment Factor for Early Retirement (from schedule)	80%
H.	Adjusted Benefit: $(F) \times (G) =$	14,643
I.	Reduction for Line E Election: $\# (1 - 0.85714) \times (H) =$	<u>2,092</u>
J.	Benefit Payable to Retiree while Spouse is Alive: $(H) - (I)$	12,551
K.	Benefit Payable to Spouse after Retiree's Death	12,551
L.	Benefit Payable to Retiree after Spouse's Death	14,643

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2016	\$ 12,551	\$ 12,551	\$ 14,643
2017	12,928	12,928	15,082
2018	13,304	13,304	15,522
2019	13,681	13,681	15,961
2020	14,057	14,057	16,400
2021	14,434	14,434	16,840
2022	14,810	14,810	17,279
2023	15,187	15,187	17,718
2024	15,563	15,563	18,158
2025	15,940	15,940	18,597

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.
Based on conversion factors for optional forms of payment in effect December 31, 2015.

**SAMPLE BENEFIT COMPUTATION – TRADITIONAL PLAN
SECTION 145.33 (B)(2)(b) PUBLIC SAFETY
MEMBER (TRANSITION GROUP A) - NORMAL RETIREMENT
RETIRING DECEMBER 31, 2015
UNDER BENEFIT PROVISIONS EVALUATED**

Data:

A.	<u> \$38,000 </u>	Final Average Earnings
B.	<u> 28 </u>	Years of Credited Service
C.	<u> 49 </u>	Age of Retiree
D.	<u> 46 </u>	Age of Spouse
E.	<u> 100% </u>	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit: $(0.025 \times 25 \text{ years} + 0.021 \times 3 \text{ years}) \times \$38,000 \times 80\% =$	\$ 20,915
G.	Reduction for Line E Election: $\# (1 - 0.91705) \times (F) =$	<u>1,735</u>
H.	Benefit Payable to Retiree while Spouse is Alive: $(F) - (G) =$	19,180
I.	Benefit Payable to Spouse after Retiree's Death	19,180
J.	Benefit Payable to Retiree after Spouse's Death	20,915

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2016	\$ 19,180	\$ 19,180	\$ 20,915
2017	19,755	19,755	21,542
2018	20,331	20,331	22,170
2019	20,906	20,906	22,797
2020	21,482	21,482	23,425
2021	22,057	22,057	24,052
2022	22,632	22,632	24,680
2023	23,208	23,208	25,307
2024	23,783	23,783	25,935
2025	24,359	24,359	26,562

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.
Based on conversion factors for optional forms of payment in effect December 31, 2015.

**SAMPLE BENEFIT COMPUTATION – TRADITIONAL PLAN
SECTION 145.33 (B)(2)(a) LAW ENFORCEMENT
MEMBER (TRANSITION GROUP A) - NORMAL RETIREMENT
RETIRING DECEMBER 31, 2015
UNDER BENEFIT PROVISIONS EVALUATED**

Data:

A.	<u> \$38,000 </u>	Final Average Earnings
B.	<u> 28 </u>	Years of Credited Service
C.	<u> 49 </u>	Age of Retiree
D.	<u> 46 </u>	Age of Spouse
E.	<u> 100% </u>	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit: $(0.025 \times 25 \text{ years} + 0.021 \times 3 \text{ years}) \times \$38,000 =$	\$ 26,144
G.	Reduction for Line E Election: $\# (1 - 0.91705) \times (F) =$	<u> 2,169 </u>
H.	Benefit Payable to Retiree while Spouse is Alive: $(F) - (G) =$	23,975
I.	Benefit Payable to Spouse after Retiree's Death	23,975
J.	Benefit Payable to Retiree after Spouse's Death	26,144

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2016	\$ 23,975	\$ 23,975	\$ 26,144
2017	24,694	24,694	26,928
2018	25,414	25,414	27,713
2019	26,133	26,133	28,497
2020	26,852	26,852	29,281
2021	27,571	27,571	30,066
2022	28,291	28,291	30,850
2023	29,010	29,010	31,634
2024	29,729	29,729	32,419
2025	30,448	30,448	33,203

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.
Based on conversion factors for optional forms of payment in effect December 31, 2015.

**SAMPLE BENEFIT COMPUTATION – TRADITIONAL PLAN
STATE OR LOCAL MEMBER (TRANSITION GROUP A) – TERMINATION BENEFIT
RETIRING DECEMBER 31, 2015
UNDER BENEFIT PROVISIONS EVALUATED**

Data:

A.	\$32,000	Final Average Earnings
B.	15	Years of Credited Service
C.	45	Age of Member
D.	42	Age of Spouse
E.	60:57	Ages at Which Benefits are Payable
F.	100%	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)
G.	\$44,000	Accumulated Contributions with Interest at Termination Date

Computations:

H.	Formula Benefit: $(0.022 \times 15 \text{ years} + 0.025 \times 0 \text{ years}) \times \$32,000 =$	\$ 10,560
I.	Adjustment Factor for Early Retirement (from schedule)	85%
J.	Adjusted Benefit: $(H) \times (I) =$	8,976
K.	Reduction for Line E Election: $\# (1 - 0.84967) \times (J) =$	<u>1,349</u>
L.	Benefit Payable to Retiree while Spouse is Alive: $(J) - (K) =$	7,627
M.	Benefit Payable to Spouse after Retiree's Death	7,627
N.	Benefit Payable to Retiree after Spouse's Death	8,976
O.	In lieu of a lifetime benefit, terminatee may elect to receive a refund of accumulated contributions with interest plus an additional 67% of eligible accumulated contributions because terminatee had more than 10 years of service.	73,480

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2016	\$ 7,627	\$ 7,627	\$ 8,976
2017	7,856	7,856	9,245
2018	8,085	8,085	9,515
2019	8,313	8,313	9,784
2020	8,542	8,542	10,053
2021	8,771	8,771	10,322
2022	9,000	9,000	10,592
2023	9,229	9,229	10,861
2024	9,457	9,457	11,130
2025	9,686	9,686	11,400

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.
Based on conversion factors for optional forms of payment in effect December 31, 2015.

SAMPLE BENEFIT COMPUTATION – TRADITIONAL PLAN
SECTION 145.33 (B)(2)(a) PUBLIC SAFETY/LAW ENFORCEMENT MEMBER
(TRANSITION GROUP A) – TERMINATION BENEFIT
RETIRING DECEMBER 31, 2015
UNDER BENEFIT PROVISIONS EVALUATED

Data:

A.	<u> \$38,000 </u>	Final Average Earnings
B.	<u> 15 </u>	Years of Credited Service
C.	<u> 37 </u>	Age of Retiree
D.	<u> 34 </u>	Age of Spouse
E.	<u> 52:49 </u>	Ages at Which Benefits are Payable
F.	<u> 100% </u>	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)
G.	<u> \$46,000 </u>	Accumulated Contributions at Termination Date

Computations:

H.	Formula Benefit: (0.015 x 15 years) x \$38,000 =	\$ 8,550
I.	Reduction for Line E Election: # (1 - 0.90207) x (H) =	<u>837</u>
J.	Benefit Payable to Retiree while Spouse is Alive: (H) - (I) =	7,713
K.	Benefit Payable to Spouse after Retiree's Death	7,713
L.	Benefit Payable to Retiree after Spouse's Death	8,550
M.	In lieu of a lifetime benefit, terminatee may elect to receive a refund of accumulated contributions with interest plus an additional 67% of eligible accumulated contributions because terminatee had more than 10 years of service.	76,820

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2016	\$ 7,713	\$ 7,713	\$ 8,550
2017	7,944	7,944	8,807
2018	8,176	8,176	9,063
2019	8,407	8,407	9,320
2020	8,639	8,639	9,576
2021	8,870	8,870	9,833
2022	9,101	9,101	10,089
2023	9,333	9,333	10,346
2024	9,564	9,564	10,602
2025	9,796	9,796	10,859

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.

Based on conversion factors for optional forms of payment in effect December 31, 2015.

SECTION IV

RECOMMENDATIONS FOR RESERVE TRANSFERS

DECEMBER 31, 2015 RETIRED LIFE VALUATION RESERVE TRANSFERS

Reserve transfers from the Employer Accumulation Fund to the A & PR Fund and/or Survivor Benefit Funds are recommended in the following instances.

- Whenever the December 31 valuation shows unfunded accrued liabilities or assets in excess of computed liabilities in any of the retired life funds.
- To cover the cost of ad-hoc postretirement benefit increases.
- To adjust retired life reserves for any changes in computed liabilities resulting from assumption changes.

By making these annual adjustments in addition to the regular transfers when allowances are added to the rolls, the ratio of assets to liabilities for retired members and beneficiaries will stay at 100%. Year to year changes in this ratio before recommended transfers will normally be isolated to mortality experience within the retired life group.

In 1992, OPERS began making interim benefit payments for certain retirements to shorten the delay between the retirement effective date and receipt of the first monthly check. However, reserve transfers are not made until benefit amounts are final. Transfers for these cases have been accrued based upon supplemental information supplied by OPERS staff and are shown on the following page. The accruals, when added to other assets, are intended to put retired life reserves in the same position they would have been in if reserve transfers for the interim benefit cases had been coincident with benefit commencement.

It is recommended that the transfers shown on the following page be made from the Employer Accumulation Fund to the Annuity & Pension Reserve Fund and Survivor Benefit Funds as indicated. The Accrued Transfers is an estimate of pending future transfers for interim cases, and does not require a year end transfer. Any accrued transfers that have been made prior to OPERS' extract date and hence are not included in the "Accrued Transfers" column on pages IV-2 through IV-5 should be netted off the "Other" column on pages IV-2 through IV-5.

TRADITIONAL PLAN
RESERVE TRANSFERS AFFECTING THE EMPLOYER ACCUMULATION FUND
DECEMBER 31, 2015

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
State						
A&PR FUND						
SR	\$ 19,237,850,457	\$ 129,205,014	\$ 31,335,476	\$ 19,398,390,947	\$ 19,398,390,947	
MP	58,420,524	101,305	(2,712,556)	55,809,273	55,809,273	
AA	210,717	0	29,840	240,557	240,557	
JR	(11,283)	0	11,283	0	0	
CR	102,493,530	0	15,038,008	117,531,538	117,531,538	
DR	2,188,683,084	6,088,274	(4,546,522)	2,190,224,836	2,190,224,836	
BD	545,572,480	8,518,811	(6,518,232)	547,573,059	547,573,059	
TOTAL A&PR	22,133,219,509	143,913,404	32,637,297	22,309,770,210	22,309,770,210	100.0%
SBF						
AA	0	0	0	0	0	
S-1	123,894,370	2,088,496	(1,056,959)	124,925,907	124,925,907	
S-2	494,194,105	4,031,968	4,255,915	502,481,988	502,481,988	
TOTAL SBF	618,088,475	6,120,464	3,198,956	627,407,895	627,407,895	100.0%
TOTAL STATE	\$ 22,751,307,984	\$ 150,033,868	\$ 35,836,253	\$ 22,937,178,105	\$ 22,937,178,105	100.0%
Local						
A&PR FUND						
SR	\$ 26,582,831,350	\$ 172,354,310	\$ 45,170,164	\$ 26,800,355,824	\$ 26,800,355,824	
MP	144,466,350	69,540	(4,230,732)	140,305,158	140,305,158	
AA	59,139,753	106,170	(173,828)	59,072,095	59,072,095	
JR	3,035	0	(3,035)	0	0	
CR	138,548,182	0	21,798,645	160,346,827	160,346,827	
DR	2,710,192,117	6,857,661	(24,514,391)	2,692,535,387	2,692,535,387	
BD	681,832,764	13,256,801	(3,201,091)	691,888,474	691,888,474	
TOTAL A&PR	30,317,013,551	192,644,482	34,845,732	30,544,503,765	30,544,503,765	100.0%
SBF						
AA	0	0	0	0	0	
S-1	181,230,144	4,267,702	256,290	185,754,136	185,754,136	
S-2	828,051,585	5,963,472	5,300,291	839,315,348	839,315,348	
TOTAL SBF	1,009,281,729	10,231,174	5,556,581	1,025,069,484	1,025,069,484	100.0%
TOTAL LOCAL	\$ 31,326,295,280	\$ 202,875,656	\$ 40,402,313	\$ 31,569,573,249	\$ 31,569,573,249	100.0%

TRADITIONAL PLAN
RESERVE TRANSFERS AFFECTING THE EMPLOYER ACCUMULATION FUND
DECEMBER 31, 2015

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
Public Safety						
A&PR FUND						
SR	\$ 9,115,372	\$ 0	\$ (92,972)	\$ 9,022,400	\$ 9,022,400	
MP	0	0	0	0	0	
AA	0	0	0	0	0	
JR	0	0	0	0	0	
CR	0	0	0	0	0	
DR	15,080,073	0	(1,014,039)	14,066,034	14,066,034	
BD	1,988,772	0	194,160	2,182,932	2,182,932	
TOTAL A&PR	26,184,217	0	(912,851)	25,271,366	25,271,366	100.0%
SBF						
AA	0	0	0	0	0	
S-1	284,285	0	(26,292)	257,993	257,993	
S-2	18,349,830	176,176	366,825	18,892,831	18,892,831	
TOTAL SBF	18,634,115	176,176	340,533	19,150,824	19,150,824	100.0%
TOTAL PUBLIC SAFETY	\$ 44,818,332	\$ 176,176	\$ (572,318)	\$ 44,422,190	\$ 44,422,190	100.0%
Law Enforcement						
A&PR FUND						
SR	\$ 1,522,560,803	\$ 10,164,684	\$ 1,540,029	\$ 1,534,265,516	\$ 1,534,265,516	
MP	(513)	0	513	0	0	
AA	0	0	0	0	0	
JR	0	0	0	0	0	
CR	1,111,334	0	138,246	1,249,580	1,249,580	
DR	566,567,440	0	(6,180,820)	560,386,620	560,386,620	
BD	115,110,392	1,643,949	2,025,892	118,780,233	118,780,233	
TOTAL A&PR	2,205,349,456	11,808,633	(2,476,140)	2,214,681,949	2,214,681,949	100.0%
SBF						
AA	0	0	0	0	0	
S-1	12,477,156	99,950	(132,842)	12,444,264	12,444,264	
S-2	35,604,022	621,453	1,046,527	37,272,002	37,272,002	
TOTAL SBF	48,081,178	721,403	913,685	49,716,266	49,716,266	100.0%
TOTAL LAW ENFORCEMENT	\$ 2,253,430,634	\$ 12,530,036	\$ (1,562,455)	\$ 2,264,398,215	\$ 2,264,398,215	100.0%
GRAND TOTAL	\$ 56,375,852,230	\$ 365,615,736	\$ 74,103,793	\$ 56,815,571,759	\$ 56,815,571,759	100.0%

**COMBINED PLAN
RESERVE TRANSFERS AFFECTING THE EMPLOYER ACCUMULATION FUND
DECEMBER 31, 2015**

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
State						
A&PR FUND						
CA	\$ 1,535,087	-	\$ (185,466)	\$ 1,349,621	\$ 1,349,621	
CB	2,724,608	-	46,528	2,771,136	2,771,136	
TOTAL A&PR	4,259,695	0	(138,938)	4,120,757	4,120,757	
TOTAL STATE	\$ 4,259,695	\$ 0	\$ (138,938)	\$ 4,120,757	\$ 4,120,757	
Local						
A&PR FUND						
CA	\$ 3,818,602	\$ 121,662	\$ (348,352)	\$ 3,591,912	\$ 3,591,912	
CB	5,288,109	124,198	183,758	5,596,065	5,596,065	
TOTAL A&PR	9,106,711	245,860	(164,594)	9,187,977	9,187,977	100.0%
TOTAL LOCAL	\$ 9,106,711	\$ 245,860	\$ (164,594)	\$ 9,187,977	\$ 9,187,977	100.0%
GRAND TOTAL	\$13,366,406	\$ 245,860	\$ (303,532)	\$ 13,308,734	\$ 13,308,734	100.0%

MEMBER DIRECTED PLAN
RESERVE TRANSFERS AFFECTING THE EMPLOYER ACCUMULATION FUND
DECEMBER 31, 2015

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
State						
A&PR FUND						
MD	\$ 2,986,493	\$ 153,926	\$ (264,454)	\$ 2,875,965	\$ 2,875,965	
TOTAL A&PR	2,986,493	153,926	(264,454)	2,875,965	2,875,965	
TOTAL STATE	\$ 2,986,493	\$153,926	\$(264,454)	\$2,875,965	\$2,875,965	
Local						
A&PR FUND						
MD	\$ 7,528,189	\$ 0	\$ (636,990)	\$ 6,891,199	\$ 6,891,199	
TOTAL A&PR	7,528,189	0	(636,990)	6,891,199	6,891,199	100.0%
TOTAL LOCAL	\$ 7,528,189	\$ 0	\$(636,990)	\$6,891,199	\$6,891,199	100.0%
GRAND TOTAL	\$10,514,682	\$153,926	\$(901,444)	\$9,767,164	\$9,767,164	100.0%

SECTION V
STATE DIVISION

STATE DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Defined Benefit Active Members in Valuation December 31, 2015

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Traditional Plan					
Men	52,471	\$ 2,235,262,576	\$ 42,600	40.0 yrs.	9.1 yrs.
Women	63,125	2,570,427,080	40,720	39.7	8.7
Traditional Plan Total	115,596	\$ 4,805,689,656	\$ 41,573	39.8 yrs.	8.9 yrs.
Combined Plan					
Men	1,073	\$ 60,898,916	\$ 56,756	42.5 yrs.	7.5 yrs.
Women	1,703	94,470,807	55,473	42.2	6.7
Combined Plan Total	2,776	\$ 155,369,723	\$ 55,969	42.3 yrs.	7.0 yrs.
Grand Total	118,372	\$ 4,961,059,379	\$ 41,911	39.9 yrs.	8.9 yrs.

Also included in the valuation were 220,246 inactive members and 4,388 members active in the money purchase plan.

Retired Members in Valuation December 31, 2015

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
Traditional Plan			
A & PR Fund			
Superannuation Retirement	58,414	\$ 150,937,592	\$ 19,516,163,042
Disability Retirement	8,558	21,208,562	2,737,797,895
Money Purchase	897	468,163	55,809,273
Total A & PR Fund	67,869	172,614,317	22,309,770,210
Total SBF	4,497	5,506,195	627,407,895
Traditional Plan Total	72,366	\$ 178,120,512	\$ 22,937,178,105
Combined Plan			
A & PR Fund			
CMDB	57	\$ 19,334	\$ 2,771,136
CMDC	30	9,553	1,349,621
Total A & PR Fund	87	28,887	4,120,757
Combined Plan Total	87	\$ 28,887	\$ 4,120,757
Member Directed Plan			
A & PR Fund	47	19,870	2,875,965
Member Directed Plan Total	47	\$ 19,870	\$ 2,875,965
Grand Total	72,500	\$ 178,169,269	\$ 22,944,174,827

**STATE DIVISION
EMPLOYER CONTRIBUTIONS TO SUPPORT
DEFINED BENEFIT RETIREMENT ALLOWANCES
EXPRESSED AS PERCENTS OF ACTIVE MEMBER PAYROLL**

Valuation Date December 31	2015			2014
Contributions for	2018			2017
Normal Cost	<u>Traditional Plan</u>	<u>Combined Plan</u>	<u>Traditional and Combined Plans</u>	<u>Traditional and Combined Plans</u>
Age and Service Allowances	7.03 %	4.30 %	6.94 %	6.99 %
Disability Allowances	2.03 %	1.87 %	2.02 %	2.03 %
Survivor's Benefits	0.40 %	0.34 %	0.40 %	0.40 %
Separation Benefits	3.69 %	1.01 %	3.60 %	3.61 %
Total Normal Cost	13.15 %	7.52 %	12.96 %	13.03 %
(Member Contributions)	10.00 %	0.00 %	9.62 %	9.63 %
Employer Normal Cost	3.15 %	7.52 %	3.34 %	3.40 %
Unfunded Actuarial Accrued Liabilities				
Total Available Contribution	6.85 %	2.48 %	6.66 %	6.60 %
Amortization Years	37	0	36	41
Total Pension Employer Contribution Rate	10.00 %	10.00 %	10.00 %	10.00 %

The term “Amortization Years” refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

STATE DIVISION COMPARATIVE STATEMENT

Valuation Date December 31	Contribution Rate Effective January 1	Defined Benefit Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Millions)							
2001@	2004	109,219	\$ 3,996	\$ 36,589	7.0 %	6.17 %	3.14 %	9.31 %	4.00 %	13.31 %
2002	2005	110,017	4,129	37,531	2.6 %	5.95 %	3.36 %	9.31 %	4.00 %	13.31 %
2003##	2006	108,249	4,079	37,679	0.4 %	5.70 %	3.34 %	9.04 %	4.50 %	13.54 %
2004	2007	110,207	4,165	37,794	0.3 %	5.67 %	2.60 %	8.27 %	5.50 %	13.77 %
2005@	2008	114,620	4,339	37,858	0.2 %	5.43 %	1.57 %	7.00 %	7.00 %	14.00 %
2006	2009	115,930	4,522	39,005	3.0 %	4.97 %	2.03 %	7.00 %	7.00 %	14.00 %
2007	2010	118,466	4,703	39,695	1.8 %	5.44 %	1.56 %	7.00 %	7.00 %	14.00 %
2008	2011	114,925	4,780	41,590	4.8 %	5.44 %	4.56 %	10.00 %	4.00 %	14.00 %
2009	2012	117,008	4,763	40,704	(2.1)%	5.45 %	4.55 %	10.00 %	4.00 %	14.00 %
2010@	2013	118,240	4,811	40,691	0.0 %	5.36 %	7.64 %	13.00 %	1.00 %	14.00 %
2011	2014	118,273	4,844	40,952	0.6 %	5.37 %	8.63 %	14.00 %	0.00 %	14.00 %
2012#	2015	117,430	4,690	39,938	(2.5)%	3.49 %	7.51 %	11.00 %	3.00 %	14.00 %
2013	2016	117,370	4,746	40,433	1.2 %	3.49 %	6.51 %	10.00 %	4.00 %	14.00 %
2014	2017	118,114	4,826	40,862	1.1 %	3.40 %	6.60 %	10.00 %	4.00 %	14.00 %
2015	2018	118,372	4,961	41,911	2.6 %	3.34 %	6.66 %	10.00 %	4.00 %	14.00 %

After benefit changes.

