1959 Survivor Benefit Program
Actuarial Valuation
as of
June 30, 2015

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Actuarial Certification

Certification

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the funded condition of the 1959 Survivor Program for Public Agency 1st, 2nd, 3rd, 4th, and Indexed Level, and the State and Schools 5th Level Pools. This valuation is based on the beneficiary and membership data provided to the Actuarial Office, the statement of assets provided by the CalPERS Financial Office, and the benefits provided under this program. It is our opinion that this valuation has been performed by qualified actuaries in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for this program.

The undersigned are actuaries for CalPERS, who are members of the American Academy of Actuaries and the Society of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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Highlights and Executive Summary

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Highlights & Executive Summary

Purpose of the Report

This actuarial valuation of the 1959 Survivor Program for Public Agency 1st, 2nd, 3rd, 4th and Indexed level and the State and Schools 5th level pools within the California Public Employees' Retirement System (CalPERS) was performed by CalPERS staff actuaries as of June 30, 2015 in order to:

- Set forth the funded status of the program, reflecting the assets and funding liabilities of this program as of June 30, 2015.
- Establish the actuarially required premiums for all levels and employee premiums in the Indexed, and State and Schools 5th Level for the Fiscal Year July 1, 2016 through June 30, 2017; and
- Provide actuarial information as of June 30, 2015 to the CalPERS Board of Administration and other interested parties.

The use of this report for any other purposes may be inappropriate.

Funded Status of the Plan

Shown below are the Accrued Liability, Market Value of Assets, and Funded Ratio of all pools within the 1959 Survivor Benefit Program as of June 30, 2015.

Plan	Accrued Liability[1]	Market Value of Assets (MVA)	Funded Ratio
State 5th Level Pool	$ 142,864,757	$ 109,619,378	76.7%
Schools 5th Level Pool	$ 13,498,624	$ 71,525,517	529.9%
PA 1st Level Pool	$ 2,585,287	$ 43,637,106	1,687.9%
PA 2nd Level Pool	$ 2,474,187	$ 10,589,764	428.0%
PA 3rd Level Pool	$ 27,969,382	$ 106,293,464	380.0%
PA 4th Level Pool	$ 128,491,218	$ 145,999,937	113.6%
PA Indexed Level Pool	$ 18,279,091	$ 23,270,090	127.3%
Total	**$ 336,162,546**	**$ 510,935,256**	**152.0%**

1 – By definition, under the Term Insurance Method, the present value of future benefits and the accrued liability are equal. Under the Entry Age Normal Method, which is being used to fund the benefit in the Indexed Pool, the accrued liability is defined as the difference between the present value of future benefits and the present value of future normal costs.

Required Employer and Employee Monthly Premiums

The actuarially required employer and employee monthly premiums per covered member per month for the 1959 Survivor Program for the Fiscal Year July 1, 2016 through June 30, 2017 are shown below. The results for Fiscal Year July 1, 2015 through June 30, 2016 are shown for comparison. Except for the Public Agency Indexed Level pool, these monthly premiums are determined using a Modified Term Insurance funding method. Monthly premiums for the Public Agency Indexed Level pool are determined using the Entry Age Normal funding method.

Required Monthly Premiums

	2015-16 Premium			2016-17 Premium		
Plan	Employer	Employee	Total	Employer	Employee	Total
State 5th Level Pool*	$5.20	$5.20	$10.40	$5.15	$5.15	$10.30
Schools 5th Level Pool*	$0.00	$2.00	$2.00	$0.00	$2.00	$2.00
PA 1st Level Pool**	$0.00	$2.00	$2.00	$0.00	$2.00	$2.00
PA 2nd Level Pool**	$0.00	$2.00	$2.00	$0.00	$2.00	$2.00
PA 3rd Level Pool**	$0.00	$2.00	$2.00	$0.00	$2.00	$2.00
PA 4th Level Pool**	$3.50	$2.00	$5.50	$4.30	$2.00	$6.30
PA Indexed Level Pool*	$2.40	$2.40	$4.80	$2.75	$2.75	$5.50

* Section 21581 of the California Public Employees' Retirement Law requires mandatory cost sharing when the total premium exceeds $4.00. Mandatory $2.00 member monthly premium required.

** Mandatory $2.00 member monthly premium required.

The required employee premium for the State 5th level pool will change from $5.20 to $5.15 per member, per month (or from $2.40 to $2.38 for biweekly paid members) for Fiscal Year 2016-17. This is in accordance with Statute 21581(c), which specifies that when the total required premium (after amortization of surplus/unfunded liability) exceeds $4.00, the employer and the member shall evenly share the required monthly premium.

The required employee premium for the Indexed level pool will change from $2.40 to $2.75 per member, per month (or from $1.11 to $1.27 for biweekly paid members) for Fiscal Year 2016-17. This is in accordance with Statute 21581(b), which specifies that when the total required premium (after amortization of surplus/unfunded liability) exceeds $4.00, the employer and the member shall evenly share the required monthly premium.

Employee required premiums for all of the other pools shall remain the same, $2.00, as in the prior year.

Changes Since the Prior Year's Valuation

Actuarial Assumptions - No changes were made since the prior valuation. A complete description of the actuarial assumptions used in the June 30, 2015 valuation may be found in Appendix A of this report.

Actuarial Methods - No changes were made since the prior valuation. A complete description of the actuarial methods used in the June 30, 2015 valuation may be found in Appendix A of this report.

Plan Provisions - No changes were made since the prior valuation. A complete description of the principal plan provisions used in the June 30, 2015 valuation may be found in Appendix B of this report.

Other Changes - CalPERS adopted a Funding Risk Mitigation Policy that will reduce the funding risk over time. Under this policy, good investment performance that significantly outperforms the discount rate triggers adjustments to the discount rate, expected investment return and strategic asset allocation targets. This has no impact on the current valuation results, but will have an impact on the Risk Analysis presented on Page 30.

Assets

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Reconciliation of the Market Value of Assets

State 5th Level Pool

Reconciliation of the Market Value of Assets from the Prior Fiscal Year

The following table shows the changes in the market value of assets for the State 5th Level Pool.

	June 30, 2014	June 30, 2015
Beginning Balance	$ 102,751,222	$ 113,878,478
Contributions (Employer and Employee) Received during fiscal year	9,056,427	9,328,084
Benefit Payments during fiscal year	(15,366,076)	(15,755,900)
Net Transfer of Assets into and out of this pool	0	0
Investment Earnings credited	17,436,905	2,168,716
Ending Balance	$ 113,878,478	$ 109,619,378
Fund Return for Year	17.5%	2.0%

Schools 5th Level Pool

Reconciliation of the Market Value of Assets from the Prior Fiscal Year

The following table shows the changes in the market value of assets for the Schools 5th Level Pool.