@ Revised actuarial assumptions.

Combined Plan members are included beginning with the December 31, 2003 valuation.

STATE DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2015

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 22,316,766,932	\$ -	\$ 22,316,766,932
Allowances currently being paid from the Survivors Benefit Fund	627,407,895	-	627,407,895
Age and service allowances based on service rendered before and likely to be rendered after valuation date	13,869,492,810	2,727,132,895	11,142,359,915
Disability allowances likely to be paid present active members who become permanently disabled	1,724,517,336	794,716,731	929,800,605
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	456,455,952	155,273,302	301,182,650
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	2,371,703,805	1,482,654,192	889,049,613
Total	\$ 41,366,344,730	\$ 5,159,777,120	\$ 36,206,567,610
Actuarial Value of Assets			28,995,284,803
Unfunded Actuarial Accrued Liability			\$ 7,211,282,807

STATE DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
COMPARATIVE STATEMENT
(\$ IN MILLIONS EXCEPT AVERAGES)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed Total	Valuation Assets	Unfunded	Amortization Years	
	Total	Average					
2001@	3,996	\$36,589	\$ 11,352	\$ 11,863	\$ (511)	-	-
2002	4,129	37,531	11,822	8,965	2,857	38	0.69
2003##	4,079	37,679	12,230	9,030	3,200	43	0.78
2004	4,165	37,794	12,441	9,664	2,777	34	0.67
2005@	4,339	37,858	13,326	10,296	3,030	39	0.70
2006	4,522	39,005	14,006	12,131	1,875	35	0.41
2007	4,703	39,695	14,526	13,442	1,084	20	0.23
2008	4,780	41,590	14,872	7,488	7,384	N/A	1.54
2009	4,763	40,704	14,843	6,648	8,195	N/A	1.71
2010@	4,811	40,691	14,903	7,113	7,790	48	1.62
2011	4,844	40,952	14,754	6,616	8,138	37	1.68
2012#	4,690	39,938	13,135	5,270	7,865	37	1.68
2013	4,746	40,433	13,125	6,572	6,553	32	1.38
2014	4,826	40,862	12,951	5,631	7,320	40	1.52
2015	4,961	41,911	13,262	6,051	7,211	35	1.45

After benefit changes.

@ Revised actuarial assumptions.

Combined Plan members are included beginning with the December 31, 2003 valuation.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll (“UNFUNDED/PAYROLL” above) is significant. Unfunded actuarial accrued liabilities represent plan debt, while active member payroll represents the plan’s capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

STATE DIVISION
MALE ACTIVE MEMBERS IN DEFINED BENEFIT VALUATION
DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	845							845
Tot. Pay	\$8,005,431							\$8,005,431
Avg. Pay	\$9,474							\$9,474
20-24	9,718	14						9,732
Tot. Pay	\$120,443,174	\$356,022						\$120,799,196
Avg. Pay	\$12,394	\$25,430						\$12,413
25-29	5,362	673	13					6,048
Tot. Pay	\$145,669,600	\$29,012,208	\$572,398					\$175,254,206
Avg. Pay	\$27,167	\$43,109	\$44,031					\$28,977
30-34	3,163	1,570	523	23				5,279
Tot. Pay	\$108,302,086	\$77,343,452	\$27,573,895	\$1,315,544				\$214,534,977
Avg. Pay	\$34,240	\$49,263	\$52,723	\$57,198				\$40,639
35-39	1,940	1,218	1,106	496	3			4,763
Tot. Pay	\$73,279,565	\$64,624,219	\$64,560,638	\$29,217,067	\$152,470			\$231,833,959
Avg. Pay	\$37,773	\$53,058	\$58,373	\$58,905	\$50,823			\$48,674
40-44	1,407	923	908	1,192	367	7		4,804
Tot. Pay	\$53,443,753	\$49,687,134	\$55,480,572	\$73,693,380	\$23,665,247	\$453,124		\$256,423,210
Avg. Pay	\$37,984	\$53,832	\$61,102	\$61,823	\$64,483	\$64,732		\$53,377
45-49	1,246	867	792	1,086	1,310	536	7	5,844
Tot. Pay	\$47,226,010	\$46,516,591	\$49,019,693	\$66,321,462	\$91,229,249	\$36,793,959	\$473,521	\$337,580,485
Avg. Pay	\$37,902	\$53,652	\$61,894	\$61,069	\$69,641	\$68,645	\$67,646	\$57,765
50-54	1,038	737	722	871	1,019	1,429	323	6,139
Tot. Pay	\$38,192,844	\$39,558,212	\$43,595,938	\$52,350,896	\$67,230,127	\$101,377,066	\$23,424,433	\$365,729,516
Avg. Pay	\$36,795	\$53,675	\$60,382	\$60,104	\$65,977	\$70,943	\$72,521	\$59,575
55-59	809	575	629	793	774	983	551	5,114
Tot. Pay	\$28,833,127	\$29,707,011	\$37,729,580	\$48,320,921	\$50,714,952	\$68,892,295	\$41,174,920	\$305,372,806
Avg. Pay	\$35,640	\$51,664	\$59,983	\$60,934	\$65,523	\$70,084	\$74,728	\$59,713
60-64	532	367	477	486	487	590	389	3,328
Tot. Pay	\$16,729,777	\$19,751,264	\$28,878,854	\$29,677,134	\$31,743,107	\$39,268,385	\$29,412,872	\$195,461,393
Avg. Pay	\$31,447	\$53,818	\$60,543	\$61,064	\$65,181	\$66,557	\$75,611	\$58,732
65-69	267	135	153	134	173	148	175	1,185
Tot. Pay	\$6,023,008	\$6,308,513	\$8,702,503	\$8,106,496	\$11,622,515	\$10,964,281	\$15,160,405	\$66,887,721
Avg. Pay	\$22,558	\$46,730	\$56,879	\$60,496	\$67,182	\$74,083	\$86,631	\$56,445
70 & Over	208	63	50	42	29	32	39	463
Tot. Pay	\$3,715,293	\$2,270,991	\$2,169,244	\$2,535,885	\$1,910,348	\$2,362,178	\$3,314,653	\$18,278,592
Avg. Pay	\$17,862	\$36,047	\$43,385	\$60,378	\$65,874	\$73,818	\$84,991	\$39,479
Totals	26,535	7,142	5,373	5,123	4,162	3,725	1,484	53,544
Tot. Pay	\$649,863,668	\$365,135,617	\$318,283,315	\$311,538,785	\$278,268,015	\$260,111,288	\$112,960,804	\$2,296,161,492
Avg. Pay	\$24,491	\$51,125	\$59,238	\$60,812	\$66,859	\$69,829	\$76,119	\$42,884

STATE DIVISION
FEMALE ACTIVE MEMBERS IN DEFINED BENEFIT VALUATION
DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	1,143							1,143
Tot. Pay	\$9,721,099							\$9,721,099
Avg. Pay	\$8,505							\$8,505
20-24	12,096	21						12,117
Tot. Pay	\$145,829,069	\$554,272						\$146,383,341
Avg. Pay	\$12,056	\$26,394						\$12,081
25-29	6,104	829	13					6,946
Tot. Pay	\$184,320,852	\$37,378,050	\$533,298					\$222,232,200
Avg. Pay	\$30,197	\$45,088	\$41,023					\$31,994
30-34	4,349	1,847	618	20				6,834
Tot. Pay	\$139,359,043	\$91,143,165	\$33,187,375	\$887,700				\$264,577,283
Avg. Pay	\$32,044	\$49,347	\$53,701	\$44,385				\$38,715
35-39	2,375	1,451	1,395	518	16			5,755
Tot. Pay	\$90,447,596	\$74,743,886	\$80,431,298	\$29,355,286	\$1,017,659			\$275,995,725
Avg. Pay	\$38,083	\$51,512	\$57,657	\$56,670	\$63,604			\$47,958
40-44	1,866	1,146	1,059	1,161	369	14		5,615
Tot. Pay	\$74,878,689	\$62,607,197	\$63,238,858	\$70,856,228	\$22,651,403	\$979,264		\$295,211,639
Avg. Pay	\$40,128	\$54,631	\$59,716	\$61,030	\$61,386	\$69,947		\$52,576
45-49	1,678	1,133	1,040	1,127	1,251	542	29	6,800
Tot. Pay	\$66,522,847	\$61,685,059	\$60,528,709	\$66,416,054	\$82,098,638	\$35,005,768	\$1,934,898	\$374,191,973
Avg. Pay	\$39,644	\$54,444	\$58,201	\$58,932	\$65,626	\$64,586	\$66,721	\$55,028
50-54	1,375	1,043	1,068	1,074	1,031	1,475	330	7,396
Tot. Pay	\$54,319,857	\$54,168,935	\$59,654,697	\$59,511,765	\$64,602,838	\$97,971,570	\$22,956,852	\$413,186,514
Avg. Pay	\$39,505	\$51,936	\$55,856	\$55,411	\$62,660	\$66,421	\$69,566	\$55,866
55-59	975	898	986	1,054	1,027	1,078	508	6,526
Tot. Pay	\$38,245,206	\$46,106,944	\$53,354,855	\$59,102,088	\$60,374,405	\$68,286,611	\$35,566,436	\$361,036,545
Avg. Pay	\$39,226	\$51,344	\$54,112	\$56,074	\$58,787	\$63,346	\$70,013	\$55,323
60-64	460	567	646	721	673	684	321	4,072
Tot. Pay	\$15,279,711	\$28,687,571	\$34,482,670	\$39,697,242	\$40,325,684	\$41,750,783	\$21,950,772	\$222,174,433
Avg. Pay	\$33,217	\$50,595	\$53,379	\$55,059	\$59,919	\$61,039	\$68,382	\$54,562
65-69	148	151	159	233	182	230	146	1,249
Tot. Pay	\$4,332,112	\$7,619,559	\$8,099,170	\$12,179,441	\$10,228,465	\$13,513,196	\$9,318,975	\$65,290,918
Avg. Pay	\$29,271	\$50,461	\$50,938	\$52,272	\$56,200	\$58,753	\$63,829	\$52,275
70 & Over	98	46	35	45	41	50	60	375
Tot. Pay	\$1,404,052	\$1,146,827	\$1,141,533	\$2,283,149	\$2,488,713	\$2,812,144	\$3,619,799	\$14,896,217
Avg. Pay	\$14,327	\$24,931	\$32,615	\$50,737	\$60,700	\$56,243	\$60,330	\$39,723
Totals	32,667	9,132	7,019	5,953	4,590	4,073	1,394	64,828
Tot. Pay	\$824,660,133	\$465,841,465	\$394,652,463	\$340,288,953	\$283,787,805	\$260,319,336	\$95,347,732	\$2,664,897,887
Avg. Pay	\$25,244	\$51,012	\$56,226	\$57,163	\$61,827	\$63,913	\$68,399	\$41,107

STATE DIVISION
INACTIVE MEMBERS IN DEFINED BENEFIT VALUATION
DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
20-24	19,065							19,065
25-29	41,245	161						41,406
30-34	58,263	775	25					59,063
35-39	30,433	925	234	8				31,600
40-44	21,989	808	310	88	7			23,202
45-49	13,388	901	436	168	79	5		14,977
50-54	8,667	988	637	291	130	59	2	10,774
55-59	7,396	1,000	748	395	204	29	4	9,776
60-64	5,189	630	352	171	71	15	6	6,434
65-69	2,752	215	75	26	15	5	2	3,090
70 & Over	771	55	20	8	2	3		859
Totals	209,158	6,458	2,837	1,155	508	116	14	220,246

SECTION VI

LOCAL GOVERNMENT DIVISION

LOCAL GOVERNMENT DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Defined Benefit Active Members in Valuation December 31, 2015

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Traditional Plan					
Men	91,337	\$ 3,566,372,882	\$ 39,046	44.6 yrs.	10.1 yrs.
Women	106,592	3,718,469,544	34,885	44.2	10.1
Traditional Plan Total	197,929	\$ 7,284,842,426	\$ 36,805	44.4 yrs.	10.1 yrs.
Combined Plan					
Men	2,072	\$ 102,567,526	\$ 49,502	45.1 yrs.	7.7 yrs.
Women	2,778	117,098,392	42,152	44.1	7.2
Combined Plan Total	4,850	\$ 219,665,918	\$ 45,292	44.6 yrs.	7.4 yrs.
Grand Total	202,779	\$ 7,504,508,344	\$ 37,008	44.4 yrs.	10.0 yrs.

Also included in the valuation were 281,643 inactive members and 17,164 members active in the money purchase plan.

Retired Members in Valuation December 31, 2015

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
Traditional Plan			
A & PR Fund			
Superannuation Retirement	108,801	\$ 209,899,730	\$ 27,019,774,746
Disability Retirement	12,046	26,774,095	3,384,423,861
Money Purchase	2,831	1,191,829	140,305,158
Total A & PR Fund	123,678	237,865,654	30,544,503,765
Total SBF	9,646	9,152,633	1,025,069,484
Traditional Plan Total	133,324	\$ 247,018,287	\$ 31,569,573,249
Combined Plan			
A & PR Fund			
CMDB	139	\$ 39,405	\$ 5,596,065
CMDC	98	25,683	3,591,912
Total A & PR Fund	237	65,088	9,187,977
Combined Plan Total	237	\$ 65,088	\$ 9,187,977
Member Directed Plan			
A & PR Fund	138	49,202	6,891,199
Member Directed Plan Total	138	\$ 49,202	\$ 6,891,199
Grand Total	133,699	\$ 247,132,577	\$ 31,585,652,425

**LOCAL GOVERNMENT DIVISION
EMPLOYER CONTRIBUTIONS TO SUPPORT
DEFINED BENEFIT RETIREMENT ALLOWANCES
EXPRESSED AS PERCENTS OF ACTIVE MEMBER PAYROLL**

Valuation Date December 31	2015			2014
Contributions for	2018			2017
Normal Cost	<u>Traditional Plan</u>	<u>Combined Plan</u>	<u>Traditional and Combined Plans</u>	<u>Traditional and Combined Plans</u>
Age and Service Allowances	7.11 %	4.43 %	7.04 %	7.08 %
Disability Allowances	1.61 %	1.44 %	1.61 %	1.61 %
Survivor's Benefits	0.48 %	0.42 %	0.48 %	0.48 %
Separation Benefits	3.62 %	1.09 %	3.54 %	3.56 %
Total Normal Cost	12.82 %	7.38 %	12.67 %	12.73 %
(Member Contributions)	10.00 %	0.00 %	9.66 %	9.67 %
Employer Normal Cost	2.82 %	7.38 %	3.01 %	3.06 %
Unfunded Actuarial Accrued Liabilities				
Total Available Contribution	7.18 %	2.62 %	6.99 %	6.94 %
Amortization Years	13	0	12	14
Total Pension Employer Contribution Rate	10.00 %	10.00 %	10.00 %	10.00 %

The term "Amortization Years" refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

**LOCAL GOVERNMENT DIVISION
COMPARATIVE STATEMENT**

Valuation Date December 31	Contribution Rate Effective January 1	Defined Benefit Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Millions)							
2001@	2004	243,202	\$ 6,451	\$ 26,526	8.7 %	6.14 %	3.41 %	9.55 %	4.00 %	13.55 %
2002	2005	247,377	6,721	27,171	2.4 %	5.92 %	3.63 %	9.55 %	4.00 %	13.55 %
2003##	2006	237,082	6,702	28,269	4.0 %	5.66 %	3.54 %	9.20 %	4.50 %	13.70 %
2004	2007	236,907	6,896	29,110	3.0 %	5.57 %	2.78 %	8.35 %	5.50 %	13.85 %
2005@	2008	236,073	7,066	29,933	2.8 %	5.00 %	2.00 %	7.00 %	7.00 %	14.00 %
2006	2009	237,981	7,234	30,399	1.6 %	4.53 %	2.47 %	7.00 %	7.00 %	14.00 %
2007	2010	237,225	7,438	31,354	3.1 %	5.12 %	1.88 %	7.00 %	7.00 %	14.00 %
2008	2011	233,163	7,566	32,451	3.5 %	5.14 %	4.86 %	10.00 %	4.00 %	14.00 %
2009	2012	223,004	7,334	32,889	1.3 %	5.14 %	4.86 %	10.00 %	4.00 %	14.00 %
2010@	2013	215,144	7,196	33,447	1.7 %	5.12 %	7.88 %	13.00 %	1.00 %	14.00 %
2011	2014	209,452	7,115	33,968	1.6 %	5.14 %	8.86 %	14.00 %	0.00 %	14.00 %
2012#	2015	208,188	7,061	33,918	(0.1)%	3.13 %	7.87 %	11.00 %	3.00 %	14.00 %
2013	2016	207,416	7,134	34,396	1.4 %	3.16 %	6.84 %	10.00 %	4.00 %	14.00 %
2014	2017	203,955	7,360	36,087	4.9 %	3.06 %	6.94 %	10.00 %	4.00 %	14.00 %
2015	2018	202,779	7,505	37,008	2.6 %	3.01 %	6.99 %	10.00 %	4.00 %	14.00 %

After benefit changes.

@ Revised actuarial assumptions.

Combined Plan members are included beginning with the December 31, 2003 valuation.

LOCAL GOVERNMENT DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2015

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 30,560,582,941	\$ -	\$ 30,560,582,941
Allowances currently being paid from the Survivors Benefit Fund	1,025,069,484	-	1,025,069,484
Age and service allowances based on service rendered before and likely to be rendered after valuation date	21,320,352,943	4,191,225,959	17,129,126,984
Disability allowances likely to be paid present active members who become permanently disabled	2,026,484,746	963,413,457	1,063,071,289
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	829,637,165	275,523,739	554,113,426
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	3,580,911,389	2,231,578,776	1,349,332,613
Total	\$ 59,343,038,668	\$ 7,661,741,931	\$ 51,681,296,737
Actuarial Value of Assets			45,537,800,850
Unfunded Actuarial Accrued Liability			\$ 6,143,495,887

LOCAL GOVERNMENT DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
COMPARATIVE STATEMENT
(\$ IN MILLIONS EXCEPT AVERAGES)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed Total	Valuation Assets	Unfunded	Amortization Years	
	Total	Average					
2001@	\$ 6,451	\$26,526	\$ 15,983	\$ 16,651	\$ (668)	-	-
2002	6,721	27,171	16,710	12,682	4,028	25	0.60
2003##	6,702	28,269	17,645	13,148	4,497	27	0.67
2004	6,896	29,110	18,269	14,223	4,046	23	0.59
2005@	7,066	29,933	19,484	14,921	4,563	25	0.65
2006	7,234	30,399	20,147	17,523	2,624	19	0.36
2007	7,438	31,354	20,838	19,656	1,182	9	0.16
2008	7,566	32,451	21,590	11,561	10,029	N/A	1.33
2009	7,334	32,889	21,620	11,599	10,021	N/A	1.37
2010@	7,196	33,447	21,668	13,212	8,456	22	1.18
2011	7,115	33,968	21,631	11,418	10,213	25	1.44
2012#	7,061	33,918	19,583	11,981	7,602	15	1.08
2013	7,134	34,396	19,586	11,440	8,146	20	1.14
2014	7,360	36,087	19,656	13,066	6,590	13	0.90
2015	7,505	37,008	20,096	13,953	6,143	11	0.82

After benefit changes.