	June 30, 2014	June 30, 2015
Beginning Balance	$ 61,870,390	$ 71,331,499
Contributions (Employer and Employee) Received during fiscal year	213,065	210,282
Benefit Payments during fiscal year	(1,441,413)	(1,458,812)
Net Transfer of Assets into and out of this pool	0	0
Investment Earnings credited	10,689,457	1,442,549
Ending Balance	$ 71,331,499	$ 71,525,517
Fund Return for Year	17.5%	2.0%

Public Agency 1st Level Pool

Reconciliation of the Market Value of Assets from the Prior Fiscal Year

The following table shows the changes in the market value of assets for the Public Agency 1st Level Pool.

	June 30, 2014	June 30, 2015
Beginning Balance	$ 36,668,679	$ 43,028,607
Contributions (Employer and Employee) Received during fiscal year	182,409	177,824
Benefit Payments during fiscal year	(279,071)	(231,026)
Net Transfer of Assets into and out of this pool	0	(212,216)
Investment Earnings credited	6,456,590	873,917
Ending Balance	$ 43,028,607	$ 43,637,106
Fund Return for Year	17.6%	2.0%

Public Agency 2nd Level Pool

Reconciliation of the Market Value of Assets from the Prior Fiscal Year

The following table shows the changes in the market value of assets for the Public Agency 2nd Level Pool.

	June 30, 2014	June 30, 2015
Beginning Balance	$ 9,100,668	$ 10,527,005
Contributions (Employer and Employee) Received during fiscal year	85,369	92,682
Benefit Payments during fiscal year	(227,496)	(236,761)
Net Transfer of Assets into and out of this pool	0	(4,443)
Investment Earnings credited	1,568,464	211,281
Ending Balance	$ 10,527,005	$ 10,589,764
Fund Return for Year	17.4%	2.0%

Public Agency 3rd Level Pool

Reconciliation of the Market Value of Assets from the Prior Fiscal Year

The following table shows the changes in the market value of assets for the Public Agency 3rd Level Pool.

	June 30, 2014	June 30, 2015
Beginning Balance	$ 92,079,207	$ 106,304,466
Contributions (Employer and Employee) Received during fiscal year	949,783	984,836
Benefit Payments during fiscal year	(2,598,703)	(2,623,553)
Net Transfer of Assets into and out of this pool	0	(497,448)
Investment Earnings credited	15,874,179	2,125,163
Ending Balance	$ 106,304,466	$ 106,293,464
Fund Return for Year	17.4%	2.0%

Public Agency 4th Level Pool

Reconciliation of the Market Value of Assets from the Prior Fiscal Year

The following table shows the changes in the market value of assets for the Public Agency 4th Level Pool.

	June 30, 2014	June 30, 2015
Beginning Balance	$ 133,865,159	$ 149,327,096
Contributions (Employer and Employee) Received during fiscal year	5,358,263	5,701,601
Benefit Payments during fiscal year	(12,467,414)	(12,677,733)
Net Transfer of Assets into and out of this pool	0	704,436
Investment Earnings credited	22,571,088	2,944,537
Ending Balance	$ 149,327,096	$ 145,999,937
Fund Return for Year	17.3%	2.0%

Public Agency Indexed Level Pool

Reconciliation of the Market Value of Assets from the Prior Fiscal Year

The following table shows the changes in the market value of assets for the Public Agency Indexed Level Pool.

	June 30, 2014	June 30, 2015
Beginning Balance	$ 20,411,771	$ 23,230,521
Contributions (Employer and Employee) Received during fiscal year	619,614	792,091
Benefit Payments during fiscal year	(1,297,992)	(1,223,796)
Net Transfer of Assets into and out of this pool	0	9,671
Investment Earnings credited	3,497,128	461,602
Ending Balance	$ 23,230,521	$ 23,270,090
Fund Return for Year	17.4%	2.0%

Liabilities and Funding Requirements

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Comparison of Current and Prior Year Results

Shown below are the comparisons of key valuation results for the current valuation date compared to corresponding values from the prior valuation date.

State 5th Level Pool

	June 30, 2014	June 30, 2015
Covered Active Members	72,848	74,372
Beneficiaries Included in the Valuation		
Deferred (eligible, but not yet receiving benefits)	272	290
Receiving Benefits	1,433	1,437
Total	1,705	1,727
Present Value of Benefits	$ 139,400,186	$ 142,864,757
Market Value of Assets (MVA)	$ 113,878,478	$ 109,619,378
(Unfunded Liability)/Excess Assets	$ (25,521,708)	$ (33,245,379)
Required Employer Monthly Premium Per Member		
Before Amortization of (Unfunded Liability)/Excess Assets	$ 7.00	$ 7.00
After Amortization of (Unfunded Liability)/Excess Assets	$10.40	$10.30
After employer/employee premium sharing	$ 5.20	$ 5.15
Funded Ratio based on MVA	81.7%	76.7%

Schools 5th Level Pool

	June 30, 2014	June 30, 2015
Covered Active Members	10,287	10,490
Beneficiaries Included in the Valuation		
Deferred (eligible, but not yet receiving benefits)	18	18
Receiving Benefits	144	154
Total	162	172
Present Value of Benefits	$ 12,599,127	$ 13,498,624
Market Value of Assets (MVA)	$ 71,331,499	$ 71,525,517
(Unfunded Liability)/Excess Assets	$ 58,732,372	$ 58,026,893
Required Employer Monthly Premium Per Member		
Before Amortization of (Unfunded Liability)/Excess Assets	$ 4.90	$ 4.70
After Amortization of (Unfunded Liability)/Excess Assets	$ 0.00	$ 0.00
After employer/employee premium sharing	$ 0.00	$ 0.00
Funded Ratio based on MVA	566.2%	529.9%

Comparison of Current and Prior Results (continued)

Shown below are the comparisons of key valuation results for the current valuation date compared to corresponding values from the prior valuation date.