@ Revised actuarial assumptions.

Combined Plan members are included beginning with the December 31, 2003 valuation.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll (“UNFUNDED / PAYROLL” above) is significant. Unfunded accrued liabilities represent plan debt, while active member payroll represents the plan’s capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

LOCAL GOVERNMENT DIVISION
MALE ACTIVE MEMBERS IN DEFINED BENEFIT VALUATION
DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	4,496							4,496
Tot. Pay	\$43,210,849							\$43,210,849
Avg. Pay	\$9,611							\$9,611
20-24	7,343	69						7,412
Tot. Pay	\$119,822,996	\$1,929,162						\$121,752,158
Avg. Pay	\$16,318	\$27,959						\$16,426
25-29	5,887	1,034	63					6,984
Tot. Pay	\$164,658,434	\$41,024,778	\$2,656,118					\$208,339,330
Avg. Pay	\$27,970	\$39,676	\$42,161					\$29,831
30-34	4,227	2,104	956	74				7,361
Tot. Pay	\$134,319,829	\$94,627,773	\$46,519,649	\$3,456,539				\$278,923,790
Avg. Pay	\$31,777	\$44,975	\$48,661	\$46,710				\$37,892
35-39	3,125	1,881	1,860	990	48			7,904
Tot. Pay	\$101,670,258	\$86,109,470	\$98,303,374	\$53,680,004	\$2,697,637			\$342,460,743
Avg. Pay	\$32,534	\$45,779	\$52,851	\$54,222	\$56,201			\$43,328
40-44	2,812	1,569	1,726	1,887	742	30		8,766
Tot. Pay	\$89,596,215	\$72,504,416	\$90,866,358	\$108,991,192	\$43,083,519	\$1,744,658		\$406,786,358
Avg. Pay	\$31,862	\$46,211	\$52,646	\$57,759	\$58,064	\$58,155		\$46,405
45-49	2,745	1,732	1,702	2,055	1,803	860	19	10,916
Tot. Pay	\$84,608,864	\$74,857,289	\$87,138,595	\$120,303,110	\$111,541,262	\$53,218,763	\$1,184,156	\$532,852,039
Avg. Pay	\$30,823	\$43,220	\$51,198	\$58,542	\$61,864	\$61,882	\$62,324	\$48,814
50-54	2,512	1,519	1,691	1,951	1,796	1,999	505	11,973
Tot. Pay	\$74,297,244	\$63,305,596	\$81,276,273	\$108,892,391	\$105,787,596	\$128,529,920	\$32,611,189	\$594,700,209
Avg. Pay	\$29,577	\$41,676	\$48,064	\$55,814	\$58,902	\$64,297	\$64,577	\$49,670
55-59	2,332	1,500	1,655	1,890	1,631	1,769	918	11,695
Tot. Pay	\$64,075,685	\$57,071,228	\$75,796,548	\$101,218,942	\$92,063,520	\$110,557,559	\$61,242,723	\$562,026,205
Avg. Pay	\$27,477	\$38,047	\$45,799	\$53,555	\$56,446	\$62,497	\$66,713	\$48,057
60-64	1,979	1,185	1,184	1,240	1,141	1,135	717	8,581
Tot. Pay	\$44,603,599	\$42,847,518	\$50,220,330	\$60,778,744	\$61,151,437	\$69,729,435	\$49,253,145	\$378,584,208
Avg. Pay	\$22,538	\$36,158	\$42,416	\$49,015	\$53,595	\$61,436	\$68,693	\$44,119
65-69	1,558	740	578	485	414	352	297	4,424
Tot. Pay	\$22,879,851	\$20,497,579	\$19,702,154	\$22,632,163	\$21,430,985	\$21,500,547	\$19,856,867	\$148,500,146
Avg. Pay	\$14,685	\$27,699	\$34,087	\$46,664	\$51,766	\$61,081	\$66,858	\$33,567
70 & Over	1,217	623	446	246	159	95	111	2,897
Tot. Pay	\$13,412,580	\$8,530,517	\$8,548,188	\$5,850,431	\$5,328,013	\$4,304,731	\$4,829,913	\$50,804,373
Avg. Pay	\$11,021	\$13,693	\$19,166	\$23,782	\$33,510	\$45,313	\$43,513	\$17,537
Totals	40,233	13,956	11,861	10,818	7,734	6,240	2,567	93,409
Tot. Pay	\$957,156,404	\$563,305,326	\$561,027,587	\$585,803,516	\$443,083,969	\$389,585,613	\$168,977,993	\$3,668,940,408
Avg. Pay	\$23,790	\$40,363	\$47,300	\$54,151	\$57,290	\$62,434	\$65,827	\$39,278

LOCAL GOVERNMENT DIVISION
FEMALE ACTIVE MEMBERS IN DEFINED BENEFIT VALUATION
DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	4,777							4,777
Tot. Pay	\$41,102,678							\$41,102,678
Avg. Pay	\$8,604							\$8,604
20-24	7,313	106						7,419
Tot. Pay	\$109,583,642	\$1,869,931						\$111,453,573
Avg. Pay	\$14,985	\$17,641						\$15,023
25-29	7,139	1,119	89					8,347
Tot. Pay	\$196,128,024	\$37,384,841	\$2,795,552					\$236,308,417
Avg. Pay	\$27,473	\$33,409	\$31,411					\$28,311
30-34	5,632	2,618	1,006	86				9,342
Tot. Pay	\$162,367,698	\$105,286,890	\$41,711,415	\$3,481,484				\$312,847,487
Avg. Pay	\$28,829	\$40,217	\$41,463	\$40,482				\$33,488
35-39	4,255	2,253	2,491	1,153	43			10,195
Tot. Pay	\$124,788,141	\$93,544,691	\$114,960,168	\$53,878,396	\$1,883,290			\$389,054,686
Avg. Pay	\$29,327	\$41,520	\$46,150	\$46,729	\$43,797			\$38,161
40-44	3,727	2,029	2,026	2,598	855	52		11,287
Tot. Pay	\$105,292,677	\$81,791,492	\$93,625,273	\$130,377,272	\$42,062,377	\$2,435,665		\$455,584,756
Avg. Pay	\$28,251	\$40,311	\$46,212	\$50,184	\$49,196	\$46,840		\$40,364
45-49	3,903	2,065	2,136	2,522	2,053	1,033	40	13,752
Tot. Pay	\$105,381,135	\$77,899,382	\$94,329,507	\$123,827,762	\$112,360,030	\$52,799,509	\$2,156,259	\$568,753,584
Avg. Pay	\$27,000	\$37,724	\$44,162	\$49,099	\$54,730	\$51,113	\$53,906	\$41,358
50-54	3,476	2,097	2,190	2,467	1,875	2,120	516	14,741
Tot. Pay	\$87,438,660	\$74,784,760	\$90,233,888	\$113,147,130	\$94,735,624	\$117,701,532	\$28,066,697	\$606,108,291
Avg. Pay	\$25,155	\$35,663	\$41,203	\$45,864	\$50,526	\$55,520	\$54,393	\$41,117
55-59	2,878	1,941	2,306	2,672	2,126	1,767	809	14,499
Tot. Pay	\$69,347,957	\$63,200,288	\$88,476,807	\$115,492,815	\$102,040,789	\$95,749,706	\$47,210,688	\$581,519,050
Avg. Pay	\$24,096	\$32,561	\$38,368	\$43,223	\$47,997	\$54,188	\$58,357	\$40,108
60-64	1,718	1,271	1,482	1,819	1,562	1,263	535	9,650
Tot. Pay	\$36,505,765	\$39,808,810	\$54,471,723	\$75,259,273	\$70,057,523	\$64,845,350	\$31,024,908	\$371,973,352
Avg. Pay	\$21,249	\$31,321	\$36,756	\$41,374	\$44,851	\$51,342	\$57,990	\$38,546
65-69	824	501	542	619	539	460	238	3,723
Tot. Pay	\$12,063,455	\$12,774,239	\$19,243,834	\$23,671,105	\$23,389,502	\$22,314,088	\$13,024,691	\$126,480,914
Avg. Pay	\$14,640	\$25,497	\$35,505	\$38,241	\$43,394	\$48,509	\$54,726	\$33,973
70 & Over	538	256	231	173	178	131	131	1,638
Tot. Pay	\$5,558,184	\$3,697,860	\$3,945,386	\$4,352,899	\$5,730,380	\$5,101,713	\$5,994,726	\$34,381,148
Avg. Pay	\$10,331	\$14,445	\$17,080	\$25,161	\$32,193	\$38,944	\$45,761	\$20,990
Totals	46,180	16,256	14,499	14,109	9,231	6,826	2,269	109,370
Tot. Pay	\$1,055,558,016	\$592,043,184	\$603,793,553	\$643,488,136	\$452,259,515	\$360,947,563	\$127,477,969	\$3,835,567,936
Avg. Pay	\$22,857	\$36,420	\$41,644	\$45,608	\$48,994	\$52,878	\$56,182	\$35,070

**LOCAL GOVERNMENT DIVISION
INACTIVE MEMBERS IN DEFINED BENEFIT VALUATION
DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
20-24	25,966							25,966
25-29	38,807	294						39,101
30-34	44,224	1,200	76					45,500
35-39	35,955	1,338	459	32				37,784
40-44	29,007	1,501	641	242	17			31,408
45-49	22,835	1,818	913	364	145	15		26,090
50-54	18,880	1,936	1,184	532	240	99	3	22,874
55-59	19,007	2,173	1,599	760	379	53	3	23,974
60-64	14,344	1,572	816	331	170	17	5	17,255
65-69	8,144	602	198	72	26	5	4	9,051
70 & Over	2,354	194	54	20	10	6	2	2,640
Totals	259,523	12,628	5,940	2,353	987	195	17	281,643

SECTION VII
PUBLIC SAFETY DIVISION

PUBLIC SAFETY DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Active Members in Valuation December 31, 2015

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Men	69	\$ 3,176,305	\$ 46,033	39.4 yrs.	9.3 yrs.
Women	10	443,247	44,325	43.3	11.3
Totals	79	\$ 3,619,552	\$ 45,817	39.9 yrs.	9.6 yrs.

Also included in the valuation were 46 inactive members and 3 members active in the money purchase plan.

Retired Members in Valuation December 31, 2015

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
A & PR Fund			
Superannuation Retirement	32	\$ 58,728	\$ 9,022,400
Disability Retirement	37	116,574	16,248,966
Money Purchase	0	0	0
Total A & PR Fund	69	\$ 175,302	\$ 25,271,366
Total SBF	105	140,493	19,150,824
Grand Total	174	\$ 315,795	\$ 44,422,190

**PUBLIC SAFETY DIVISION
 EMPLOYER CONTRIBUTIONS TO SUPPORT
 RETIREMENT ALLOWANCES
 EXPRESSED AS PERCENTS OF ACTIVE MEMBER PAYROLL**

Valuation Date December 31	2015	2014
Contributions for	2018	2017
Normal Cost		
Age and Service Allowances	7.42 %	7.37 %
Disability Allowances	3.57 %	3.63 %
Survivor's Benefits	0.58 %	0.55 %
Separation Benefits	4.50 %	4.61 %
Total Normal Cost	16.07 %	16.16 %
(Member Contributions)	12.00 %	12.00 %
Employer Normal Cost	4.07 %	4.16 %
Unfunded Actuarial Accrued Liabilities		
Total Available Contribution	10.03 %	9.94 %
Amortization Years	N/A	N/A
Total Pension Employer Contribution Rate	14.10 %	14.10 %

N/A The unfunded actuarial accrued liabilities are unable to be amortized based upon the total pension contribution rate.

The term “Amortization Years” refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

**PUBLIC SAFETY DIVISION
COMPARATIVE STATEMENT ***

Valuation Date December 31	Contribution Rate Effective January 1	Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Thousands)							
2006	2009	127	\$ 5,851	\$ 46,067	2.3 %	8.73 %	1.90 %	10.63 %	7.00 %	17.63 %
2007	2010	120	5,638	46,985	2.0 %	8.95 %	1.92 %	10.87 %	7.00 %	17.87 %
2008	2011	127	6,219	48,969	4.2 %	8.32 %	5.78 %	14.10 %	4.00 %	18.10 %
2009	2012	94	4,061	43,205	(11.8)%	7.77 %	6.33 %	14.10 %	4.00 %	18.10 %
2010@	2013	88	3,650	41,480	(4.0)%	6.22 %	10.88 %	17.10 %	1.00 %	18.10 %
2011	2014	84	3,629	43,202	4.2 %	6.12 %	11.98 %	18.10 %	0.00 %	18.10 %
2012#	2015	87	3,751	43,119	(0.2)%	3.96 %	11.14 %	15.10 %	3.00 %	18.10 %
2013	2016	85	3,684	43,338	0.5 %	4.11 %	9.99 %	14.10 %	4.00 %	18.10 %
2014	2017	86	3,823	44,452	2.6 %	4.16 %	9.94 %	14.10 %	4.00 %	18.10 %
2015	2018	79	3,620	45,817	3.1 %	4.07 %	10.03 %	14.10 %	4.00 %	18.10 %

After benefit changes.

* Prior to 2005, Public Safety and Law Enforcement results were reported together. Historical information prior to 2005 may be found on page VIII-3.

@ Revised actuarial assumptions.

PUBLIC SAFETY DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2015

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 25,271,366	\$ -	\$ 25,271,366
Allowances currently being paid from the Survivors Benefit Fund	19,150,824	-	19,150,824
Age and service allowances based on service rendered before and likely to be rendered after valuation date	8,172,705	2,291,666	5,881,039
Disability allowances likely to be paid present active members who become permanently disabled	2,160,763	1,098,990	1,061,773
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	385,601	171,007	214,594
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	2,311,085	1,455,571	855,514
Total	\$ 57,452,344	\$ 5,017,234	\$ 52,435,110
Actuarial Value of Assets			27,651,140
Unfunded Actuarial Accrued Liability			\$ 24,783,970

PUBLIC SAFETY DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
COMPARATIVE STATEMENT *
(\$ IN MILLIONS EXCEPT AVERAGES)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed Total	Valuation Assets	Unfunded	Amortization Years	
	Total	Average					
2006	\$6	\$46,067	\$16	\$(64)	\$ 80	N/A	13.33
2007	6	46,985	18	(82)	100	N/A	16.67
2008	6	48,969	18	9	9	79	1.50
2009	4	43,205	12	0	12	N/A	3.00
2010@	4	41,480	7	(7)	14	N/A	3.50
2011	4	43,202	8	(1)	9	45	2.25
2012#	4	43,119	7	(14)	21	N/A	5.25
2013	4	43,338	7	1	6	19	1.50
2014	4	44,452	8	(15)	23	N/A	5.75
2015	4	45,817	8	(17)	25	N/A	6.25

After benefit changes.

N/A The unfunded actuarial accrued liabilities are unable to be amortized based upon the total pension contribution rate.

* Prior to 2005, Public Safety and Law Enforcement results were reported together. Historical information prior to 2005 may be found on page VIII-5.

@ Revised actuarial assumptions.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll (“UNFUNDED/PAYROLL” above) is significant. Unfunded accrued liabilities represent plan debt, while active member payroll represents the plan’s capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

PUBLIC SAFETY DIVISION
MALE ACTIVE MEMBERS IN VALUATION DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
Tot. Pay								
Avg. Pay								
20-24	2							2
Tot. Pay	\$63,827							\$63,827
Avg. Pay	\$31,914							\$31,914
25-29	11	2						13
Tot. Pay	\$540,935	\$105,691						\$646,626
Avg. Pay	\$49,176	\$52,846						\$49,740
30-34	9	2	1					12
Tot. Pay	\$358,844	\$71,165	\$34,850					\$464,859
Avg. Pay	\$39,872	\$35,583	\$34,850					\$38,738
35-39	2	3	6	1				12
Tot. Pay	\$89,060	\$153,805	\$318,302	\$56,306				\$617,473
Avg. Pay	\$44,530	\$51,268	\$53,050	\$56,306				\$51,456
40-44	2	2	2	7				13
Tot. Pay	\$85,855	\$70,986	\$90,371	\$341,352				\$588,564
Avg. Pay	\$42,928	\$35,493	\$45,186	\$48,765				\$45,274
45-49		1	1		1	1		4
Tot. Pay		\$37,340	\$39,317		\$40,669	\$52,703		\$170,029
Avg. Pay		\$37,340	\$39,317		\$40,669	\$52,703		\$42,507
50-54			3		1			4
Tot. Pay			\$160,269		\$34,944			\$195,213
Avg. Pay			\$53,423		\$34,944			\$48,803
55-59	2		1		1	1		5
Tot. Pay	\$68,473		\$63,550		\$43,651	\$51,481		\$227,155
Avg. Pay	\$34,237		\$63,550		\$43,651	\$51,481		\$45,431
60-64		1		1	1			3
Tot. Pay		\$65,938		\$41,001	\$60,304			\$167,243
Avg. Pay		\$65,938		\$41,001	\$60,304			\$55,748
65-69		1						1
Tot. Pay		\$35,316						\$35,316
Avg. Pay		\$35,316						\$35,316
70 & Over								
Tot. Pay								
Avg. Pay								
Totals	28	12	14	9	4	2		69
Tot. Pay	\$1,206,994	\$540,241	\$706,659	\$438,659	\$179,568	\$104,184		\$3,176,305
Avg. Pay	\$43,107	\$45,020	\$50,476	\$48,740	\$44,892	\$52,092		\$46,033

PUBLIC SAFETY DIVISION
FEMALE ACTIVE MEMBERS IN VALUATION DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
Tot. Pay								
Avg. Pay								
20-24								
Tot. Pay								
Avg. Pay								
25-29	2	1						3
Tot. Pay	\$85,749	\$53,887						\$139,636
Avg. Pay	\$42,875	\$53,887						\$46,545
30-34			1					1
Tot. Pay			\$35,228					\$35,228
Avg. Pay			\$35,228					\$35,228
35-39								
Tot. Pay								
Avg. Pay								
40-44								
Tot. Pay								
Avg. Pay								
45-49					2			2
Tot. Pay					\$141,720			\$141,720
Avg. Pay					\$70,860			\$70,860
50-54						1		1
Tot. Pay						\$35,316		\$35,316
Avg. Pay						\$35,316		\$35,316
55-59	1	1						2
Tot. Pay	\$35,316	\$32,957						\$68,273
Avg. Pay	\$35,316	\$32,957						\$34,137
60-64		1						1
Tot. Pay		\$23,074						\$23,074
Avg. Pay		\$23,074						\$23,074
65-69								
Tot. Pay								
Avg. Pay								
70 & Over								
Tot. Pay								
Avg. Pay								
Totals	3	3	1		2	1		10
Tot. Pay	\$121,065	\$109,918	\$35,228		\$141,720	\$35,316		\$443,247
Avg. Pay	\$40,355	\$36,639	\$35,228		\$70,860	\$35,316		\$44,325

PUBLIC SAFETY DIVISION
INACTIVE MEMBERS IN VALUATION DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
20-24								
25-29	11							11
30-34	13							13
35-39	9	2	1					12
40-44	5							5
45-49	2							2
50-54	1							1
55-59	1							1
60-64				1				1
65-69								
70 & Over								
Totals	42	2	1	1				46

SECTION VIII

LAW ENFORCEMENT DIVISION

LAW ENFORCEMENT DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Active Members in Valuation December 31, 2015

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Men	6,865	\$ 428,221,961	\$ 62,378	41.3 yrs.	14.3 yrs.
Women	914	53,073,823	58,068	41.3	13.6
Totals	7,779	\$ 481,295,784	\$ 61,871	41.3 yrs.	14.2 yrs.