Public Agency 1st Level Pool

	June 30, 2014	June 30, 2015
Covered Active Members	7,409	7,413
Beneficiaries Included in the Valuation		
Deferred (eligible, but not yet receiving benefits)	31	33
Receiving Benefits	92	94
Total	123	127
Present Value of Benefits	$ 2,478,062	$ 2,585,287
Market Value of Assets (MVA)	$ 43,028,607	$ 43,637,106
(Unfunded Liability)/Excess Assets	$ 40,550,545	$ 41,051,819
Required Employer Monthly Premium Per Member		
Total premium required	$ 1.50	$ 1.40
Premium required after Employee Contributions	$ 0.00	$ 0.00
Employer premium after Amortization of (Unfunded Liability)/Excess Assets	$ 0.00	$ 0.00
Funded Ratio based on MVA	1,736.4%	1,687.9%

Public Agency 2nd Level Pool

	June 30, 2014	June 30, 2015
Covered Active Members	3,939	3,945
Beneficiaries Included in the Valuation		
Deferred (eligible, but not yet receiving benefits)	29	25
Receiving Benefits	67	73
Total	96	98
Present Value of Benefits	$ 2,340,934	$ 2,474,187
Market Value of Assets (MVA)	$ 10,527,005	$ 10,589,764
(Unfunded Liability)/Excess Assets	$ 8,186,071	$ 8,115,577
Required Employer Monthly Premium Per Member		
Total premium required	$ 1.80	$ 1.80
Premium required after Employee Contributions	$ 0.00	$ 0.00
Employer premium after Amortization of (Unfunded Liability)/Excess Assets	$ 0.00	$ 0.00
Funded Ratio based on MVA	449.7%	428.0%

Comparison of Current and Prior Results (continued)

Shown below are the comparisons of key valuation results for the current valuation date compared to corresponding values from the prior valuation date.

Public Agency 3rd Level Pool

	June 30, 2014	June 30, 2015
Covered Active Members	41,701	42,933
Beneficiaries Included in the Valuation		
Deferred (eligible, but not yet receiving benefits)	185	186
Receiving Benefits	532	547
Total	717	733
Present Value of Benefits	$ 27,317,573	$ 27,969,382
Market Value of Assets (MVA)	$106,304,466	$106,293,464
(Unfunded Liability)/Excess Assets	$ 78,986,893	$ 78,324,082
Required Employer Monthly Premium Per Member		
Total premium required	$ 2.80	$ 2.80
Premium required after Employee Contributions	$ 0.80	$ 0.80
Employer premium after Amortization of (Unfunded Liability)/Excess Assets	$ 0.00	$ 0.00
Funded Ratio based on MVA	389.1%	380.0%

Public Agency 4th Level Pool

	June 30, 2014	June 30, 2015
Covered Active Members	68,814	70,072
Beneficiaries Included in the Valuation		
Deferred (eligible, but not yet receiving benefits)	239	234
Receiving Benefits	904	936
Total	1,143	1,170
Present Value of Benefits	$ 125,014,115	$ 128,491,218
Market Value of Assets (MVA)	$ 149,327,096	$ 145,999,937
(Unfunded Liability)/Excess Assets	$ 24,312,981	$ 17,508,719
Required Employer Monthly Premium Per Member		
Total premium required	$ 7.70	$ 7.60
Premium required after Employee Contributions	$ 5.70	$ 5.60
Employer premium after Amortization of (Unfunded Liability)/Excess Assets	$ 3.50	$ 4.30
Funded Ratio based on MVA	119.4%	113.6%

Comparison of Current and Prior Results (continued)

Shown below are the comparisons of key valuation results for the current valuation date compared to corresponding values from the prior valuation date.

Public Agency Indexed Level Pool

	June 30, 2014	June 30, 2015
Covered Active Members	10,161	10,516
Beneficiaries Included in the Valuation		
Deferred (eligible, but not yet receiving benefits)	22	21
Receiving Benefits	106	110
Total	128	131
Entry Age Normal Accrued Liability	$ 17,887,365	$ 18,279,091
Market Value of Assets (MVA)	$ 23,230,521	$ 23,270,090
(Unfunded Liability)/Excess Assets	$ 5,343,156	$ 4,990,999
Required Employer Monthly Premium Per Member		
Before Amortization of (Unfunded Liability)/Excess Assets	$ 8.20	$ 8.20
After Amortization of (Unfunded Liability)/Excess Assets	$ 4.80	$ 5.50
After employer/employee premium sharing	$ 2.40	$ 2.75
Funded Ratio based on MVA	129.9%	127.3%

The following table develops the annual premiums required for 2016-17 for the State 5th and Schools 5th Level Pools.

Development of Funding Requirements for State 5th and Schools 5th Level Pools

June 30, 2015 Annual Valuation of 1959 Survivor Program

	State 5th Level	School 5th Level
1) Development of Unfunded Liability		
a. Present Value of Future Survivor Benefits	$142,864,757	$13,498,624
b. Market Value of Assets	$109,619,378	$71,525,517
c. Unfunded Accrued Liability/(Excess Assets) [1(a)-1(b)]	$33,245,379	($58,026,893)
2) Development of Normal Cost		
a. Present Value of Benefits for 2011-2014 Deaths	$24,342,833	$2,062,433
b. Number of 2011-2014 Member Months	3,522,012	481,980
c. Total per member, per month 2015/2016 Term Insurance Normal Cost	$7.00	$4.90
d. Total per member, per month 2016/2017 Term Insurance Normal Cost [.25 * 2(a)/2(b) + .75 * (c)], rounded to nearest $0.10	$7.00	$4.70
3) 2016 Projected Unfunded Liability		
a. 2015 Unfunded Accrued Liability/(Excess Assets) as of June 30, 2016 [1(c)*1.075]	$35,738,782	($62,378,910)
b. Projected Normal Cost Accrual 2015-2016 with interest	$6,786,685	$639,225
c. Projected Employer Contributions 2015-2016 with interest	$4,864,361	$0
d. Projected Employee Contributions 2015-2016 with interest	$4,864,361	$262,399
e. Total Projected UAL/(Excess Assets) as of June 30, 2016 [3(a)+3(b)-3(c)-3(d)]	$32,796,746	($62,002,084)
4) 2016/2017 Required Contribution		
a. Required Normal Cost per member, per month [2(d)]	$7.00	$4.70
b. Projected Active Members as of 6/30/2016	76,000	10,600
c. Required Normal Cost Contribution [12*4(a)*4(b)*1.075^1/2]	$6,619,072	$619,854
d. Amortization of the UAL/(Excess Assets)[1]	$2,756,102	($619,854)
e. Total Required Contribution per member, per month [(4(c)+4(d))/(4(b)*12)], rounded to nearest $0.10	$10.30	$0.00
f. Amortization Period	see table on Pg. 21	30 yr.
5) 2016/2017 Required Employer and Employee Premiums With Cost Sharing Provision		
a. Required Employee Premium per member, per month [maximum($2,4(e)/2)]	$5.15	$2.00
b. Required Employer Premium per member, per month [maximum($0,4(e)-5(a))]	$5.15	$0.00

Notes:

1 - See amortization schedule on Page 21

The following table develops the annual premiums required for 2016-17 for the Public Agency 1st and 2nd Level Pools.

Development of Funding Requirements for Public Agency 1st and 2nd Level Pools

June 30, 2015 Annual Valuation of 1959 Survivor Program

	Public Agency Level 1	Public Agency Level 2
1) Development of Unfunded Liability		
a. Present Value of Future Survivor Benefits	$2,585,287	$2,474,187
b. Market Value of Assets	$43,637,106	$10,589,764
c. Unfunded Accrued Liability/(Excess Assets) [1(a)-1(b)]	($41,051,819)	($8,115,577)
2) Development of Normal Cost		
a. Present Value of Benefits for 2011-2014 Deaths[1]	$9,313,886	$11,642,358
b. Number of 2011-2014 Member Months[1]	6,345,948	6,345,948
c. Total per member, per month 2015/2016 Term Insurance Normal Cost	$1.40	$1.80
d. Total per member, per month 2016/2017 Term Insurance Normal Cost [.25 * 2(a)/2(b) + .75 * (c)], rounded to nearest $0.10	$1.40	$1.80
3) 2016 Projected Unfunded Liability		
a. 2015 Unfunded Accrued Liability as of June 30, 2016 [1(c)*1.075]	($44,130,705)	($8,724,245)
b. Projected Normal Cost Accrual 2015-2016 with interest	$133,766	$92,219
c. Projected Employer Contributions 2015-2016 with interest	$0	$0
d. Projected Employee Contributions 2015-2016 with interest	$184,301	$98,851
e. Total Projected UAL as of June 30, 2016 [3(a)+3(b)-3(c)-3(d)]	($44,181,241)	($8,730,877)
4) 2016/2017 Required Contribution		
a. Required Normal Cost per member, per month [2(d)]	$1.40	$1.80
b. Projected Active Members as of 6/30/2016	7,400	4,000
c. Required Normal Cost Contribution [12*4(a)*4(b)*1.075^1/2]	$128,898	$89,581
d. Amortization of the UAL/(Excess Assets)	($128,898)	($89,581)
e. Total Required Contribution Per Member, Per Month [(4(c)+4(d))/(4(b)*12)], rounded to nearest $0.10	$0.00	$0.00
f. Amortization Period	N/A	N/A
5) 2016/2017 Required Employer and Employee Premiums		
a. Required Employee Premium per member, per month	$2.00	$2.00
b. Required Employer Premium per member, per month [maximum($0,4(e)-5(a))]	$0.00	$0.00

Notes:

1 - Mortality experience and survivor distribution are assumed to be homogeneous across all Public Agency pools and are added together to develop normal costs in order to improve credibility of the data. This is further explained in the Actuarial Funding Methods section.

The following table develops the annual premiums required for 2016-17 for the Public Agency 3rd and 4th Level Pools.

Development of Funding Requirements for Public Agency 3rd and 4th Level Pools

June 30, 2015 Annual Valuation of 1959 Survivor Program

	Public Agency Level 3	Public Agency Level 4
1) Development of Unfunded Liability		
a. Present Value of Future Survivor Benefits	$27,969,382	$128,491,218
b. Market Value of Assets	$106,293,464	$145,999,937
c. Unfunded Accrued Liability/(Excess Assets) [1(a)-1(b)]	($78,324,082)	($17,508,719)
2) Development of Normal Cost		
a. Present Value of Benefits for 2011-2014 Deaths[1]	$18,110,334	$49,156,622
b. Number of 2011-2014 Member Months[1]	6,345,948	6,345,948
c. Total per member, per month 2015/2016 Term Insurance Normal Cost	$2.80	$7.60
d. Total per member, per month 2016/2017 Term Insurance Normal Cost [.25 * 2(a)/2(b) + .75 * (c)], rounded to nearest $0.10	$2.80	$7.60
3) 2016 Projected Unfunded Liability		
a. 2015 Unfunded Accrued Liability as of June 30, 2016 [1(c)*1.075]	($84,198,388)	($18,821,872)
b. Projected Normal Cost Accrual 2015-2016 with interest	$1,567,584	$6,946,829
c. Projected Employer Contributions 2015-2016 with interest	$0	$3,086,839
d. Projected Employee Contributions 2015-2016 with interest	$1,080,364	$1,763,908
e. Total Projected UAL as of June 30, 2016 [3(a)+3(b)-3(c)-3(d)]	($83,711,168)	($16,725,790)
4) 2016/2017 Required Contribution		
a. Required Normal Cost per member, per month [2(d)]	$2.80	$7.60
b. Projected Active Members as of 6/30/2016	43,900	71,700
c. Required Normal Cost Contribution [12*4(a)*4(b)*1.075^1/2]	$1,529,354	$6,779,821
d. Amortization of the UAL/(Excess Assets)	($1,529,354)	($1,365,898)
e. Total Required Contribution Per Member, Per Month [(4(c)+4(d))/(4(b)*12)], rounded to nearest $0.10	$0.00	$6.30
f. Amortization Period	N/A	30-year
5) 2016/2017 Required Employer and Employee Premiums		
a. Required Employee Premium per member, per month	$2.00	$2.00
b. Required Employer Premium per member, per month [maximum($0,4(e)-5(a))]	$0.00	$4.30

Notes:

1 - Mortality experience and survivor distribution are assumed to be homogeneous across all Public Agency pools and are added together to develop normal costs in order to improve credibility of the data. This is further explained in the Actuarial Funding Methods section.

The following table develops the annual premiums required for 2016-17 for the Public Agency Indexed Level Pools.