Also included in the valuation were 953 inactive members and 24 members active in the money purchase plan.

Retired Members in Valuation December 31, 2015

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
A & PR Fund			
Superannuation Retirement	2,992	\$ 10,378,588	\$ 1,535,515,096
Disability Retirement	1,592	5,068,619	679,166,853
Money Purchase	0	0	0
Total A & PR Fund	4,584	\$ 15,447,207	\$ 2,214,681,949
Total SBF	344	408,951	49,716,266
Grand Total	4,928	\$ 15,856,158	\$ 2,264,398,215

**LAW ENFORCEMENT DIVISION
 EMPLOYER CONTRIBUTIONS TO SUPPORT
 RETIREMENT ALLOWANCES
 EXPRESSED AS PERCENTS OF ACTIVE MEMBER PAYROLL**

Valuation Date December 31	2015	2014
Contributions for	2018	2017
Normal Cost		
Age and Service Allowances	11.30 %	11.34 %
Disability Allowances	4.01 %	4.02 %
Survivor's Benefits	0.54 %	0.54 %
Separation Benefits	2.38 %	2.44 %
Total Normal Cost	18.23 %	18.34 %
(Member Contributions)	13.00 %	13.00 %
Employer Normal Cost	5.23 %	5.34 %
Unfunded Actuarial Accrued Liabilities		
Total Available Contribution	8.87 %	8.76 %
Amortization Years	9	14
Total Pension Employer Contribution Rate	14.10 %	14.10 %

The term “Amortization Years” refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

**LAW ENFORCEMENT DIVISION
COMPARATIVE STATEMENT ***

Valuation Date December 31	Contribution Rate Effective January 1	Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Thousands)							
2001@	2004	7,892	\$ 335,432	\$ 42,503	5.2 %	8.88 %	3.82 %	12.70 %	4.00 %	16.70 %
2002	2005	8,030	356,694	44,420	4.5 %	8.77 %	3.93 %	12.70 %	4.00 %	16.70 %
2003	2006	8,253	384,388	46,576	4.9 %	8.65 %	3.78 %	12.43 %	4.50 %	16.93 %
2004	2007	8,173	392,672	48,045	3.2 %	8.63 %	3.04 %	11.67 %	5.50 %	17.17 %
2005@	2008	7,976	395,189	49,547	3.0 %	9.65 %	0.75 %	10.40 %	7.00 %	17.40 %
2006	2009	8,092	413,182	51,061	3.1 %	9.65 %	0.98 %	10.63 %	7.00 %	17.63 %
2007	2010	8,265	437,223	52,901	3.6 %	9.95 %	0.92 %	10.87 %	7.00 %	17.87 %
2008	2011	8,173	448,694	54,900	3.8 %	8.43 %	5.67 %	14.10 %	4.00 %	18.10 %
2009	2012	8,006	447,232	55,862	1.8 %	8.16 %	5.94 %	14.10 %	4.00 %	18.10 %
2010@	2013	7,702	438,830	56,976	2.0 %	7.56 %	9.54 %	17.10 %	1.00 %	18.10 %
2011	2014	7,545	437,605	57,999	1.8 %	7.18 %	10.92 %	18.10 %	0.00 %	18.10 %
2012#	2015	7,470	438,500	58,702	1.2 %	5.43 %	9.67 %	15.10 %	3.00 %	18.10 %
2013	2016	7,549	447,612	59,294	1.0 %	5.44 %	8.66 %	14.10 %	4.00 %	18.10 %
2014	2017	7,618	463,653	60,863	2.6 %	5.34 %	8.76 %	14.10 %	4.00 %	18.10 %
2015	2018	7,779	481,296	61,871	1.7 %	5.23 %	8.87 %	14.10 %	4.00 %	18.10 %

After benefit changes.

@ Revised actuarial assumptions.

* Prior to 2005, Law Enforcement and Public Safety are combined for purposes of this schedule.

LAW ENFORCEMENT DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2015

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 2,214,681,949	\$ -	\$ 2,214,681,949
Allowances currently being paid from the Survivors Benefit Fund	49,716,266	-	49,716,266
Age and service allowances based on service rendered before and likely to be rendered after valuation date	1,880,412,795	487,971,740	1,392,441,055
Disability allowances likely to be paid present active members who become permanently disabled	346,347,945	172,097,357	174,250,588
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	57,779,476	23,354,637	34,424,839
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	130,497,102	104,039,122	26,457,980
Total	\$ 4,679,435,533	\$ 787,462,856	\$ 3,891,972,677
Actuarial Value of Assets			3,500,214,774
Unfunded Actuarial Accrued Liability			\$ 391,757,903

LAW ENFORCEMENT DIVISION
DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES
COMPARATIVE STATEMENT *
(\$ IN MILLIONS EXCEPT AVERAGES)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed Total	Valuation Assets	Unfunded	Amortization Years	
	Total	Average					
2001@	\$335	\$42,503	\$ 1,071	\$ 1,149	\$ (78)	-	-
2002	357	44,420	1,135	854	281	36	0.79
2003	384	46,576	1,170	838	332	41	0.86
2004	393	48,045	1,197	868	329	43	0.84
2005@	395	49,547	1,298	926	372	N/A	0.94
2006	413	51,061	1,356	1,069	287	N/A	0.69
2007	437	52,901	1,430	1,214	216	N/A	0.49
2008	449	54,900	1,500	771	729	N/A	1.62
2009	447	55,862	1,534	807	727	N/A	1.63
2010@	439	56,976	1,542	966	576	19	1.31
2011	438	57,999	1,546	813	733	23	1.67
2012#	439	58,702	1,480	945	535	14	1.22
2013	448	59,294	1,510	981	529	15	1.18
2014	464	60,863	1,550	1,062	488	13	1.05
2015	481	61,871	1,628	1,236	392	8	0.81

After benefit changes.

@ Revised actuarial assumptions.

* Prior to 2005, Law Enforcement and Public Safety are combined for purposes of this schedule.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll (“UNFUNDED/PAYROLL” above) is significant. Unfunded accrued liabilities represent plan debt, while active member payroll represents the plan’s capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

LAW ENFORCEMENT DIVISION
MALE ACTIVE MEMBERS IN VALUATION DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
Tot. Pay								
Avg. Pay								
20-24	153	3						156
Tot. Pay	\$5,848,696	\$141,263						\$5,989,959
Avg. Pay	\$38,227	\$47,088						\$38,397
25-29	532	181	4					717
Tot. Pay	\$24,411,849	\$9,657,792	\$242,600					\$34,312,241
Avg. Pay	\$45,887	\$53,358	\$60,650					\$47,855
30-34	290	379	200	5				874
Tot. Pay	\$13,907,974	\$22,726,600	\$12,362,342	\$298,271				\$49,295,187
Avg. Pay	\$47,959	\$59,965	\$61,812	\$59,654				\$56,402
35-39	126	205	446	303	7			1,087
Tot. Pay	\$6,253,338	\$12,208,836	\$29,225,929	\$20,572,205	\$414,684			\$68,674,992
Avg. Pay	\$49,630	\$59,555	\$65,529	\$67,895	\$59,241			\$63,178
40-44	74	130	281	650	275	5		1,415
Tot. Pay	\$3,762,801	\$7,590,232	\$17,943,644	\$44,552,997	\$18,946,447	\$399,570		\$93,195,691
Avg. Pay	\$50,849	\$58,386	\$63,856	\$68,543	\$68,896	\$79,914		\$65,863
45-49	47	74	153	344	602	205		1,425
Tot. Pay	\$2,305,636	\$4,375,653	\$9,597,249	\$23,295,496	\$42,897,680	\$15,153,031		\$97,624,745
Avg. Pay	\$49,056	\$59,130	\$62,727	\$67,719	\$71,259	\$73,917		\$68,509
50-54	18	28	57	134	212	180	36	665
Tot. Pay	\$762,314	\$1,493,073	\$3,466,071	\$8,720,935	\$14,381,431	\$12,781,889	\$2,814,977	\$44,420,690
Avg. Pay	\$42,351	\$53,324	\$60,808	\$65,082	\$67,837	\$71,010	\$78,194	\$66,798
55-59	7	13	20	45	91	88	52	316
Tot. Pay	\$281,288	\$725,639	\$1,262,996	\$2,909,553	\$6,080,266	\$6,295,875	\$4,242,319	\$21,797,936
Avg. Pay	\$40,184	\$55,818	\$63,150	\$64,657	\$66,816	\$71,544	\$81,583	\$68,981
60-64	11	6	11	31	33	32	33	157
Tot. Pay	\$506,780	\$296,838	\$714,778	\$1,920,972	\$2,049,564	\$2,136,324	\$2,350,075	\$9,975,331
Avg. Pay	\$46,071	\$49,473	\$64,980	\$61,967	\$62,108	\$66,760	\$71,214	\$63,537
65-69	5	1	3	6	13	11	6	45
Tot. Pay	\$152,091	\$100,723	\$148,180	\$305,959	\$722,369	\$693,119	\$413,598	\$2,536,039
Avg. Pay	\$30,418	\$100,723	\$49,393	\$50,993	\$55,567	\$63,011	\$68,933	\$56,356
70 & Over	1		3	2	1	1		8
Tot. Pay	\$18,879		\$109,048	\$145,767	\$40,934	\$84,522		\$399,150
Avg. Pay	\$18,879		\$36,349	\$72,884	\$40,934	\$84,522		\$49,894
Totals	1,264	1,020	1,178	1,520	1,234	522	127	6,865
Tot. Pay	\$58,211,646	\$59,316,649	\$75,072,837	\$102,722,155	\$85,533,375	\$37,544,330	\$9,820,969	\$428,221,961
Avg. Pay	\$46,054	\$58,154	\$63,729	\$67,580	\$69,314	\$71,924	\$77,330	\$62,378

LAW ENFORCEMENT DIVISION
FEMALE ACTIVE MEMBERS IN VALUATION DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
Tot. Pay								
Avg. Pay								
20-24	20							20
Tot. Pay	\$776,979							\$776,979
Avg. Pay	\$38,849							\$38,849
25-29	82	19						101
Tot. Pay	\$3,572,054	\$930,747						\$4,502,801
Avg. Pay	\$43,562	\$48,987						\$44,582
30-34	26	59	27	2				114
Tot. Pay	\$1,168,714	\$3,592,385	\$1,608,057	\$107,677				\$6,476,833
Avg. Pay	\$44,951	\$60,888	\$59,558	\$53,839				\$56,814
35-39	24	27	69	38				158
Tot. Pay	\$1,100,847	\$1,518,908	\$4,226,693	\$2,510,228				\$9,356,676
Avg. Pay	\$45,869	\$56,256	\$61,256	\$66,059				\$59,219
40-44	15	21	31	85	30			182
Tot. Pay	\$669,730	\$1,163,462	\$1,901,853	\$5,437,409	\$1,878,729			\$11,051,183
Avg. Pay	\$44,649	\$55,403	\$61,350	\$63,970	\$62,624			\$60,721
45-49	6	8	24	45	65	11		159
Tot. Pay	\$310,212	\$461,605	\$1,345,296	\$2,764,588	\$4,397,711	\$816,738		\$10,096,150
Avg. Pay	\$51,702	\$57,701	\$56,054	\$61,435	\$67,657	\$74,249		\$63,498
50-54	1	5	10	24	30	23	2	95
Tot. Pay	\$12,894	\$249,139	\$540,908	\$1,488,688	\$1,767,955	\$1,517,948	\$147,459	\$5,724,991
Avg. Pay	\$12,894	\$49,828	\$54,091	\$62,029	\$58,932	\$65,998	\$73,730	\$60,263
55-59	1	2	7	11	21	11	3	56
Tot. Pay	\$39,393	\$60,033	\$340,194	\$661,204	\$1,395,010	\$545,716	\$203,965	\$3,245,515
Avg. Pay	\$39,393	\$30,017	\$48,599	\$60,109	\$66,429	\$49,611	\$67,988	\$57,956
60-64		1	2	7	6	5	4	25
Tot. Pay		\$61,431	\$111,521	\$430,147	\$403,065	\$316,205	\$287,927	\$1,610,296
Avg. Pay		\$61,431	\$55,761	\$61,450	\$67,178	\$63,241	\$71,982	\$64,412
65-69					2	1	1	4
Tot. Pay					\$103,632	\$72,782	\$55,985	\$232,399
Avg. Pay					\$51,816	\$72,782	\$55,985	\$58,100
70 & Over								
Tot. Pay								
Avg. Pay								
Totals	175	142	170	212	154	51	10	914
Tot. Pay	\$7,650,823	\$8,037,710	\$10,074,522	\$13,399,941	\$9,946,102	\$3,269,389	\$695,336	\$53,073,823
Avg. Pay	\$43,719	\$56,604	\$59,262	\$63,207	\$64,585	\$64,106	\$69,534	\$58,068

LAW ENFORCEMENT DIVISION
INACTIVE MEMBERS IN VALUATION DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
20-24	6							6
25-29	70	5						75
30-34	101	29	3					133
35-39	93	23	12	4				132
40-44	107	29	17	17	2			172
45-49	124	24	19	12	12	2		193
50-54	62	9	12	13	4	8		108
55-59	32	13	8	7	4			64
60-64	26	4	3	3	2			38
65-69	23	1		1	1		1	27
70 & Over	5							5
Totals	649	137	74	57	25	10	1	953

SECTION IX

ALLOWANCES BEING PAID TO RETIREES AND BENEFICIARIES

**MONTHLY ALLOWANCES OF RETIRED LIVES
BY YEAR OF RETIREMENT
AS OF DECEMBER 31, 2015**

Year of Retirement	No.	Initial	Post-Ret. Increase	Total	Average
2015	7,933	\$16,303,959	\$ 48,811	\$ 16,352,770	\$ 2,061
2014	12,157	21,950,674	720,061	22,670,735	1,865
2013	12,020	23,499,223	1,712,212	25,211,435	2,097
2012	10,993	22,575,808	2,113,878	24,689,686	2,246
2011	12,112	26,961,104	3,336,456	30,297,560	2,501
2010	10,891	22,134,400	3,400,946	25,535,346	2,345
2009	10,644	22,231,562	4,041,580	26,273,142	2,468
2008	9,282	17,685,716	3,747,313	21,433,029	2,309
2007	8,859	16,314,801	3,952,771	20,267,572	2,288
2006	9,366	16,396,636	4,448,209	20,844,845	2,226
2005	8,677	15,668,523	4,713,002	20,381,525	2,349
2004	8,169	13,863,801	4,581,005	18,444,806	2,258
2003	7,615	13,070,623	4,692,341	17,762,964	2,333
2002	8,408	14,093,556	5,495,442	19,588,998	2,330
2001	6,839	10,796,533	4,514,695	15,311,228	2,239
2000	6,510	9,614,246	4,260,043	13,874,289	2,131
1999	5,726	8,034,539	3,700,973	11,735,512	2,050
1994-1998	23,593	28,814,336	15,027,423	43,841,759	1,858
1989-1993	14,895	14,875,587	10,058,487	24,934,074	1,674
1984-1988	10,088	8,227,271	6,805,598	15,032,869	1,490
1979-1983	4,244	2,280,262	2,513,975	4,794,237	1,130
1974-1978	1,694	644,207	1,049,503	1,693,710	1,000
1969-1973	389	91,777	210,165	301,942	776
1964-1968	133	30,576	105,105	135,681	1,020
Before 1964	64	13,504	49,335	62,839	982
TOTAL	211,301	\$346,173,224	\$95,299,329	\$441,472,553	\$2,089

**MONTHLY ALLOWANCES OF RETIRED LIVES
BY YEARS OF SERVICE
AS OF DECEMBER 31, 2015**

Years of Service	No.	Initial	Post-Ret. Increase	Total	Average
<5 or n/a	8,372	\$ 3,035,882	\$ 455,392	\$ 3,491,274	\$ 417
5	4,231	1,639,155	491,396	2,130,551	504
6	3,460	1,486,326	424,660	1,910,986	552
7	3,296	1,556,483	429,815	1,986,298	603
8	3,164	1,646,072	431,504	2,077,576	657
9	2,415	1,410,651	348,457	1,759,108	728
10	9,630	4,842,751	1,438,959	6,281,710	652
11	5,881	3,523,470	972,602	4,496,072	765
12	5,886	3,775,234	1,030,881	4,806,115	817
13	5,498	4,003,131	1,067,209	5,070,340	922
14	5,247	4,038,682	1,081,564	5,120,246	976
15	5,675	4,693,946	1,280,392	5,974,338	1,053
16	5,414	4,671,457	1,314,310	5,985,767	1,106
17	4,967	4,774,146	1,357,590	6,131,736	1,234
18	4,953	4,982,547	1,444,689	6,427,236	1,298
19	4,782	5,095,147	1,467,118	6,562,265	1,372
20	6,082	7,038,698	1,986,448	9,025,146	1,484
21	5,152	6,416,180	1,885,576	8,301,756	1,611
22	4,906	6,581,995	1,909,034	8,491,029	1,731
23	4,852	6,897,498	1,959,169	8,856,667	1,825
24	4,637	7,095,356	2,010,542	9,105,898	1,964
25	9,893	16,719,973	4,686,639	21,406,612	2,164
26	5,934	10,734,979	3,217,575	13,952,554	2,351
27	5,911	11,451,380	3,512,279	14,963,659	2,531
28	6,507	14,226,660	4,335,754	18,562,414	2,853
29	6,239	14,746,594	4,211,791	18,958,385	3,039
30	30,051	77,418,419	19,245,654	96,664,073	3,217
31	8,722	23,291,133	6,292,925	29,584,058	3,392
32	6,693	18,556,230	5,124,177	23,680,407	3,538
33	5,156	14,919,256	4,027,902	18,947,158	3,675
34	4,058	12,111,692	3,386,937	15,498,629	3,819
35	3,715	11,268,471	3,192,052	14,460,523	3,892
36	2,617	8,010,147	2,281,945	10,292,092	3,933
37	2,107	6,550,672	1,846,577	8,397,249	3,985
38	1,488	4,615,122	1,340,602	5,955,724	4,003
39	1,166	3,511,162	1,144,339	4,655,501	3,993
40 & Over	2,544	8,836,527	2,664,874	11,501,401	4,521
TOTAL	211,301	\$346,173,224	\$95,299,329	\$441,472,553	\$2,089

ANNUITY AND PENSION RESERVE FUND
ANNUAL ALLOWANCE, REPORTED ASSETS AND ACTUARIAL LIABILITIES
COMPARATIVE STATEMENT
(\$ MILLIONS)

Valuation Date	Annual Allowances			Reported Assets*	Actuarial Liabilities	Ratio of Assets to Liabilities	Ratio of DB Active to Retired
	No.	\$ Millions	% of DB Payroll				
12/31/1986	84,892	\$ 474	10.4 % **	\$ 4,965	\$ 4,935	100.6 %	3.0
12/31/1987	86,924	518	10.6 % **	5,485	5,437	100.9 %	3.0
12/31/1988	89,972	581	10.9 % **	6,182	6,173	100.1 %	2.9
12/31/1989@	92,504	661	12.4 % **	6,985	6,911	101.1 %	2.9
12/31/1990	94,088	706	11.7 % **	7,438	7,338	101.4 %	3.0
12/31/1991	95,843	762	11.5 % **	8,014	7,904	101.4 %	3.4
12/31/1992	98,609	835	12.1 % **	8,814	8,692	101.4 %	3.4
12/31/1993	100,651	901	12.5 % **	9,390	9,356	100.4 %	3.4
12/31/1994	102,587	958	12.6 % **	9,964	9,893	100.7 %	3.3
12/31/1995	104,806	1,036	13.0 % **	10,808	10,737	100.7 %	3.3
12/31/1996@	107,617	1,141	13.7 % **	11,819	11,762	100.5 %	3.3
12/31/1997	110,470	1,233	14.3 % **	12,843	12,755	100.7 %	3.2
12/13/1998	113,000	1,327	14.7 % **	13,885	13,751	101.0 %	3.1
12/31/1999+	115,431	1,530	16.1 % **	14,978	16,139	92.8 %	3.1
12/31/2000	118,620	1,641	16.1 % **	16,980	16,980	100.0 %	3.1
12/31/2001@	121,875	1,775	16.5 % **	18,001	18,001	100.0 %	3.0
12/31/2002	126,409	1,958	17.5 % **	20,085	20,085	100.0 %	2.9
12/31/2003	130,433	2,136	19.1 % **	22,535	22,535	100.0 %	2.7
12/31/2004	134,535	2,311	20.2 % **	24,470	24,470	100.0 %	2.6
12/31/2005@	138,996	2,508	21.2 % **	27,084	27,084	100.0 %	2.6
12/31/2006	144,037	2,710	22.3 % **	29,304	29,304	100.0 %	2.5
12/31/2007	148,493	2,916	23.2 % **	31,547	31,547	100.0 %	2.5
12/31/2008	153,931	3,148	24.6 % **	34,060	34,060	100.0 %	2.3
12/31/2009	159,518	3,419	27.2 % **	37,098	37,098	100.0 %	2.2
12/31/2010@	166,247	3,705	29.8 % **	40,184	40,818	100.0 %	2.1
12/31/2011	174,679	4,065	32.8 % **	45,001	45,001	100.0 %	1.9
12/31/2012	180,759	4,352	35.7 % **	48,044	48,044	100.0 %	1.8
12/31/2013	187,198	4,629	37.5 % **	50,754	50,754	100.0 %	1.8
12/31/2014	194,096	4,908	38.8 % **	53,432	53,432	100.0 %	1.7
12/31/2015	196,709	5,115	39.5 % **	55,117	55,117	100.0 %	1.7

* Including certain recommended transfers and accrued transfers.