Development of Funding Requirements for Public Agency Indexed Level Pool

June 30, 2015 Annual Valuation of 1959 Survivor Program

	Public Agency Indexed Level
1) Development of Unfunded Liability	
a. Present Value of Future Benefits for Active Members	$11,628,956
b. Present Value of Future Benefits for Current Survivors	$13,826,557
c. Total Present Value of Future Benefits [1(a)+1(b)]	$25,455,513
d. Present Value of Future Normal Costs	$7,176,422
e. Entry Age Normal Total Accrued Liability [1(c)-1(d)]	$18,279,091
f. Market Value of Assets	$23,270,090
g. Unfunded Accrued Liability/(Excess Assets) [1(e)-1(f)]	($4,990,999)
2) Development of Normal Cost	
a. Required Entry Age Normal Cost	$1,033,065
b. Active Members as of June 30, 2015	10,516
c. Total per member per month Entry Age Normal Cost [2(a)/2(b)*12], rounded to nearest $0.10	$8.20
3) 2016 Projected Unfunded Liability	
a. 2015 Unfunded Accrued Liability/(Excess Assets) as of June 30, 2016 [1(g)*1.075]	($5,365,324)
b. Projected Normal Cost Accrual 2015-2016 with interest	$1,131,971
c. Projected Employer Contributions 2015-2016 with interest	$319,746
d. Projected Employee Contributions 2015-2016 with interest	$319,746
e. Total Projected UAL as of June 30, 2016 [3(a)+3(b)-3(c)-3(d)]	($4,872,845)
4) 2016/2017 Required Contribution	
a. Required Normal Cost per member, per month [2(c)]	$8.20
b. Projected Active Members as of June 30, 2016	10,900
c. Required Normal Cost Contribution [12*4(a)*4(b)*1.075^1/2]	$1,112,054
d. Amortization of the UAL/(Excess Assets)	($397,937)
e. Total Required Contribution per member, per month [(4(c)+4(d))/(4(b)*12)], rounded to nearest $0.10	$5.50
f. Amortization Period	30-year
5) 2016/2017 Employer and Employee Premiums with Cost Sharing Provision	
a. Required Employee Premium per member, per month [maximum(2,4(e)/2)]	$2.75
b. Required Employer Premium per member, per month [maximum(0,4(e)-5(a))]	$2.75

Schedule of Amortization Bases

The schedule below shows the development of the required payments on the Amortization Bases in accordance with the Amortization Policy. In accordance with Board policy, a plan with a funding excess will have their funding excess amortized over a minimum of 30 years.

State 5th Level Pool

	Date Established	Remaining Period	Projected Balance 6/30/2015	Payment 2015-16	Projected Balance 6/30/2016	Payment 2016-17	Projected Balance 6/30/2017	Projected Payment 2017-18
Unfunded Liability	6/30/2013	28	$37,510,628	$3,093,190	$37,116,838	$3,093,190	$36,693,513	$3,093,190
Experience (Gain)/Loss	6/30/2014	29	($13,599,404)	($ 266,892)	($14,342,641)	($ 533,783)	($ 14,864,900)	($ 800,675)
Experience (Gain)/Loss	6/30/2015	30			$ 10,022,549	$ 196,695	$ 10,570,302	$ 393,390
Total			**$23,911,224**	**$2,826,298**	**$32,796,746**	**$2,756,102**	**$32,398,914**	**$2,685,905**

Gain/(Loss) Analysis 6/30/2014 – 6/30/2015

State 5th Level Pool

The following table develops the asset and demographic gain and losses between June 30, 2014 and June 30, 2015 for the State 5th Level Pool.

Amounts as of 6/30/2014		
1)	Present Value of Benefits	$ 139,400,186
2)	Market Value of Assets	113,878,478
3)	Unfunded Liability/(Excess Assets) [(1)-(2)]	25,521,708
Amounts During the Period 6/30/2014 – 6/30/2015		
4)	Expected Claims for the Fiscal Year	6,174,407
5)	Employer and Employee Premiums Collected	9,328,084
6)	Benefit Payments	(15,755,900)
7)	Net Liabilities Transferred into the State 5th level pool	0
8)	Net Assets Transferred into the State 5th level pool	0
Expected Amounts as of 6/30/2015		
9)	Expected Present Value of Benefits [(1) * 1.075 + ((4) + (6) + (7)) * $(1.075)^{1/2}$]	139,920,896
10)	Expected Market Value of Assets [(2) * 1.075 + ((5) + (6) + (8)) * $(1.075)^{1/2}$]	115,754,862
11)	Expected Unfunded Liability/(Excess Assets) [(9)-(10)]	24,166,034
Amounts as of 6/30/2015		
12)	Present Value of Benefits	142,864,757
13)	Market Value of Assets	109,619,378
14)	Unfunded Liability/(Excess Assets) [(12)-(13)]	33,245,379
Gain/(Loss) for the Period 6/30/2014 – 6/30/2015		
15)	Liability Gain/(Loss) [(9) – (12)]	(2,943,861)
16)	Asset Gain/(Loss) [(13) – (10)]	(6,135,484)
17)	Total Gain/(Loss) [(15) + (16)]	$ (9,079,345)

Gain/(Loss) Analysis 6/30/2014 – 6/30/2015

Schools 5th Level Pool

The following table develops the asset and demographic gain and losses between June 30, 2014 and June 30, 2015 for the Schools 5th Level Pool.

Amounts as of 6/30/2014		
1)	Present Value of Benefits	$ 12,599,127
2)	Market Value of Assets	71,331,499
3)	Unfunded Liability/(Excess Assets) [(1)-(2)]	(58,732,372)
Amounts During the Period 6/30/2014 – 6/30/2015		
4)	Expected Claims for the Fiscal Year	608,351
5)	Employer and Employee Premiums Collected	210,282
6)	Benefit Payments	(1,458,812)
7)	Net Liabilities Transferred into the Schools 5th level pool	0
8)	Net Assets Transferred into the Schools 5th level pool	0
Expected Amounts as of 6/30/2015		
9)	Expected Present Value of Benefits [(1) * 1.075 + ((4) + (6) + (7)) * $(1.075)^{1/2}$]	12,662,284
10)	Expected Market Value of Assets [(2) * 1.075 + ((5) + (6) + (8)) * $(1.075)^{1/2}$]	75,386,858
11)	Expected Unfunded Liability/(Excess Assets) [(9)-(10)]	(62,724,574)
Amounts as of 6/30/2015		
12)	Present Value of Benefits	13,498,624
13)	Market Value of Assets	71,525,517
14)	Unfunded Liability/(Excess Assets) [(12)-(13)]	(58,026,893)
Gain/(Loss) for the Period 6/30/2014 – 6/30/2015		
15)	Liability Gain/(Loss) [(9) – (12)]	(836,340)
16)	Asset Gain/(Loss) [(13) – (10)]	(3,861,341)
17)	Total Gain/(Loss) [(15) + (16)]	$ (4,697,680)

Gain/(Loss) Analysis 6/30/2014 – 6/30/2015

Public Agency 1st Level Pool

The following table develops the asset and demographic gain and losses between June 30, 2014 and June 30, 2015 for the Public Agency 1st Level Pool.

Amounts as of 6/30/2014		
1)	Present Value of Benefits	$ 2,478,062
2)	Market Value of Assets	43,028,607
3)	Unfunded Liability/(Excess Assets) [(1)-(2)]	(40,550,545)
Amounts During the Period 6/30/2014 – 6/30/2015		
4)	Expected Claims for the Fiscal Year	128,951
5)	Employer and Employee Premiums Collected	177,824
6)	Benefit Payments	(231,026)
7)	Net Liabilities Transferred into the 1st level pool	0
8)	Net Assets Transferred into the 1st level pool	(212,216)
Expected Amounts as of 6/30/2015		
9)	Expected Present Value of Benefits [(1) * 1.075 + ((4) + (6) + (7)) * $(1.075)^{1/2}$]	2,558,083
10)	Expected Market Value of Assets [(2) * 1.075 + ((5) + (6) + (8)) * $(1.075)^{1/2}$]	45,980,562
11)	Expected Unfunded Liability/(Excess Assets) [(9)-(10)]	(43,422,478)
Amounts as of 6/30/2015		
12)	Present Value of Benefits	2,585,287
13)	Market Value of Assets	43,637,106
14)	Unfunded Liability/(Excess Assets) [(12)-(13)]	(41,051,819)
Gain/(Loss) for the Period 6/30/2014 – 6/30/2015		
15)	Liability Gain/(Loss) [(9) – (12)]	(27,204)
16)	Asset Gain/(Loss) [(13) – (10)]	(2,343,456)
17)	Total Gain/(Loss) [(15) + (16)]	$ (2,370,659)

Gain/(Loss) Analysis 6/30/2014 – 6/30/2015

Public Agency 2nd Level Pool

The following table develops the asset and demographic gain and losses between June 30, 2014 and June 30, 2015 for the Public Agency 2nd Level Pool.

Amounts as of 6/30/2014		
1)	Present Value of Benefits	$ 2,340,934
2)	Market Value of Assets	10,527,005
3)	Unfunded Liability/(Excess Assets) [(1)-(2)]	(8,186,071)
Amounts During the Period 6/30/2014 – 6/30/2015		
4)	Expected Claims for the Fiscal Year	85,620
5)	Employer and Employee Premiums Collected	92,682
6)	Benefit Payments	(236,761)
7)	Net Liabilities Transferred into the 2nd level pool	0
8)	Net Assets Transferred into the 2nd level pool	(4,443)
Expected Amounts as of 6/30/2015		
9)	Expected Present Value of Benefits [(1) * 1.075 + ((4) + (6) + (7)) * (1.075)$^{1/2}$]	2,359,798
10)	Expected Market Value of Assets [(2) * 1.075 + ((5) + (6) + (8)) * (1.075)$^{1/2}$]	11,162,539
11)	Expected Unfunded Liability/(Excess Assets) [(9)-(10)]	(8,802,741)
Amounts as of 6/30/2015		
12)	Present Value of Benefits	2,474,187
13)	Market Value of Assets	10,589,764
14)	Unfunded Liability/(Excess Assets) [(12)-(13)]	(8,115,577)
Gain/(Loss) for the Period 6/30/2014 – 6/30/2015		
15)	Liability Gain/(Loss) [(9) – (12)]	(114,389)
16)	Asset Gain/(Loss) [(13) – (10)]	(572,775)
17)	Total Gain/(Loss) [(15) + (16)]	$ (687,164)

Gain/(Loss) Analysis 6/30/2014 – 6/30/2015

Public Agency 3rd Level Pool

The following table develops the asset and demographic gain and losses between June 30, 2014 and June 30, 2015 for the Public Agency 3rd Level Pool.

Amounts as of 6/30/2014		
1)	Present Value of Benefits	$ 27,317,573
2)	Market Value of Assets	106,304,466
3)	Unfunded Liability/(Excess Assets) [(1)-(2)]	(78,986,893)
Amounts During the Period 6/30/2014 - 6/30/2015		
4)	Expected Claims for the Fiscal Year	1,426,929
5)	Employer and Employee Premiums Collected	984,836
6)	Benefit Payments	(2,623,553)
7)	Net Liabilities Transferred into the 3rd level pool	(101,243)
8)	Net Assets Transferred into 3rd level pool	(497,448)
Expected Amounts as of 6/30/2015		
9)	Expected Present Value of Benefits [(1) * 1.075 + ((4) + (6) + (7)) * (1.075)$^{1/2}$]	28,020,734
10)	Expected Market Value of Assets [(2) * 1.075 + ((5) + (6) + (8)) * (1.075)$^{1/2}$]	112,062,478
11)	Expected Unfunded Liability/(Excess Assets) [(9)-(10)]	(84,041,743)
Amounts as of 6/30/2015		
12)	Present Value of Benefits	27,969,382
13)	Market Value of Assets	106,293,464
14)	Unfunded Liability/(Excess Assets) [(12)-(13)]	(78,324,082)
Gain/(Loss) for the Period 6/30/2014 – 6/30/2015		
15)	Liability Gain/(Loss) [(9) – (12)]	51,352
16)	Asset Gain/(Loss) [(13) – (10)]	(5,769,014)
17)	Total Gain/(Loss) [(15) + (16)]	$ (5,717,662)

Gain/(Loss) Analysis 6/30/2014 – 6/30/2015

Public Agency 4th Level Pool

The following table develops the asset and demographic gain and losses between June 30, 2014 and June 30, 2015 for the Public Agency 4th Level Pool.