@ Revised actuarial assumptions.

** Excluding health insurance and Medicare payments.

+ Including estimated effect of legislated benefit changes.

ANNUITY AND PENSION RESERVE FUND
RETIREES AND BENEFICIARIES DECEMBER 31, 2015
TYPE OF BENEFIT, MONTHLY AMOUNT AND ACTUARIAL LIABILITIES

Type of Allowance	Number	Current Total	Actuarial Liabilities
Superannuation Retirement			
Plan A - Joint & 50%	20,912	\$ 53,780,570	\$ 7,199,971,152
Plan B - Straight Life	82,108	168,074,005	19,934,115,991
Plan C - Special Joint & Survivor	24,994	65,235,323	9,278,368,665
Plan D - Joint & 100%	23,193	58,265,188	8,976,894,674
Plan E - Life & 0 to 5 Years Guaranteed	340	652,334	78,001,968
- Life & 6 to 10 Years Guaranteed	502	968,291	113,497,654
- Life & 11 to 15 Years Guaranteed	688	1,145,503	139,318,879
- Life & 16 to 20 Years Guaranteed	69	160,232	23,788,682
Plan F - Multiple Continuing Beneficiaries	1,033	2,625,081	482,124,325
Money Purchase	3,728	1,659,992	196,114,431
Survivor Beneficiary - Life Benefit	16,831	20,431,833	1,871,476,097
Survivor Beneficiary - Temporary Benefit	78	99,325	5,993,095
Total Superannuation	174,476	\$ 373,097,677	\$ 48,299,665,613
Disability Retirement	22,233	\$ 53,167,850	\$ 6,817,637,580
Total from A & PR	196,709	\$ 426,265,527	\$ 55,117,303,193

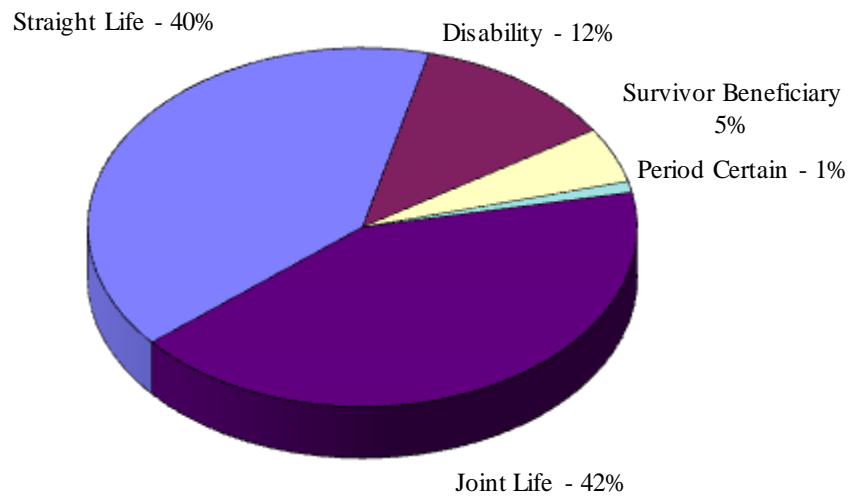
ANNUITY AND PENSION RESERVE FUND
RETIREES AND BENEFICIARIES DECEMBER 31, 2015
TYPE OF BENEFIT AND AMOUNT BY GENDER OF RECIPIENT

Type of Allowance	Men		Women		Total	
	Number	Monthly Allowances	Number	Monthly Allowances	Number	Monthly Allowances
Superannuation Retirement						
Plan A - Joint & 50%	13,761	\$ 37,723,487	7,151	\$ 16,057,083	20,912	\$ 53,780,570
Plan B - Straight Life	25,367	58,857,102	56,741	109,216,903	82,108	168,074,005
Plan C - Special Joint & Survivor	12,352	36,368,789	12,642	28,866,534	24,994	65,235,323
Plan D - Joint & 100%	18,484	48,548,787	4,709	9,716,401	23,193	58,265,188
Plan E - Life & 0 to 5 Years Guaranteed	136	286,648	204	365,686	340	652,334
- Life & 6 to 10 Years Guaranteed	248	478,874	254	489,417	502	968,291
- Life & 11 to 15 Years Guaranteed	379	624,542	309	520,961	688	1,145,503
- Life & 16 to 20 Years Guaranteed	46	99,606	23	60,626	69	160,232
Plan F - Multiple Continuing Beneficiaries	384	1,186,120	649	1,438,961	1,033	2,625,081
Money Purchase	2,390	1,281,768	1,338	378,224	3,728	1,659,992
Survivor Beneficiary - Life Benefit	1,999	1,543,328	14,832	18,888,505	16,831	20,431,833
Survivor Beneficiary - Temporary Benefit	22	30,139	56	69,186	78	99,325
Total Superannuation	75,568	\$ 187,029,190	98,908	\$ 186,068,487	174,476	\$ 373,097,677
Disability Retirement	11,293	\$ 29,707,098	10,940	\$ 23,460,752	22,233	\$ 53,167,850
Total from A & PR	86,861	\$ 216,736,288	109,848	\$ 209,529,239	196,709	\$ 426,265,527

ANNUITIES BEING PAID BY TYPE

DECEMBER 31, 2015

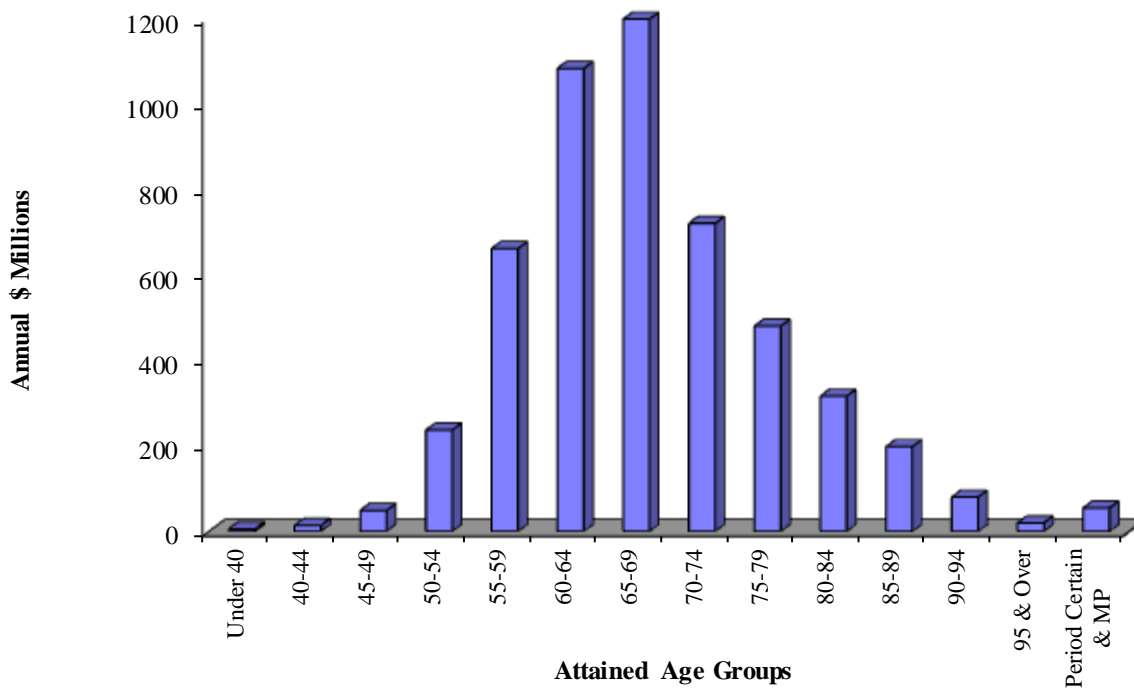
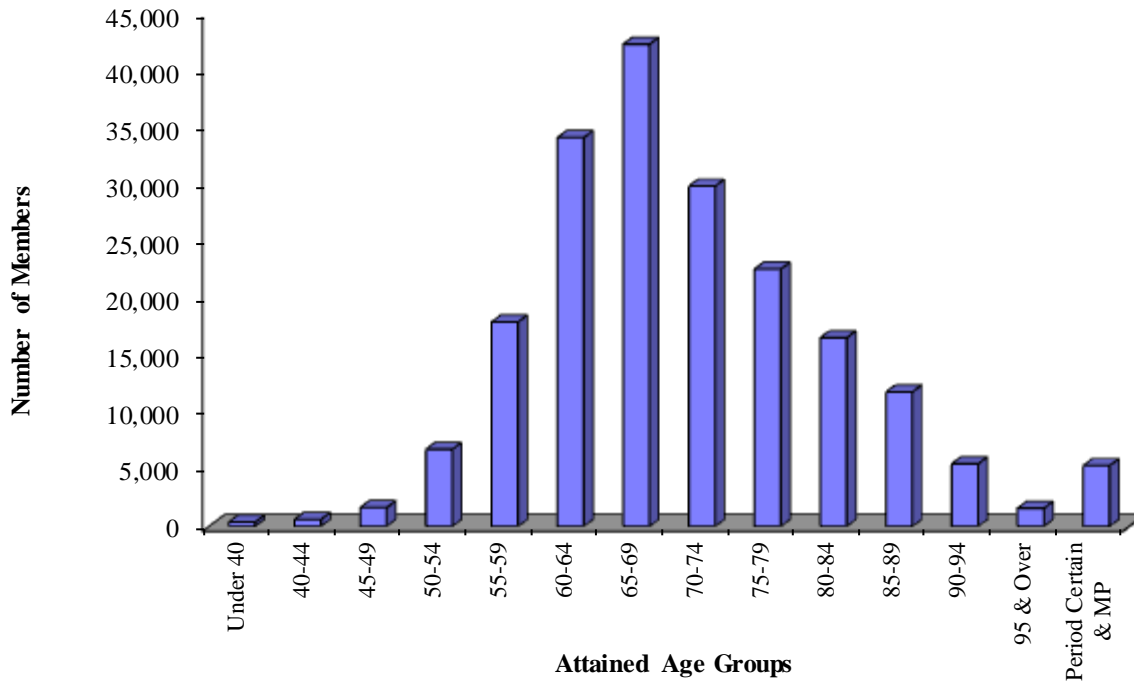
Annuity and Pension Reserve Fund



**ANNUITY AND PENSION RESERVE FUND
RETIREES AND BENEFICIARIES DECEMBER 31, 2015
CURRENT MONTHLY TOTAL \$ BY ATTAINED AGES**

Attained Ages	Superannuation		Disability		Totals	
	No.	Monthly Total	No.	Monthly Total	No.	Monthly Total
Under 20	11	\$ 8,441			11	\$ 8,441
20-24	26	12,509			26	12,509
25-29	34	28,617	2	\$ 3,218	36	31,835
30-34	30	26,815	41	63,603	71	90,418
35-39	46	29,878	188	323,655	234	353,533
40-44	51	36,631	558	1,097,984	609	1,134,615
45-49	278	640,698	1,372	3,402,858	1,650	4,043,556
50-54	3,754	11,679,487	3,007	8,088,317	6,761	19,767,804
55-59	13,169	42,674,251	4,745	12,375,381	17,914	55,049,632
60-64	28,668	76,985,609	5,404	13,211,895	34,072	90,197,504
65-69	38,870	91,636,748	3,376	8,154,351	42,246	99,791,099
70-74	27,999	56,282,028	1,816	3,727,002	29,815	60,009,030
75-79	21,618	38,346,073	935	1,668,240	22,553	40,014,313
80-84	16,091	25,703,742	442	634,531	16,533	26,338,273
85-89	11,531	16,190,524	243	310,551	11,774	16,501,075
90-94	5,411	6,605,800	81	85,223	5,492	6,691,023
95 & Over	1,562	1,623,474	23	21,041	1,585	1,644,515
Period Certain & Money Purchase	5,327	4,586,352			5,327	4,586,352
Totals	174,476	\$373,097,677	22,233	\$53,167,850	196,709	\$426,265,527

**ANNUITY AND PENSION RESERVE FUND
BENEFITS BEING PAID BY ATTAINED AGES
DECEMBER 31, 2015**



**ANNUITY AND PENSION RESERVE FUND
PERCENT OF RECIPIENTS
BY AGE GROUPS
AND YEAR**

Attained Age Group	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Under 30	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30-39	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%
40-49	1.1%	1.3%	1.5%	1.8%	2.0%	2.2%	2.5%	2.7%	2.9%	3.1%	3.3%	3.4%	3.5%	3.5%	3.3%
50-59	12.5%	13.7%	14.6%	15.4%	15.9%	15.9%	16.0%	15.9%	15.9%	16.1%	15.8%	14.7%	13.7%	12.9%	11.7%
60-69	38.8%	37.9%	36.5%	35.5%	34.8%	33.5%	32.6%	31.4%	30.7%	29.6%	28.9%	28.8%	28.6%	28.3%	28.1%
70-79	26.7%	26.2%	26.1%	25.8%	25.4%	25.7%	26.2%	26.7%	27.2%	27.7%	28.5%	29.4%	30.4%	31.5%	32.7%
80-89	14.4%	14.4%	14.8%	15.3%	15.8%	16.6%	16.9%	17.4%	17.7%	17.9%	18.0%	18.2%	18.3%	18.4%	18.7%
90 & Over	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%	3.4%	3.4%	3.3%	3.2%	3.2%	3.2%	3.2%	3.1%	3.1%
Period Certain & MP	2.7%	2.7%	2.7%	2.4%	2.3%	2.2%	2.1%	2.1%	1.9%	1.9%	1.8%	1.8%	1.8%	1.7%	1.8%
TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average Age	70.4	70.2	70.0	69.9	69.9	70.0	70.0	70.1	70.1	70.2	70.2	70.4	70.6	70.7	71.0

STATE DIVISION
SURVIVOR BENEFIT FUND TABULATED BY
TYPE OF BENEFIT BEING PAID AND MONTHLY AMOUNT
DECEMBER 31, 2015

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member Joint and Survivor Computation			
Men	174	\$ 196,585	\$ 20,351,777
Women	630	1,006,877	104,574,131
Totals	804	\$ 1,203,462	\$ 124,925,908
S-2 - Survivor Benefit to Beneficiary of Deceased Member Fixed Rate Amount			
Males			
Widower - no child	687	\$ 843,412	\$ 103,171,274
Widower - child	35	35,307	5,789,840
Child's record	91	55,604	3,838,417
Parent	0	0	0
Other	0	0	0
Child only	156	137,585	8,349,380
Subtotals - Male	969	\$ 1,071,908	\$ 121,148,911
Females			
Widow - no child	2,084	\$ 2,680,746	\$ 327,318,521
Widow - child	110	133,639	23,468,698
Child's record	114	72,382	5,416,515
Parent	0	0	0
Other	2	1,736	261,576
Child only	174	162,876	8,555,275
Subtotals - Female	2,484	\$ 3,051,379	\$ 365,020,585
Totals	3,453	\$ 4,123,287	\$ 486,169,496
Total Benefits Being Paid from Survivor Benefit Fund			
Men	1,143	\$ 1,268,493	\$ 141,500,688
Women	3,114	4,058,256	469,594,716
Totals	4,257	\$ 5,326,749	\$ 611,095,404

LOCAL GOVERNMENT DIVISION
SURVIVOR BENEFIT FUND TABULATED BY
TYPE OF BENEFIT BEING PAID AND MONTHLY AMOUNT
DECEMBER 31, 2015

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member Joint and Survivor Computation			
Men	249	\$ 225,307	\$ 21,981,407
Women	1,315	1,613,366	163,772,730
Totals	1,564	\$ 1,838,673	\$ 185,754,137
S-2 - Survivor Benefit to Beneficiary of Deceased Member Fixed Rate Amount			
Males			
Widower - no child	1,135	\$ 996,277	\$ 117,627,940
Widower - child	74	58,735	10,020,978
Child's record	197	98,339	6,892,650
Parent	0	0	0
Other	2	1,291	136,862
Child only	309	242,984	16,077,814
Subtotals - Male	1,717	\$ 1,397,626	\$ 150,756,244
Females			
Widow - no child	5,046	\$ 4,993,889	\$ 594,330,107
Widow - child	242	245,099	42,081,022
Child's record	267	149,467	11,541,731
Parent	2	2,275	157,910
Other	5	3,646	438,012
Child only	302	229,219	12,868,207
Subtotals - Female	5,864	\$ 5,623,595	\$ 661,416,989
Totals	7,581	\$ 7,021,221	\$ 812,173,233
Total Benefits Being Paid from Survivor Benefit Fund			
Men	1,966	\$ 1,622,933	\$ 172,737,651
Women	7,179	7,236,961	825,189,719
Totals	9,145	\$ 8,859,894	\$ 997,927,370

PUBLIC SAFETY DIVISION
SURVIVOR BENEFIT FUND TABULATED BY
TYPE OF BENEFIT BEING PAID AND MONTHLY AMOUNT
DECEMBER 31, 2015

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member Joint and Survivor Computation			
Men	0	\$ 0	\$ 0
Women	2	1,815	257,993
Totals	2	\$ 1,815	\$ 257,993
S-2 - Survivor Benefit to Beneficiary of Deceased Member Fixed Rate Amount			
Males			
Widower - no child	4	\$ 4,766	\$ 399,027
Widower - child	0	0	0
Child's record	0	0	0
Other	0	0	0
Child only	5	3,656	280,249
Subtotals - Male	9	\$ 8,422	\$ 679,276
Females			
Widow - no child	86	\$ 122,993	\$ 17,390,962
Widow - child	1	1,579	266,959
Child's record	1	822	51,303
Other	4	3,909	454,766
Child only	0	0	0
Subtotals - Female	92	\$ 129,303	\$ 18,163,990
Totals	101	\$ 137,725	\$ 18,843,266
Total Benefits Being Paid from Survivor Benefit Fund			
Men	9	\$ 8,422	\$ 679,276
Women	94	131,118	18,421,983
Totals	103	\$ 139,540	\$ 19,101,259

LAW ENFORCEMENT DIVISION
SURVIVOR BENEFIT FUND TABULATED BY
TYPE OF BENEFIT BEING PAID AND MONTHLY AMOUNT
DECEMBER 31, 2015

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member Joint and Survivor Computation			
Men	1	\$ 1,263	\$ 159,404
Women	57	106,602	12,284,860
Totals	58	\$ 107,865	\$ 12,444,264
S-2 - Survivor Benefit to Beneficiary of Deceased Member Fixed Rate Amount			
Males			
Widower - no child	7	\$ 6,830	\$ 1,003,778
Widower - child	1	868	159,350
Child's record	15	9,723	768,737
Other	0	0	0
Child only	28	28,822	1,436,457
Subtotals - Male	51	\$ 46,243	\$ 3,368,322
Females			
Widow - no child	153	\$ 183,161	\$ 25,697,470
Widow - child	25	30,959	5,643,547
Child's record	28	15,916	980,896
Other	22	18,279	869,134
Child only	0	0	0
Subtotals - Female	228	\$ 248,315	\$ 33,191,047
Totals	279	\$ 294,558	\$ 36,559,369
Total Benefits Being Paid from Survivor Benefit Fund			
Men	52	\$ 47,506	\$ 3,527,726
Women	285	354,917	45,475,907
Totals	337	\$ 402,423	\$ 49,003,633