Amounts as of 6/30/2014		
1)	Present Value of Benefits	$ 125,014,115
2)	Market Value of Assets	149,327,096
3)	Unfunded Liability/(Excess Assets) [(1)-(2)]	(24,312,981)
Amounts During the Period 6/30/2014 – 6/30/2015		
4)	Expected Claims for the Fiscal Year	6,366,534
5)	Employer and Employee Premiums Collected	5,701,601
6)	Benefit Payments	(12,677,733)
7)	Net Liabilities Transferred into the 4th level pool	274,803
8)	Net Assets Transferred into the 4th level pool	704,436
Expected Amounts as of 6/30/2015		
9)	Expected Present Value of Benefits [(1) * 1.075 + ((4) + (6) + (7)) * $(1.075)^{1/2}$]	128,131,505
10)	Expected Market Value of Assets [(2) * 1.075 + ((5) + (6) + (8)) * $(1.075)^{1/2}$]	154,023,996
11)	Expected Unfunded Liability/(Excess Assets) [(9)-(10)]	(25,892,490)
Amounts as of 6/30/2015		
12)	Present Value of Benefits	128,491,218
13)	Market Value of Assets	145,999,937
14)	Unfunded Liability/(Excess Assets) [(12)-(13)]	(17,508,719)
Gain/(Loss) for the Period 6/30/2014 – 6/30/2015		
15)	Liability Gain/(Loss) [(9) – (12)]	(359,713)
16)	Asset Gain/(Loss) [(13) – (10)]	(8,024,059)
17)	Total Gain/(Loss) [(15) + (16)]	$ (8,383,772)

Gain/(Loss) Analysis 6/30/2014 – 6/30/2015

Public Agency Indexed Level Pool

The following table develops the asset and demographic gain and losses between June 30, 2014 and June 30, 2015 for the Public Agency Indexed Level Pool.

Amounts as of 6/30/2014		
1)	Accrued Liability	$ 17,887,365
2)	Market Value of Assets	23,230,521
3)	Unfunded Liability/(Excess Assets) [(1)-(2)]	(5,343,156)
Amounts During the Period 6/30/2014 – 6/30/2015		
4)	Normal Cost for the Fiscal Year	1,033,436
5)	Employer and Employee Premiums Collected	792,091
6)	Benefit Payments	(1,223,796)
7)	Net Liabilities Transferred into the Indexed Level pool	0
8)	Net Assets Transferred into the Indexed Level pool	9,671
Expected Amounts as of 6/30/2015		
9)	Expected Present Value of Benefits [(1) * 1.075 + ((4) + (6) + (7)) * $(1.075)^{1/2}$]	19,031,549
10)	Expected Market Value of Assets [(2) * 1.075 + ((5) + (6) + (8)) * $(1.075)^{1/2}$]	24,535,236
11)	Expected Unfunded Liability/(Excess Assets) [(9)-(10)]	(5,503,688)
Amounts as of 6/30/2015		
12)	Present Value of Benefits	18,279,091
13)	Market Value of Assets	23,270,090
14)	Unfunded Liability/(Excess Assets) [(12)-(13)]	(4,990,999)
Gain/(Loss) for the Period 6/30/2014 – 6/30/2015		
15)	Liability Gain/(Loss) [(9) – (12)]	752,458
16)	Asset Gain/(Loss) [(13) – (10)]	(1,265,146)
17)	Total Gain/(Loss) [(15) + (16)]	$ (512,689)

Risk Analysis

Contents

This section contains the following topics:

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Analysis of Future Investment Return Scenarios

The following analysis looks at what the 2017-18 contribution rates would be under four different investment return scenarios. This type of analysis can give the reader a sense of the short-term risk to the contribution rates.

The first scenario is what one would expect if the markets were to give us a 5th percentile return without considering we are already at an approximate return of -6% so far for the 2015-16 Fiscal Year (thru January 31, 2016). The 5th percentile return corresponds to a -12% return for the 2015-16 Fiscal Year. The second scenario assumed the return would be our assumed 7.50%. The third scenario assumes an approximate return of -6%, the rate of return attained so far this fiscal year. The last scenario is what one would expect if the markets were to give us a 95th percentile return notwithstanding the -6% year-to-date return for the current fiscal year. This 95th percentile return is equivalent to around 27%. A 27% return would trigger a reduction in the discount rate by .25% in accordance with the Risk Mitigation Policy which is reflected under that scenario.

The tables below shows 2017-18 projected employee and employer contribution rates under the return scenarios mentioned above.

	-12% Return		**7.50% Return**	
	2017-18 Employer Monthly Premium	2017-18 Employee Monthly Premium	2017-18 Employer Monthly Premium	2017-18 Employee Monthly Premium
PA 1	$0.00	$2.00	$0.00	$2.00
PA 2	$0.00	$2.00	$0.00	$2.00
PA 3	$0.00	$2.00	$0.00	$2.00
PA 4	$7.10	$2.00	$4.30	$2.00
Indexed	$4.10	$4.10	$2.75	$2.75
State	$5.35	$5.35	$5.10	$5.10
School	$0.00	$2.00	$0.00	$2.00

	-6% Return		**27% Return[1]**	
	2017-18 Employer Monthly Premium	2017-18 Employee Monthly Premium	2017-18 Employer Monthly Premium	2017-18 Employee Monthly Premium
PA 1	$0.00	$2.00	$0.00	$2.00
PA 2	$0.00	$2.00	$0.00	$2.00
PA 3	$0.00	$2.00	$0.00	$2.00
PA 4	$6.30	$2.00	$2.10	$2.00
Indexed	$3.70	$3.70	$1.20	$2.00
State	$5.25	$5.25	$4.90	$4.90
School	$0.00	$2.00	$0.00	$2.00

[1] *– reflects reduction in discount rate of .25%*

Analysis of Discount Rate Sensitivity

The following analysis looks at what the 2016-17 contribution premiums would be under two different discount rate scenarios. We determined the required contribution premiums using discount rates that are 1% lower and 1% higher than the valuation discount rate of 7.50%. This analysis will give an indication of the potential required premium rates if the PERF had investment returns of 6.50% or 8.50% over the long-term.

This type of analysis can give employers a sense of the long-term risk to the contribution rates.

6.50% Discount Rate (-1%) **Increase in Premium**

	2016-17 Employer Monthly Premium	2016-17 Employee Monthly Premium	2016-17 Employer Monthly Premium	2016-17 Employee Monthly Premium
PA 1	$0.00	$2.00	$0.00	$0.00
PA 2	$0.00	$2.00	$0.00	$0.00
PA 3	$0.00	$2.00	$0.00	$0.00
PA 4	$6.00	$2.00	$1.70	$0.00
Indexed	$4.05	$4.05	$1.30	$1.30
State	$5.80	$5.80	$0.65	$0.65
School	$0.00	$2.00	$0.00	$0.00

8.50% Discount Rate (+1%) **Decrease in Premium**

	2016-17 Employer Monthly Premium	2016-17 Employee Monthly Premium	2016-17 Employer Monthly Premium	2016-17 Employee Monthly Premium
PA 1	$0.00	$2.00	$0.00	$0.00
PA 2	$0.00	$2.00	$0.00	$0.00
PA 3	$0.00	$2.00	$0.00	$0.00
PA 4	$2.80	$2.00	($1.50)	$0.00
Indexed	$1.00	$2.00	($1.75)	($0.75)
State	$4.45	$4.45	($0.70)	($0.70)
School	$0.00	$2.00	$0.00	$0.00

Appendix A - Statement of Actuarial Methods and Assumptions

Actuarial Funding Method for Public Agency 1st, 2nd, 3rd and 4th Level, and State and Schools 5th Level Pools

The actuarial funding method used, as provided in State statute for public agency 1st, 2nd, 3rd and 4th level, and State and Schools 5th level pools, is called the Term Insurance method. This is a terminal funding arrangement with no pre-funding of the survivor benefits payable on account of deaths expected to occur beyond those in the coming year.