**STATE DIVISION
DEFERRED SURVIVOR BENEFICIARIES
TABULATED BY GENDER AND DEFERRED AGE
DECEMBER 31, 2015**

Group	Number	Current Total	Actuarial Liabilities
Widowers - Male			
Deferred to age 50	0	\$ 0	\$ 0
Deferred to age 62	59	45,982	4,010,286
Deferred to age 65	0	0	0
Total - Male	59	\$ 45,982	\$ 4,010,286
Widows - Female			
Deferred to age 50	1	\$ 887	\$ 117,740
Deferred to age 62	179	131,626	12,124,813
Deferred to age 65	1	951	59,652
Total - Female	181	\$ 133,464	\$ 12,302,205
Totals	240	\$ 179,446	\$ 16,312,491

**LOCAL GOVERNMENT DIVISION
DEFERRED SURVIVOR BENEFICIARIES
TABULATED BY GENDER AND DEFERRED AGE
DECEMBER 31, 2015**

Group	Number	Current Total	Actuarial Liabilities
Widowers - Males			
Deferred to age 50	0	\$ 0	\$ 0
Deferred to age 62	116	58,273	4,995,445
Deferred to age 65	0	0	0
Total - Male	116	\$ 58,273	\$ 4,995,445
Widows - Female			
Deferred to age 50	1	\$ 1,042	\$ 164,803
Deferred to age 62	384	233,424	21,981,866
Deferred to age 65	0	0	0
Total - Female	385	\$ 234,466	\$ 22,146,669
Totals	501	\$ 292,739	\$ 27,142,114

**PUBLIC SAFETY DIVISION
 DEFERRED SURVIVOR BENEFICIARIES
 TABULATED BY GENDER AND DEFERRED AGE
 DECEMBER 31, 2015**

Group	Number	Current Total	Actuarial Liabilities
Widowers - Males			
Deferred to age 50	0	\$ 0	\$ 0
Total - Male	0	\$ 0	\$ 0
Widows - Females			
Deferred to age 50	0	\$ 0	\$ 0
Deferred to age 62	2	953	49,565
Total - Female	2	\$ 953	\$ 49,565
Totals	2	\$ 953	\$ 49,565

**LAW ENFORCEMENT DIVISION
 DEFERRED SURVIVOR BENEFICIARIES
 TABULATED BY GENDER AND DEFERRED AGE
 DECEMBER 31, 2015**

Group	Number	Current Total	Actuarial Liabilities
Widowers - Males			
Deferred to age 50	0	\$ 0	\$ 0
Deferred to age 62	0	0	0
Total - Male	0	\$ 0	\$ 0
Widows - Females			
Deferred to age 50	0	\$ 0	\$ 0
Deferred to age 62	7	6,528	712,633
Total - Female	7	\$ 6,528	\$ 712,633
Totals	7	\$ 6,528	\$ 712,633

SURVIVOR BENEFIT FUND
REPORTED ASSETS AND LIABILITIES
DIVISIONS COMBINED

Valuation Date	Monthly Allowances				\$ Millions		Ratio of Assets to Liabilities
	Current		Deferred		Reported Assets+	Actuarial Liabilities	
	No.	Amount	No.	Amount			
12/31/1981@	9,629	\$ 2,468,950	1,045	\$ 191,228	\$ 460.6	\$ 336.0	137 %
12/31/1982@	9,913	2,654,686	1,006	199,239	499.7	330.6	151 %
12/31/1983	10,132	2,812,639	1,020	225,475	454.7	352.8	129 %
12/31/1984*	11,819	3,119,531	990	248,373	492.2	451.1	109 %
12/31/1985	11,889	3,278,253	979	259,842	532.8	469.6	113 %
12/31/1986	12,054	3,489,915	960	268,931	575.5	451.2	128 %
12/31/1987	12,153	3,656,420	933	279,327	626.1	472.9	132 %
12/31/1988	12,237	3,822,085	941	283,026	490.8	490.8	100 %
12/31/1989@	12,198	4,177,540	941	320,792	525.3	522.1	101 %
12/31/1990	12,182	4,330,622	907	321,218	542.5	537.1	101 %
12/31/1991	12,268	4,528,326	860	314,414	567.9	557.1	102 %
12/31/1992	12,318	4,750,848	852	329,509	589.8	583.3	101 %
12/31/1993	12,437	4,985,681	862	345,937	620.7	607.7	102 %
12/31/1994	12,569	5,207,186	845	347,178	641.5	628.5	102 %
12/31/1995	12,608	5,408,577	866	376,573	668.9	652.4	103 %
12/31/1996@	12,724	5,822,113	878	395,594	711.6	710.6	100 %
12/31/1997	12,856	6,074,566	932	433,430	743.0	740.5	100 %
12/13/1998	13,079	6,337,739	1,060	500,514	780.2	779.6	100 %
12/31/1999#	13,236	7,345,740	989	550,153	801.4	910.9	88 %
12/31/2000	13,317	9,026,315	666	348,886	1,037.4	1,037.4	100 %
12/31/2001@	13,588	9,449,543	993	490,441	1,086.4	1,086.4	100 %
12/31/2002	13,708	9,764,826	902	470,284	1,120.2	1,120.2	100 %
12/31/2003	13,988	10,246,174	842	493,329	1,193.1	1,193.1	100 %
12/31/2004	13,903	10,503,169	858	524,733	1,227.1	1,227.1	100 %
12/31/2005@	14,108	10,948,727	831	528,162	1,289.3	1,289.3	100 %
12/31/2006	14,172	11,333,735	832	508,430	1,332.6	1,332.6	100 %
12/31/2007	14,186	11,714,551	832	510,846	1,375.9	1,375.9	100 %
12/31/2008	14,238	12,122,501	847	526,623	1,425.6	1,425.6	100 %
12/31/2009	14,301	12,576,956	840	527,032	1,479.4	1,479.4	100 %
12/31/2010@	14,407	13,047,857	829	524,242	1,545.7	1,545.7	100 %
12/31/2011	14,370	13,424,237	800	505,111	1,589.7	1,589.7	100 %
12/31/2012#	14,224	13,769,795	796	519,459	1,629.3	1,629.3	100 %
12/31/2013	14,187	14,152,417	751	480,335	1,663.5	1,663.5	100 %
12/31/2014	13,974	14,406,311	739	474,837	1,688.7	1,688.7	100 %
12/31/2015	13,842	14,728,606	750	479,666	1,721.3	1,721.3	100 %

@ Revised actuarial assumptions.

* Benefits increased.

After benefit changes.

+ Includes certain recommended transfers and accrued transfers.

RETIREES AND BENEFICIARIES DECEMBER 31, 2015 HISTORICAL AVERAGES

All Retirees								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2015	211,301	57.6	22.8	\$20,076	69.9	\$25,579	\$22,056	\$40,604
2014	208,809	57.6	22.8	19,673	69.7	24,833	21,348	39,753
2013	202,136	57.4	22.8	19,290	69.5	24,209	20,784	38,763
2012	195,779	57.4	22.7	18,827	69.3	23,461	20,088	37,743
2011	189,849	57.3	22.6	18,218	69.3	22,611	19,212	36,552
2010	181,483	57.2	22.4	17,379	69.3	21,598	18,144	35,025
2009	174,659	57.2	22.2	16,724	69.3	20,730	17,256	33,808
2008	169,016	57.2	22.0	15,942	69.4	19,750	16,284	32,401
2007	163,511	57.2	21.9	15,318	69.4	18,917	15,480	31,214
2006	159,041	57.3	21.7	14,711	69.4	18,096	14,700	29,975
Traditional Plan								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2015	210,792	57.6	22.9	\$20,092	69.9	\$25,600	\$22,080	\$40,600
2014	208,395	57.6	22.8	19,686	69.7	24,849	21,372	39,749
2013	201,841	57.4	22.8	19,299	69.5	24,220	20,796	38,760
2012	195,622	57.4	22.7	18,832	69.3	23,468	20,088	37,741
2011	189,753	57.3	22.6	18,221	69.3	22,614	19,224	36,549
2010	181,433	57.2	22.4	17,380	69.3	21,600	18,144	35,025
2009	174,637	57.2	22.2	16,725	69.3	20,731	17,256	33,808
2008	169,000	57.2	22.0	15,942	69.4	19,751	16,284	32,401
2007	163,505	57.2	21.9	15,318	69.4	18,917	15,480	31,214
2006	159,039	57.3	21.7	14,711	69.4	18,096	14,700	29,974
Combined Plan								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2015	324	64.6	9.8	\$3,401	67.3	\$3,596	\$3,186	\$45,141
2014	259	64.7	9.7	3,284	66.8	3,421	3,030	44,349
2013	164	64.9	8.7	2,839	67.0	2,962	2,682	43,403
2012	95	64.2	8.5	2,785	66.2	2,891	2,556	45,218
2011	58	64.2	7.9	2,757	66.0	2,828	2,202	49,751
2010	32	64.3	7.9	2,158	65.9	2,219	1,962	40,548
2009	12	65.0	7.6	1,590	66.6	1,635	1,740	35,139
2008	12	64.0	7.4	1,239	64.8	1,260	1,092	29,454
2007	4	61.1	4.8	1,620	62.0	1,644	1,644	43,743
2006	2	62.1	3.8	1,656	62.3	1,656	1,656	50,116
Member Directed Plan								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2015	185	NA	NA	NA	NA	NA	NA	NA
2014	155	NA	NA	NA	NA	NA	NA	NA
2013	131	NA	NA	NA	NA	NA	NA	NA
2012	62	NA	NA	NA	NA	NA	NA	NA
2011	38	NA	NA	NA	NA	NA	NA	NA
2010	18	NA	NA	NA	NA	NA	NA	NA
2009	10	NA	NA	NA	NA	NA	NA	NA
2008	4	NA	NA	NA	NA	NA	NA	NA
2007	2	NA	NA	NA	NA	NA	NA	NA
2006	NA							

SECTION X

ACTUARIAL METHODS AND ASSUMPTIONS

**SUMMARY OF
ACTUARIAL METHODS AND ASSUMPTIONS USED FOR OPERS
ACTUARIAL VALUATIONS
ASSUMPTIONS ADOPTED BY THE RETIREMENT BOARD
AFTER CONSULTING WITH THE ACTUARY**

The individual entry age actuarial cost method of valuation was used in determining liabilities and normal cost. Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce payments (principal & interest) which are level percent of payroll contributions.

The actuarial assumptions used in the valuation are shown in this Section. Assumptions were established following the December 31, 2010 actuarial valuation based upon an Experience Study covering the period January 1, 2006 through December 31, 2010 and updated in conjunction with the passage of Senate Bill 343. The actuarial assumptions represent estimates of future experience.

ECONOMIC ASSUMPTIONS

The investment return rate assumed in the valuations was 8.00% per year, compounded annually (net after administrative expenses).

The wage inflation rate assumed in this valuation was 3.75% per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macroeconomic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes related to individual merit and seniority effects.

The price inflation component of the investment return rate and the wage inflation rate is assumed to be 3.00%.

The assumed real rate of return over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 8.00% investment return rate translates to an assumed real rate of return over wage inflation of 4.25%. The assumed real rate of return over price inflation is 5.00%.

The active member population (the sum of the Traditional and Combined Plan active members) is assumed to remain constant. For purposes of financing the unfunded actuarial accrued liabilities, total payroll (the sum of the Traditional and Combined Plan active payroll) is assumed to grow at the wage inflation rate – 3.75% per year.

Pay increase assumptions for individual active members are shown for sample ages on pages X-8 through X-11. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.75% recognizes wage inflation, including price inflation, productivity increases, and other macroeconomic forces.

NON-ECONOMIC ASSUMPTIONS

The post-retirement mortality rates used in evaluating age and service and survivor benefit allowances to be paid are based upon the RP-2000 mortality table projected 20 years using Projection Scale AA. For males, 105% of the Combined Healthy male mortality rates are used. For females, 100% of the Combined Healthy female mortality rates are used. Related values are shown on page X-12. The mortality rates used in evaluating disability allowances are based upon the RP-2000 mortality table with no projection. For males, 120% of the Disabled female mortality rates are used set forward 2 years. For females, 100% of the Disabled female mortality rates are used. The mortality rates were established based upon the experience of the OPERS membership in total. Based upon the experience observed during the most recent 5-year period study, it appears that the current rates provide for an approximate 13% margin for future mortality improvement.

The probabilities of unreduced and reduced age and service retirement are shown on pages X-3 through X-7. For State and Local Government members that satisfy the 30-year unreduced retirement condition prior to age 65, the service-based unreduced retirement probabilities are used. For State and Local Government members that satisfy the 30-year unreduced retirement condition on or after age 65, the age-based unreduced retirement probabilities are used.

The probabilities of withdrawal from service, disability and death-in-service are shown for sample ages on pages X-8 through X-11. For withdrawal from service it was assumed that members terminating before age 35, members terminating with less than 5 years of service, and a percentage of all other members would withdraw their contributions and forfeit their entitlement to an employer financed benefit. The percentage is 100% at age 35 and is reduced for each year of age after 35, becoming 0% at age 55 (age 45 for law members).

For purposes of death-in-service and disability benefits, it is assumed that Combined Plan members will take a benefit from the Traditional Plan, unless a lump sum distribution from the Combined Plan would have a greater value. It is assumed death-in-service members have 2 qualified survivor beneficiaries.

The funding value of defined benefit assets recognizes assumed investment return fully each year. Differences between actual and assumed investment return are phased-in over a closed 4-year period. Funding value is not permitted to deviate from market value by more than 12%. Traditional and Combined Plan retiree health funding values of assets are developed independently beginning with the December 31, 2004 valuation.

Present assets (cash & investments) at funding value are shown on pages II-2 through II-9.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA). Great care was taken in the production of this report, but there may be cases where schedules do not add, or where they do not exactly balance to other related schedules due to rounding.

PROBABILITIES OF UNREDUCED AGE AND SERVICE RETIREMENT

Transition Group A

Ages	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
65	22%	22%	20%	20%
66	22%	22%	20%	20%
67	20%	20%	15%	20%
68	20%	20%	15%	17%
69	20%	20%	15%	17%
70	20%	20%	15%	17%
71	20%	20%	15%	17%
72	15%	20%	15%	17%
73	15%	20%	15%	17%
74	15%	20%	15%	17%
75	15%	20%	15%	17%
76	15%	20%	15%	17%
77	15%	25%	15%	17%
78	15%	25%	15%	17%
79	15%	25%	15%	22%
80	25%	25%	20%	22%
81	25%	25%	20%	22%
82	25%	25%	20%	22%
83	25%	25%	20%	22%
84	25%	25%	20%	22%
85 & Over	100%	100%	100%	100%
Ref	2094	2095	2096	2097

Ages	Percent of Eligible Active Members Retiring Within Next Year	
	Public Safety	Law Enforcement
	48	
49		20%
50		20%
51		20%
52	30%	20%
53	30%	20%
54	25%	20%
55	25%	20%
56	25%	23%
57	25%	23%
58	20%	25%
59	20%	25%
60	35%	30%
61	35%	25%
62	35%	25%
63	35%	25%
64	35%	25%
65	35%	25%
66	35%	25%
67	35%	25%
68	35%	25%
69	35%	25%
70 & Over	100%	100%
Ref	1334	2084

Service	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
30	37%	40%	35%	35%
31	28%	33%	26%	30%
32-39	24%	26%	23%	24%
40	35%	33%	32%	24%
41	35%	33%	32%	24%
42	35%	33%	32%	24%
43	35%	33%	32%	20%
44	35%	33%	32%	20%
45	25%	25%	32%	20%
46	25%	25%	25%	20%
47	25%	25%	25%	20%
48	25%	25%	25%	20%
49	25%	25%	25%	20%
50 & Over	100%	100%	100%	100%
Ref	2091	2093	2098	2099

PROBABILITIES OF UNREDUCED AGE AND SERVICE RETIREMENT

Transition Group B

Ages	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
66	22%	22%	20%	20%
67	22%	22%	20%	20%
68	20%	20%	15%	20%
69	20%	20%	15%	17%
70	20%	20%	15%	17%
71	20%	20%	15%	17%
72	20%	20%	15%	17%
73	15%	20%	15%	17%
74	15%	20%	15%	17%
75	15%	20%	15%	17%
76	15%	20%	15%	17%
77	15%	20%	15%	17%
78	15%	25%	15%	17%
79	15%	25%	15%	17%
80	15%	25%	15%	22%
81	25%	25%	20%	22%
82	25%	25%	20%	22%
83	25%	25%	20%	22%
84	25%	25%	20%	22%
85 & Over	100%	100%	100%	100%
Ref	2094	2095	2096	2097

Ages	Percent of Eligible Active Members Retiring Within Next Year	
	Public Safety	Law Enforcement
	50	
51		20%
52		20%
53		20%
54	25%	20%
55	25%	20%
56	25%	20%
57	25%	20%
58	20%	23%
59	20%	23%
60	35%	25%
61	35%	25%
62	35%	30%
63	35%	25%
64	35%	25%
65	35%	25%
66	35%	25%
67	35%	25%
68	35%	25%
69	35%	25%
70	100%	25%
71	100%	25%
72 & Over	100%	100%
Ref	1334	2084

Service	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
31	37%	40%	35%	35%
32	28%	33%	26%	30%
33-40	24%	26%	23%	24%
41	35%	33%	32%	24%
42	35%	33%	32%	24%
43	35%	33%	32%	24%
44	35%	33%	32%	20%
45	35%	33%	32%	20%
46	25%	25%	32%	20%
47	25%	25%	25%	20%
48	25%	25%	25%	20%
49	25%	25%	25%	20%
50	25%	25%	25%	20%
51 & Over	100%	100%	100%	100%
Ref	2091	2093	2098	2099

PROBABILITIES OF UNREDUCED AGE AND SERVICE RETIREMENT

Transition Group C

67&5 Condition	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
Age				
67	22%	22%	20%	20%
68	22%	22%	20%	20%
69	20%	20%	15%	20%
70	20%	20%	15%	17%
71	20%	20%	15%	17%
72	20%	20%	15%	17%
73	20%	20%	15%	17%
74	15%	20%	15%	17%
75	15%	20%	15%	17%
76	15%	20%	15%	17%
77	15%	20%	15%	17%
78	15%	20%	15%	17%
79	15%	25%	15%	17%
80	15%	25%	15%	17%
81	15%	25%	15%	22%
82	25%	25%	20%	22%
83	25%	25%	20%	22%
84	25%	25%	20%	22%
85 & Over	100%	100%	100%	100%
Ref	2094	2095	2096	2097

Ages	Percent of Eligible Active Members Retiring Within Next Year	
	Public Safety	Law Enforcement
	52	
53		20%
54		20%
55		20%
56	25%	20%
57	25%	20%
58	20%	20%
59	20%	20%
60	35%	23%
61	35%	23%
62	35%	25%
63	35%	25%
64	35%	30%
65	35%	25%
66	35%	25%
67	35%	25%
68	35%	25%
69	35%	25%
70	100%	25%
71	100%	25%
72	100%	25%
73	100%	25%
74 & Over	100%	100%
Ref	1334	2084

55&32 Condition	Percent of Eligible Active Members Retiring Within Next Year				
	Year of Eligibility	State		Local Government	
		Men	Women	Men	Women
1	37%	40%	35%	35%	
2	28%	33%	26%	30%	
3-10	24%	26%	23%	24%	
11	35%	33%	32%	24%	
12	35%	33%	32%	24%	
13	35%	33%	32%	24%	
14	35%	33%	32%	20%	
15	35%	33%	32%	20%	
16	25%	25%	32%	20%	
17	25%	25%	25%	20%	
18	25%	25%	25%	20%	
19	25%	25%	25%	20%	
20	25%	25%	25%	20%	
21 & over	100%	100%	100%	100%	
Ref	2091	2093	2098	2099	

PROBABILITIES OF REDUCED RETIREMENT

Transition Group A

Ages	Percent of Eligible Active Members Retiring Within Next Year				
	State		Local Government		Public Safety
	Men	Women	Men	Women	
48					8%
49					8%
50					8%
51					8%
52					
53					
54					
55	10%	10%	9%	11%	
56	10%	10%	9%	11%	
57	10%	10%	9%	11%	
58	10%	10%	9%	11%	
59	10%	11%	9%	11%	
60	10%	12%	9%	11%	
61	10%	13%	9%	12%	
62	15%	15%	13%	13%	
63	15%	15%	14%	14%	
64	15%	15%	12%	15%	
Ref	2085	2086	2087	2088	1496

Transition Group B

Ages	Percent of Eligible Active Members Retiring Within Next Year					
	State		Local Government		Public Safety	Law Enforcement
	Men	Women	Men	Women		
48					8%	8%
49					8%	8%
50					8%	
51					8%	
52					8%	
53					8%	
54						
55	10%	10%	9%	11%		
56	10%	10%	9%	11%		
57	10%	10%	9%	11%		
58	10%	10%	9%	11%		
59	10%	11%	9%	11%		
60	10%	12%	9%	11%		
61	10%	13%	9%	12%		
62	15%	15%	13%	13%		
63	15%	15%	14%	14%		
64	15%	15%	12%	15%		
65	15%	15%	12%	15%		
Ref	2085	2086	2087	2088	469	1496

PROBABILITIES OF REDUCED RETIREMENT

Transition Group C

Ages	Percent of Eligible Active Members Retiring Within Next Year					
	State		Local Government		Public Safety	Law Enforcement
	Men	Women	Men	Women		
48						8%
49						8%
50						8%
51						8%
52					8%	
53					8%	
54					8%	
55					8%	
56						
57	10%	10%	9%	11%		
58	10%	10%	9%	11%		
59	10%	10%	9%	11%		
60	10%	10%	9%	11%		
61	10%	11%	9%	11%		
62	10%	12%	9%	11%		
63	10%	13%	9%	12%		
64	15%	15%	13%	13%		
65	15%	15%	14%	14%		
66	15%	15%	12%	15%		
Ref	2085	2086	2087	2088	1496	1496

STATE
SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE & SERVICE RETIREMENT
& INDIVIDUAL PAY INCREASE ASSUMPTIONS

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			45.00%	45.00%					
	1			30.00%	30.00%					
	2			17.00%	18.00%					
	3			12.00%	13.00%					
	4			10.00%	10.00%					
25	5 & Over	0.03%	0.01%	7.20%	8.28%	0.12%	0.12%	4.30%	3.75%	8.05%
30		0.04%	0.02%	5.16%	6.66%	0.15%	0.15%	3.00%	3.75%	6.75%
35		0.07%	0.03%	3.82%	4.82%	0.26%	0.26%	2.20%	3.75%	5.95%
40		0.10%	0.04%	2.82%	3.32%	0.42%	0.42%	1.80%	3.75%	5.55%
45		0.14%	0.06%	2.14%	2.50%	0.58%	0.58%	1.40%	3.75%	5.15%
50		0.19%	0.09%	1.90%	2.30%	0.74%	0.74%	1.20%	3.75%	4.95%
55		0.33%	0.17%	1.90%	2.30%	1.10%	1.10%	0.90%	3.75%	4.65%
60	0.61%	0.34%	1.90%	2.30%	1.78%	1.78%	0.70%	3.75%	4.45%	
Ref		#506x0.9sb0	#455x0.75sb0	751 #1202x1	755 #1203x1	#385x0.808	#385x0.808	301		

The pay increase assumptions are age based only, and not service based.

**LOCAL GOVERNMENT
SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE & SERVICE RETIREMENT
& INDIVIDUAL PAY INCREASE ASSUMPTIONS**

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			40.00%	40.00%					
	1			26.00%	26.00%					
	2			16.00%	17.00%					
	3			11.00%	13.00%					
	4			10.00%	10.00%					
25	5 & Over	0.03%	0.01%	6.74%	8.30%	0.11%	0.10%	4.30%	3.75%	8.05%
30		0.04%	0.02%	5.24%	6.54%	0.14%	0.11%	3.00%	3.75%	6.75%
35		0.07%	0.03%	3.96%	4.94%	0.23%	0.17%	2.20%	3.75%	5.95%
40		0.10%	0.04%	2.86%	3.52%	0.36%	0.27%	1.80%	3.75%	5.55%
45		0.14%	0.06%	2.38%	2.76%	0.50%	0.36%	1.40%	3.75%	5.15%
50		0.19%	0.09%	2.30%	2.60%	0.73%	0.53%	1.20%	3.75%	4.95%
55		0.33%	0.17%	2.30%	2.60%	1.08%	0.79%	0.90%	3.75%	4.65%
60	0.61%	0.34%	2.30%	2.60%	1.24%	1.09%	0.70%	3.75%	4.45%	
Ref		#506x0.9sb0	#455x0.75sb0	752 #1205x1	754 #1206x1	#333x0.808	#334x0.808	301		

The pay increase assumptions are age based only, and not service based.

PUBLIC SAFETY
SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE & SERVICE RETIREMENT
& INDIVIDUAL PAY INCREASE ASSUMPTIONS

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			19.00%	19.00%					
	1			17.00%	17.00%					
	2			10.00%	10.00%					
	3			10.00%	10.00%					
	4			10.00%	10.00%					
25	5 & Over	0.03%	0.01%	10.00%	10.00%	0.21%	0.34%	6.30%	3.75%	10.05%
30		0.04%	0.02%	8.80%	8.80%	0.38%	0.45%	4.00%	3.75%	7.75%
35		0.07%	0.03%	6.20%	6.20%	0.65%	0.88%	1.60%	3.75%	5.35%
40		0.10%	0.04%	3.50%	3.50%	0.83%	1.22%	0.85%	3.75%	4.60%
45		0.14%	0.06%	2.20%	2.20%	1.01%	1.60%	0.60%	3.75%	4.35%
50		0.19%	0.09%	2.00%	2.00%	1.70%	2.01%	0.50%	3.75%	4.25%
55		0.33%	0.17%	2.00%	2.00%	2.37%	2.92%	0.50%	3.75%	4.25%
60	0.61%	0.34%	2.00%	2.00%	3.01%	3.44%	0.50%	3.75%	4.25%	
Ref		#506x0.9sb0	#455x0.75sb0	756 #1211x1	756 #1211x1	#699x0.86	#743x0.86	303		

The pay increase assumptions are age based only, and not service based.

LAW ENFORCEMENT
SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE & SERVICE RETIREMENT
& INDIVIDUAL PAY INCREASE ASSUMPTIONS

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			16.00%	16.00%					
	1			10.00%	12.00%					
	2			8.00%	8.00%					
	3			6.00%	7.00%					
	4			5.00%	7.00%					
25	5 & Over	0.03%	0.01%	3.54%	3.80%	0.21%	0.34%	6.30%	3.75%	10.05%
30		0.04%	0.02%	2.66%	2.90%	0.38%	0.45%	4.00%	3.75%	7.75%
35		0.07%	0.03%	2.14%	2.30%	0.65%	0.88%	1.60%	3.75%	5.35%
40		0.10%	0.04%	1.48%	1.50%	0.83%	1.22%	0.85%	3.75%	4.60%
45		0.14%	0.06%	1.20%	1.30%	1.01%	1.60%	0.60%	3.75%	4.35%
50		0.19%	0.09%	1.20%	1.20%	1.70%	2.01%	0.50%	3.75%	4.25%
55		0.33%	0.17%	1.20%	1.20%	2.37%	2.92%	0.50%	3.75%	4.25%
60		0.61%	0.34%	1.20%	1.20%	3.01%	3.44%	0.50%	3.75%	4.25%
Ref		#506x0.9sb0	#455x0.75sb0	753 #876x1	445 #575x1	#699x0.86	#743x0.86	303		

The pay increase assumptions are age based only, and not service based.

SINGLE LIFE RETIREMENT VALUES

Sample Attained Ages	Present Value of \$1 Monthly for Life Increasing 3.0% Annually (First Increase After 1 Year)		Future Life Expectancy (years)	
	Males	Females	Males	Females
50	\$177.31	\$181.07	32.36	34.63
55	165.65	170.43	27.64	29.88
60	151.34	157.52	23.09	25.31
65	134.71	142.57	18.81	21.02
70	116.28	125.95	14.89	17.06
75	95.74	107.82	11.29	13.47
80	74.64	88.38	8.17	10.23
Ref:	:#454x1.05sb0	:#455x1sb0		

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

DECEMBER 31, 2015

Marriage Assumption:	70% of males and 60% of females are assumed to be married for purposes of death-in-service benefits for State and Local members. 90% of males and 90% of females are assumed to be married for purposes of death-in-service benefits for Law members. Male spouses are assumed to be three years older than female spouses for active member valuation purposes. In retired or inactive cases where spouse information is needed, but not available, the three year age difference is also assumed.
Pay Increase Timing:	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Final Average Salary:	For present value of future benefit purposes, final average salary was calculated in accordance with pay increase assumptions, but was not permitted to fall below the final average salary reported in the data.
Decrement Timing:	Decrements are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and mortality decrements do not operate during the first 5 years of service.
Death after Disability:	Death after disability benefits were approximated by assuming that the disability benefit would be paid as a joint and 35% survivor benefit for people in the original disability plan and as a joint and 20% survivor benefit for people in the post 1992 plan.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year. A (0.80)% factor is applied to State active member liabilities (other than for refunds) and a (1.00)% factor is applied to Local active member liabilities (other than for refunds) to recognize that a portion of the membership is part time.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

DECEMBER 31, 2015 (CONCLUDED)

Miscellaneous Loads:	<ul style="list-style-type: none">• A load of approximately 0.35% of payroll is included in the computed normal cost to recognize subsidized service purchases.• Law active accrued liabilities for retirement are reduced by 10% to recognize that total service reported is not entirely Law service, and that non-Law service cannot be used to satisfy Law eligibility conditions.• A load of approximately 1% of Combined Plan payroll is included in the Combined Plan computed normal cost to recognize expected administrative expenses.• Approximately \$3 million was added to the Combined Plan actuarial accrued liability to reflect assumed future transfers out of Combined Plan assets to repay start-up loans.
Transition Groups Under Senate Bill #343:	A member's transition group (i.e., Group A, Group B, or Group C) was determined as of the valuation date based upon the assumption (for transition group determination only) that active members would continue in active service.
Cost-of-Living Adjustments:	For individuals retiring after January 7, 2013, cost-of-living adjustments were assumed to be 3% for calendar years 2013 through 2018 and 2.8% thereafter.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon contribution rates presented in the Summary of Benefits, and the actual payroll payable at the time contributions are made.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Normal Form of Benefit:	The assumed normal form of benefit is a straight life benefit, except where otherwise noted.
Missing Member Data and Member Data Adjustments:	Active and inactive records with missing dates of birth, if any, were given dates of birth that resulted in an entry age of 30 based upon the reported service. Active and inactive records with missing gender codes, if any, were assumed to be female. For active members with less than 6 months of service credit and a reported annualized salary greater than \$200,000, the annual salary used for valuation purposes was the greater of the member's reported FAS and non-annualized gross salary.

SECTION XI
FINANCIAL PRINCIPLES

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES OF OPERS

Promises Made, and To Be Paid For. As each year is completed, OPERS in effect hands an “IOU” to each member then acquiring a year of service credit --- the “IOU” says: “The Ohio Public Employees Retirement System owes you one year’s worth of retirement benefits, payments in cash commencing when you qualify for retirement.”

The related *key financial questions* are:

Which generation of taxpayers contributes the money to cover the IOU?

The present taxpayers, who receive the benefit of the member’s present year of service? ***Or the future taxpayers***, who happen to be in Ohio at the time the IOU becomes a cash demand, years and often decades later?

The law governing OPERS financing intends that this year’s taxpayers contribute the money to cover the IOUs being handed out this year. With this financial objective, ***the employer contribution rate is expected to remain approximately level from generation to generation of taxpayers.***

There are systems which have a design for deferring contributions to future taxpayers. Lured by a lower contribution rate now, they put aside the consequence that the contribution rate must then relentlessly grow to a level much higher than would be required if a level contribution pattern were followed.

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. ***Investment income*** becomes ***the 3rd and largest contributor*** for benefits to employees, and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

Normal Cost (the cost of members' service being rendered this year)

... plus ...

Interest on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between: liabilities for service already rendered; and the accrued assets of OPERS).

Computing Contributions to Support Fund Benefits. From a given schedule of benefits and from employee and asset data, the actuary calculates the contribution rates to support the benefits by means of *an actuarial valuation and a funding method.*

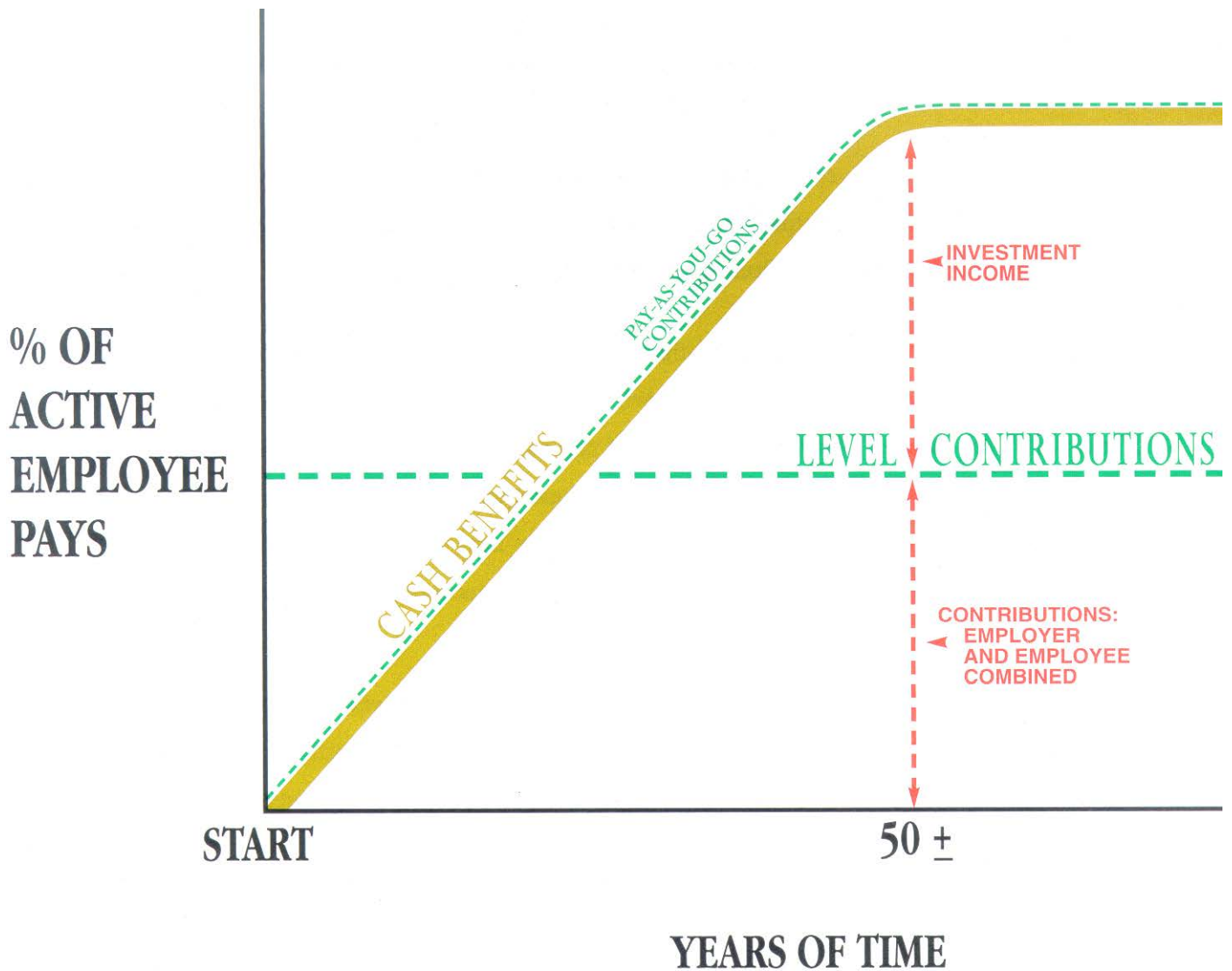
An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement.

In an actuarial valuation, assumptions must be made as to what the above rates will be for the next year and for decades in the future. The assumptions are established by the Retirement Board after receiving the advice of the actuary.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and has been observed, it will not coincide exactly with assumed experience, regardless of the skill of the actuary and the many calculations made. The future can not be predicted with 100% precision.

OPERS copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is *continuing adjustments in financial position.*

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CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

THE ACTUARIAL VALUATION PROCESS

The financing diagram on the opposite page shows the relationship between *the two fundamentally different philosophies of paying* for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is thus an *increasing contribution method*; and, the *level contribution method* which attempts to equalize contributions between the generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined. The activity constituting the valuation may be summarized as follows:

- A. **Census Data**, including:
 - Retired lives now receiving benefits
 - Former employees with vested benefits not yet payable
 - Active employees

- B. + **Asset data** (cash & investments)

- C. + **Benefit provisions** that establish eligibility and amounts of payments to members

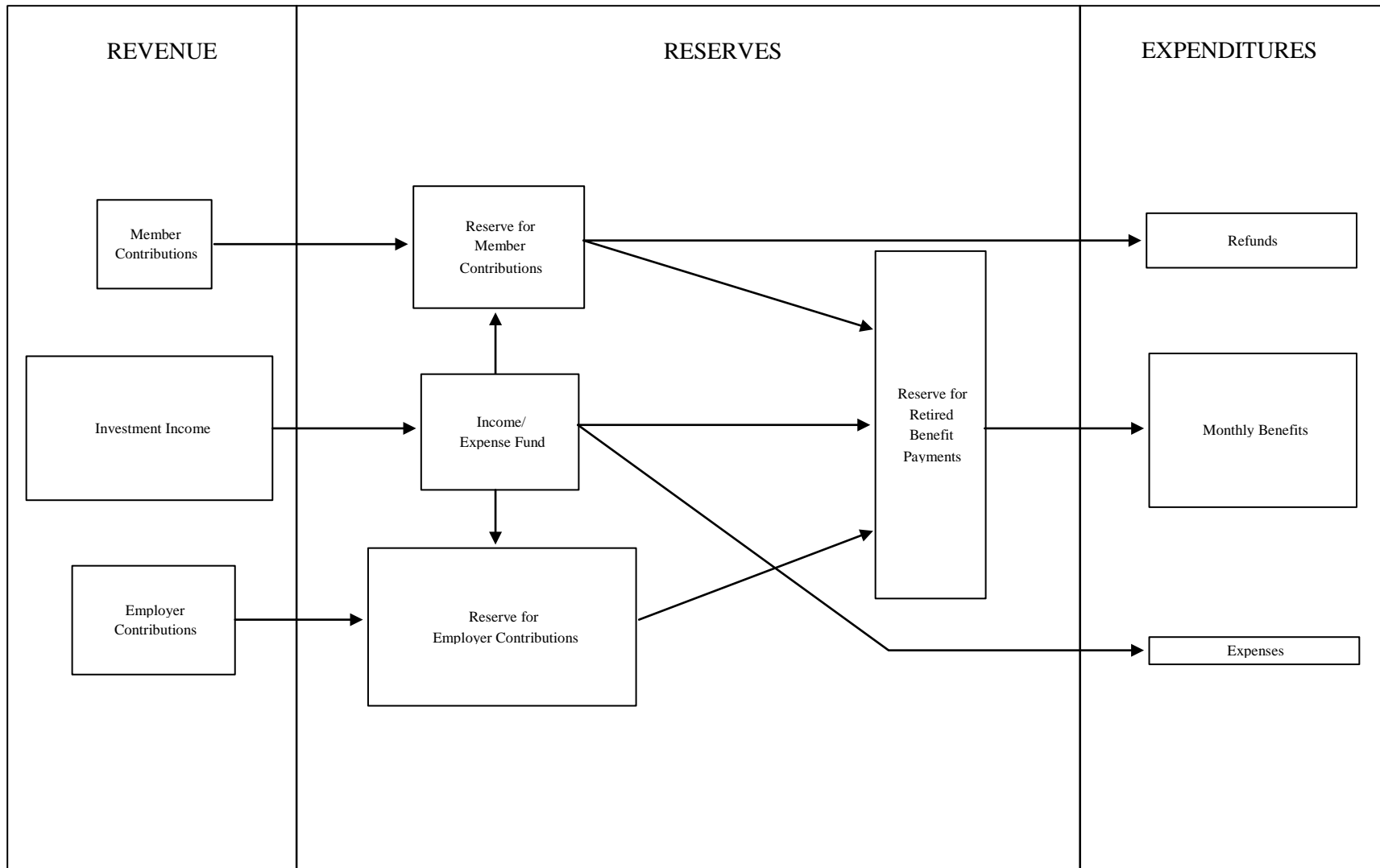
- D. + **Assumptions concerning future experience** in various risk areas

- E. + **The funding method** for employer contributions (the long-term, planned pattern for employer contributions)

- F. + **Mathematically combining the assumptions, the funding method, and the data**

- G. = Determination of:
 - Plan Financial Position; and/or
 - New Employer Contribution Rate

Flow of Money Through the Retirement System



GLOSSARY

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Accumulated Benefit Obligation. The actuarial present value of vested and non-vested benefits based on service to date and past and current salary levels.

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuary. A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries (MAAA). The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation ASA and ultimately to Fellowship with the designation FSA.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (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, in accordance with the actuarial cost method being used.

Funding Value of Assets. The value of current plan assets recognized for valuation purposes. Generally based on a phased-in recognition of all or a portion of market related investment return. Sometimes referred to as Actuarial Value of Assets.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a “going concern” basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

MEANING OF “UNFUNDED ACTUARIAL ACCRUED LIABILITIES”

“Actuarial accrued liabilities” are the present value of the portions of promised benefits that are not covered by future normal cost contributions --- a liability has been established (“accrued”) because the service has been rendered but the resulting monthly cash benefit may not be payable until years in the future.

If “actuarial accrued liabilities” at any time exceed the plan’s accrued assets (cash & investments), the difference is *“unfunded actuarial accrued liabilities.”* This is the common condition. If the plan’s assets equaled the plan’s “actuarial accrued liabilities”, the plan would be termed “fully funded.” This is an unusual condition.

Each time a plan adds a new benefit which applies to service already rendered, an “actuarial accrued liability” is created, which is also an “unfunded actuarial accrued liability” because the plan can’t print instant cash to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years, commonly in the 15-30 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual plan experience is less favorable than assumed, the difference is added to unfunded actuarial accrued liabilities. For example, in plans where benefits are directly related to an employee’s pay near time of retirement, unfunded actuarial accrued liabilities increased rapidly during the 1970’s because unexpected rates of pay increase created additional actuarial accrued liabilities which could not be matched by reasonable investment results. Most of the unexpected pay increases were the direct result of inflation, which is a very destructive force on financial stability.

The existence of unfunded actuarial accrued liabilities is not bad but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important--- “bad” or “good” or somewhere in between.

Nor are unfunded actuarial accrued liabilities a bill payable immediately, but it is important that policy-makers prevent the amount from becoming unreasonably high and *it is vital for plans to have a sound method for making payments toward them* so that they are controlled.

SECTION XII

GASB REPORTING

This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements.

**SCHEDULE OF DEFINED BENEFIT FUNDING PROGRESS
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
(\$ AMOUNTS IN MILLIONS)
TRADITIONAL, COMBINED, AND MEMBER DIRECTED PLANS**

The schedule below measures the funding progress with respect to the *retirement allowance* portion of OPERS benefits for compliance with applicable GASB Statements. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule. Assets do, however, include market value adjustments.

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a % of Active Member Payroll
1996	\$32,631	\$30,534	\$ 2,097	94 %	\$ 8,340	25 %
1997	34,971	33,846	1,125	97 %	8,640	13 %
1998	37,714	38,360	(646)	102 %	9,017	0 %
1999	43,070	43,060	10	100 %	9,477	0 %
2000	46,347	46,844	(497)	101 %	10,192	0 %
2001	49,095	48,748	347	99 %	10,782	3 %
2001*	47,492	48,748	(1,256)	103 %	10,782	0 %
2002	50,872	43,706	7,166	86 %	11,207	64 %
2003	54,774	46,746	8,028	85 %	11,165	72 %
2004	57,604	50,452	7,152	88 %	11,454	62 %
2005	61,146	54,473	6,673	89 %	11,807	57 %
2005*	62,498	54,473	8,025	87 %	11,807	68 %
2006	66,161	61,296	4,865	93 %	12,175	40 %
2007	69,734	67,151	2,583	96 %	12,583	21 %
2008	73,466	55,315	18,150	75 %	12,801	142 %
2009	76,555	57,629	18,926	75 %	12,548	151 %
2010	79,630	60,600	19,031	76 %	12,450	153 %
2010*	80,485	63,649	16,836	79 %	12,450	135 %
2011	84,530	65,436	19,094	77 %	12,399	154 %
2012	87,105	67,855	19,250	78 %	12,193	158 %
2012#	83,878	67,855	16,023	81 %	12,193	131 %
2013	86,645	71,411	15,234	82 %	12,331	124 %
2014	89,285	74,865	14,420	84 %	12,654	114 %
2015	91,832	78,061	13,771	85 %	12,950	106 %

* Revised actuarial assumptions.

After benefit changes.

**SCHEDULE OF DEFINED BENEFIT FUNDING PROGRESS
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
(\$ AMOUNTS IN MILLIONS)
TRADITIONAL PLAN**

The schedule below measures the funding progress with respect to the *retirement allowance* portion of OPERS benefits for compliance with applicable GASB Statements. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule. Assets do, however, include market value adjustments.

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a % of Active Member Payroll
1996	\$32,631	\$30,534	\$ 2,097	94 %	\$ 8,340	25 %
1997	34,971	33,846	1,125	97 %	8,640	13 %
1998	37,714	38,360	(646)	102 %	9,017	0 %
1999	43,070	43,060	10	100 %	9,477	0 %
2000	46,347	46,844	(497)	101 %	10,192	0 %
2001	49,095	48,748	347	99 %	10,782	3 %
2001*	47,492	48,748	(1,256)	103 %	10,782	0 %
2002	50,872	43,706	7,166	86 %	11,207	64 %
2003	54,756	46,737	8,019	85 %	11,056	73 %
2004	57,573	50,430	7,143	88 %	11,313	63 %
2005	61,099	54,433	6,666	89 %	11,633	57 %
2005*	62,447	54,433	8,014	87 %	11,633	69 %
2006	66,089	61,235	4,854	93 %	11,971	41 %
2007	69,639	67,067	2,572	96 %	12,347	21 %
2008	73,346	55,230	18,116	75 %	12,546	144 %
2009	76,407	57,519	18,888	75 %	12,290	154 %
2010	79,459	60,461	18,997	76 %	12,165	156 %
2010*	80,307	63,515	16,792	79 %	12,165	138 %
2011	84,325	65,274	19,052	77 %	12,103	157 %
2012	86,876	67,670	19,206	78 %	11,884	162 %
2012#	83,664	67,670	15,994	81 %	11,884	135 %
2013	86,407	71,175	15,232	82 %	12,000	127 %
2014	89,017	74,567	14,450	84 %	12,300	117 %
2015	91,535	77,700	13,835	85 %	12,575	110 %

* Revised actuarial assumptions.

After benefit changes.

**SCHEDULE OF DEFINED BENEFIT FUNDING PROGRESS
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
(\$ AMOUNTS IN MILLIONS)
COMBINED PLAN**

The schedule below measures the funding progress with respect to the *retirement allowance* portion of OPERS benefits for compliance with applicable GASB Statements. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule. Assets do, however, include market value adjustments.

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a % of Active Member Payroll
1996						
1997						
1998						
1999						
2000						
2001						
2001						
2002						
2003	\$ 18	\$ 9	\$ 9	50 %	\$109	8 %
2004	31	22	9	71 %	141	6 %
2005	47	40	7	85 %	174	4 %
2005*	51	40	11	78 %	174	6 %
2006	72	61	11	85 %	205	5 %
2007	95	84	11	88 %	236	5 %
2008	120	85	35	71 %	255	14 %
2009	148	110	38	74 %	258	15 %
2010	171	138	33	81 %	284	12 %
2010*	177	134	43	76 %	284	15 %
2011	203	161	42	79 %	296	14 %
2012	226	183	43	81 %	310	14 %
2012#	212	183	29	86 %	310	9 %
2013	230	229	1	100 %	331	0 %
2014	260	289	(29)	111 %	354	0 %
2015	288	350	(62)	122 %	375	0 %

* Revised actuarial assumptions.

After benefit changes.

**SCHEDULE OF DEFINED BENEFIT FUNDING PROGRESS
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
(\$ AMOUNTS)
MEMBER DIRECTED PLAN**

The schedule below measures the funding progress with respect to the *retirement allowance* portion of OPERS benefits for compliance with applicable GASB Statements. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule. Assets do, however, include market value adjustments.

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a % of Active Member Payroll
1996						
1997						
1998						
1999						
2000						
2001						
2001						
2002						
2003						
2004						
2005						
2005*						
2006						
2007						
2008	\$ 166,354	\$ 147,976	\$ 18,378	89 %	NA	NA
2009	252,670	205,639	47,031	81 %	NA	NA
2010	489,792	438,982	50,810	90 %	NA	NA
2010*	496,004	454,025	41,979	92 %	NA	NA
2011	1,172,900	1,156,151	16,749	99 %	NA	NA
2012	2,665,552	2,523,879	141,673	95 %	NA	NA
2013	6,884,231	6,826,536	57,695	99 %	NA	NA
2014	8,291,077	8,771,712	(480,635)	106 %	NA	NA
2015	9,767,164	10,622,057	(854,893)	109 %	NA	NA

* Revised actuarial assumptions.

SCHEDULE OF EMPLOYER CONTRIBUTIONS*
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS

Traditional Plan		
Valuation Date December 31	Year Ended December 31	Annual Required Contributions
2004	2006	8.44%
2005	2008	7.12%
2006	2009	7.13%
2007	2010	7.14%
2008	2011	13.33%
2009	2012	13.64%
2010	2013	13.52%
2011	2014	14.15%
2012	2015	11.16%
2013	2016	10.16%
2014	2017	10.16%
2015	2018	10.16%

Combined Plan		
Valuation Date December 31	Year Ended December 31	Annual Required Contributions
2004	2006	8.33%
2005	2008	7.29%
2006	2009	7.33%
2007	2010	7.22%
2008	2011	10.00%
2009	2012	10.00%
2010	2013	13.00%
2011	2014	14.00%
2012	2015	11.00%
2013	2016	10.00%
2014	2017	10.00%
2015	2018	10.00%

Member Directed Plan		
Valuation Date December 31	Year Ended December 31	Annual Required Contributions
2008	2011	\$ 1,570
2009	2012	4,019
2010	2013	4,342
2011	2014	1,669
2012	2015	14,121
2013	2016	5,751
2014	2017	0
2015	2018	0

* The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

**SCHEDULE OF UNFUNDED ACTUARIAL ACCRUED LIABILITY@
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
TRADITIONAL, COMBINED AND MEMBER DIRECTED PLANS**

	December 31, 2015					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$ 13,262,392,783	\$ 20,095,644,312	\$ 33,358,037,095	\$ 8,012,920	\$ 1,627,574,462	\$ 34,993,624,477
Retirees and Beneficiaries	22,944,174,827	31,585,652,425	54,529,827,252	44,422,190	2,264,398,215	56,838,647,657
Total Accrued Liabilities	\$ 36,206,567,610	\$ 51,681,296,737	\$ 87,887,864,347	\$ 52,435,110	\$ 3,891,972,677	\$ 91,832,272,134
Assets						
Active and Inactive Members						
EAF*	\$ (360,176,160)	\$ 4,031,418,408	\$ 3,671,242,248	\$ (21,506,316)	\$ 475,818,315	\$ 4,125,554,247
ESF	5,064,636,066	7,805,663,066	12,870,299,132	3,450,084	597,313,633	13,471,062,849
Unallocated	46,332,642	72,792,381	119,125,023	44,409	5,621,568	124,791,000
Market Value Adjustment	1,300,317,428	2,042,274,570	3,342,591,998	1,240,773	157,063,043	3,500,895,814
Total Active and Inactive Assets	\$ 6,051,109,976	\$ 13,952,148,425	\$ 20,003,258,401	\$ (16,771,050)	\$ 1,235,816,559	\$ 21,222,303,910
Retirees and Beneficiaries						
A & PR Fund*	\$ 22,316,766,932	\$ 30,560,582,941	\$ 52,877,349,873	\$ 25,271,366	\$ 2,214,681,949	\$ 55,117,303,188
SBF Fund*	627,407,895	1,025,069,484	1,652,477,379	19,150,824	49,716,266	1,721,344,469
Total R&B Assets	\$ 22,944,174,827	\$ 31,585,652,425	\$ 54,529,827,252	\$ 44,422,190	\$ 2,264,398,215	\$ 56,838,647,657
Total Assets	\$ 28,995,284,803	\$ 45,537,800,850	\$ 74,533,085,653	\$ 27,651,140	\$ 3,500,214,774	\$ 78,060,951,567
Unfunded Actuarial Accrued Liability	\$ 7,211,282,807	\$ 6,143,495,887	\$ 13,354,778,694	\$ 24,783,970	\$ 391,757,903	\$ 13,771,320,567

@ The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

**SCHEDULE OF UNFUNDED ACTUARIAL ACCRUED LIABILITY@
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
TRADITIONAL PLAN**

	December 31, 2015					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$13,145,911,843	\$19,937,509,994	\$33,083,421,837	\$ 8,012,920	\$1,627,574,462	\$34,719,009,219
Retirees and Beneficiaries	22,937,178,105	31,569,573,249	54,506,751,354	44,422,190	2,264,398,215	56,815,571,759
Total Accrued Liabilities	\$36,083,089,948	\$51,507,083,243	\$87,590,173,191	\$ 52,435,110	\$3,891,972,677	\$91,534,580,978
Assets						
Active and Inactive Members						
EAF*	(\$492,763,675)	\$ 3,842,714,936	\$ 3,349,951,261	\$ (21,506,316)	\$ 475,818,315	\$ 3,804,263,260
ESF	5,063,317,138	7,804,613,478	12,867,930,616	3,450,084	597,313,633	13,468,694,333
Unallocated	46,332,642	72,792,381	119,125,023	44,409	5,621,568	124,791,000
Market Value Adjustment	1,294,504,565	2,033,772,810	3,328,277,375	1,240,773	157,063,043	3,486,581,191
Total Active and Inactive Assets	\$ 5,911,390,670	\$13,753,893,605	\$19,665,284,275	\$ (16,771,050)	\$ 1,235,816,559	\$20,884,329,784
Retirees and Beneficiaries						
A & PR Fund*	\$22,309,770,210	\$30,544,503,765	\$52,854,273,975	\$ 25,271,366	\$2,214,681,949	\$55,094,227,290
SBF Fund*	627,407,895	1,025,069,484	1,652,477,379	19,150,824	49,716,266	1,721,344,469
Total R&B Assets	\$22,937,178,105	\$31,569,573,249	\$54,506,751,354	\$ 44,422,190	\$2,264,398,215	\$56,815,571,759
Total Assets	\$28,848,568,775	\$45,323,466,854	\$74,172,035,629	\$ 27,651,140	\$3,500,214,774	\$77,699,901,543
Unfunded Actuarial Accrued Liability	\$ 7,234,521,173	\$ 6,183,616,389	\$13,418,137,562	\$ 24,783,970	\$ 391,757,903	\$13,834,679,435

@ The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

**SCHEDULE OF UNFUNDED ACTUARIAL ACCRUED LIABILITY@
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
COMBINED PLAN**

	December 31, 2015					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$116,480,940	\$158,134,318	\$274,615,258			\$274,615,258
Retirees and Beneficiaries	4,120,757	9,187,977	13,308,734			13,308,734
Total Accrued Liabilities	\$120,601,697	\$167,322,295	\$287,923,992			\$287,923,992
Assets						
Active and Inactive Members						
EAF*	\$132,118,378	\$188,815,809	\$320,934,187			\$320,934,187
ESF	1,306,620	1,036,529	2,343,149			2,343,149
Unallocated	0	0	0			0
Market Value Adjustment	5,656,485	8,185,412	13,841,897			13,841,897
Total Active and Inactive Assets	\$139,081,483	\$198,037,750	\$337,119,233			\$337,119,233
Retirees and Beneficiaries						
A & PR Fund*	\$ 4,120,757	\$ 9,187,977	\$ 13,308,734			\$ 13,308,734
SBF Fund*	0	0	0			0
Total R&B Assets	\$ 4,120,757	\$ 9,187,977	\$ 13,308,734			\$ 13,308,734
Total Assets	\$143,202,240	\$207,225,727	\$350,427,967			\$350,427,967
Unfunded Actuarial Accrued Liability	\$ (22,600,543)	\$ (39,903,432)	\$ (62,503,975)			\$ (62,503,975)

@ The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

**SCHEDULE OF UNFUNDED ACTUARIAL ACCRUED LIABILITY@
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS
MEMBER DIRECTED PLAN**

	December 31, 2015					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$ -	\$ -	\$ -			\$ -
Retirees and Beneficiaries	2,875,965	6,891,199	9,767,164			9,767,164
Total Accrued Liabilities	\$ 2,875,965	\$ 6,891,199	\$ 9,767,164			\$ 9,767,164
Assets						
Active and Inactive Members						
EAF*	\$ 469,137	\$ (112,337)	\$ 356,800			\$ 356,800
ESF	12,308	13,059	25,367			25,367
Unallocated	0	0	0			0
Market Value Adjustment	156,378	316,348	472,726			472,726
Total Active and Inactive Assets	\$ 637,823	\$ 217,070	\$ 854,893			\$ 854,893
Retirees and Beneficiaries						
A & PR Fund*	\$ 2,875,965	\$ 6,891,199	\$ 9,767,164			\$ 9,767,164
SBF Fund*	0	0	0			0
Total R&B Assets	\$ 2,875,965	\$ 6,891,199	\$ 9,767,164			\$ 9,767,164
Total Assets	\$ 3,513,788	\$ 7,108,269	\$ 10,622,057			\$ 10,622,057
Unfunded Actuarial Accrued Liability	\$ (637,823)	\$ (217,070)	\$ (854,893)			\$ (854,893)

@ The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

**REQUIRED SUPPLEMENTARY INFORMATION
FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS**

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest valuation date follows:

Valuation date	December 31, 2015
Actuarial cost method	Individual entry age
Amortization method for unfunded actuarial accrued liabilities	Level percent closed - Traditional and Combined Level dollar closed - Member Directed
Equivalent Single Amortization Period (Years from December 31, 2017)	
Traditional Plan	18
Combined Plan	0
Member Directed Plan	30
Asset valuation method	4-year smoothed market
Actuarial assumptions:	
Investment rate of return	8.00%
Projected salary increases including wage inflation at 3.75%	4.25% - 10.05%
Cost-of-living adjustments	Pre 1/7/2013 Retirees: 3.0% simple Post 1/7/2013 Retirees: 3.0% simple through 2018, then 2.8% simple

	Traditional	Combined	Member Directed	Total
Retirees and beneficiaries receiving benefits	210,792	324	185	211,301
Terminated plan members entitled to but not yet receiving benefits				
Less than 5 years of service	468,142	1,269	0	469,411
5 or more years of service	32,762	715	0	33,477
Total	500,904	1,984	0	502,888
Active plan members				
Less than 5 years of service	144,051	3,034	0	147,085
5 or more years of service	177,332	4,592	0	181,924
Total	321,383	7,626	0	329,009
Total				
Less than 5 years of service	612,193	4,303	0	616,496
5 or more years of service	420,886	5,631	185	426,702
Total	1,033,079	9,934	185	1,043,198

August 29, 2016

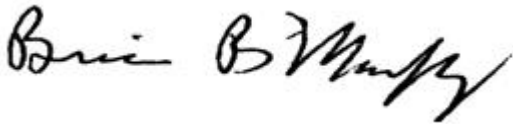
Ms. Karen E. Carraher
Executive Director
Ohio Public Employees Retirement System
277 East Town Street
Columbus, Ohio 43215

Re: Report of December 31, 2015 Actuarial Valuation

Dear Karen:

Enclosed are three bound copies of the final report via Federal Express, 17 additional copies will follow.

Sincerely,

A handwritten signature in black ink that reads "Brian B. Murphy". The signature is written in a cursive, slightly slanted style.

Brian B. Murphy, FSA, EA, MAAA, FCA

MD:rmn
Enclosures

cc: Mr. Tom Heseltine
Clifton Larson Allen