The Normal Cost for the year is equal to the Expected Claims (present value of benefits arising from deaths) that will occur in the coming fiscal year. The expected claims for the coming fiscal year is determined as the expected claim per member, per month multiplied by the expected member months for the coming fiscal year. The normal cost (or expected claims) per member, per month for the coming fiscal year is equal to a weighted average of the prior year and current year normal cost. Specifically, the current year's normal cost is calculated as the present value of member deaths for the past 4 years divided by the total number of members exposed to the death benefit over the same period. Then the normal cost (expected claims) for the coming year is simply 25% of the current year's normal cost and 75% of the prior year's normal cost. The reason for this methodology is that when new deaths occur each year, it is often unknown which benefit will ultimately apply (i.e., 1957 Survivor, Industrial Death, Pre-Retirement Option 2 or 1959 Survivor). Many times, new deaths are initially placed under the 1959 Survivor roll, but ultimately are reclassified to another roll some time later. This can create extreme volatility in the normal cost calculation between valuation years, especially for smaller pools.

The consequence of this approach is that less weight is given to the most recent year's data and more weight is given to previous years. In fact, as this methodology matures or reaches a steady state, all data from the past would have some impact on the calculated normal cost. The following matrix shows ultimate weights for the past ten year's data as the methodology approaches its steady state:

Data t years ago	Weights
1	6.3%
2	10.9
3	14.5
4	17.1
5	12.8
6	9.6
7	7.2
8	5.4
9	4.1
10	3.0

For Public Agency 1st, 2nd, 3rd and 4th Levels, the Present Value of Benefits for 2011-2014 Deaths for each level are calculated as if all members of all four levels who died from 2011-2014 were members of that particular level.

The Accrued Liability is equal to the Present Value of Benefits payable to current survivors. If the Accrued Liability exceeds the Actuarial Value of Assets, the difference is called the Unfunded Liability. On the other hand, if the Actuarial Value of Assets exceeds the Accrued Liability, the difference is called Excess Assets.

The required employer monthly premium is the total required monthly premium less the $2.00 per month member contributions as required by State Statute Section 21581. For all levels, existing excess assets in the pool will be amortized and directly used to offset required employer contributions. However, for the State and Schools 5th Level pool, if the total required monthly premium after amortization of excess assets exceeds $4, the member and the employer shall evenly share the required monthly premium. For the current valuation date, the unfunded liability for the State 5th Level pool was amortized using CalPERS amortization policy. Excess assets for the Schools 5th Level pool, and Public Agency 1st, 2nd, and 3rd Level pools were sufficient to offset required employer contributions indefinitely, based on June 30, 2015 data and assumptions. Excess assets for the Public Agency 4th Level were amortized over a 30-year period, and are not sufficient to fully offset the required employer contribution. The resulting employer contribution for the 4th Level is $4.30 per covered member per month.

Actuarial Funding Method for Public Agency Indexed Level Pool

The funding method used for the Public Agency Indexed Level pool is the Entry Age Normal method. Under this method, projected benefits are determined for all members and the associated liabilities are spread in a manner that produces an annual cost that increases by approximately 2% in each year.

The Normal Cost for the Public Agency Indexed Level pool is the portion of the total Entry Age Normal Cost, as described in the preceding paragraph that is allocated to the current fiscal year. Since there is no cost allocated to the current fiscal year for those already receiving benefits or are in a deferred status, only active members have a Normal Cost. The population demographics, excluding population growth, are assumed to remain stable for purposes of projecting the Normal Cost to the year for which the contribution requirement is being determined.

The Accrued Liability is equal to the Present Value of Future Benefits for both current survivors and active members, less the Present Value of Future Normal Costs.

The total required monthly premium is the sum of the individual Normal Costs divided by the number of member months. The required employer monthly premium is the total required monthly premium less the $2.00 per month member contributions as required by State Statute Section 21581. Existing excess assets in the pool is amortized and directly used to offset required employer contributions. However, if the total required monthly premium after amortization of excess assets exceeds $4.00, the member and the employer evenly share the required monthly premium. Excess assets for the Public Agency Indexed Level are amortized over a 30-year period. The resulting employer contribution for the Indexed Level is $2.75 per covered member per month.

Asset Valuation Method

Commencing with the June 30, 2013 valuation, assets were and continue to be valued on a Market Value basis.

Method for Projecting Active Counts

In the past, actuarial staff has found that two particular methods have worked well in predicting future active member counts for the pools. Projected counts are necessary to determine employer premiums. The two methods that are normally used are linear trend or autoregressive models. For this valuation year, we will continue to use these models for the Public Agency Pools. They continue to model slow and even declining growth in the Levels 1, 2 and 3 pools and less positive growth in Level 4 and Indexed. This is to be expected, since the first three levels are closed to new entrants and Levels 4 and Indexed are still open to amending and new contracting.

These methods when applied to the State and Schools Pools are also predicting modest growth for Schools and for State. This is consistent with the current state of the economy, current hiring practices of the State and the fact that new migration into and out of these pools do not take place.

Actuarial Assumptions

The primary actuarial assumptions used in this valuation include the investment return rate and the mortality rates for current beneficiaries.

The investment return for the PERF was adopted by the CalPERS Board on March 14, 2012 based upon recommendations from both CalPERS actuarial staff and outside consulting actuaries. Agenda Item 4 to the Pension and Health Benefits Committee meeting on March 13, 2012 provides the background information for the adopted rate.

The mortality assumptions are based on mortality rates resulting from the most recent CalPERS Experience Study adopted by the CalPERS Board. For purposes of the mortality rates, the revised rates include 20 years of projected on-going mortality improvement using Scale BB published by the Society of Actuaries. For more details about the mortality assumptions and demographic assumptions related to the Indexed Level pool, please refer to the Experience Study report found on the CalPERS website in the *Forms and Publications* section.

Actual mortality rates for active members of all pools combined are shown in Appendix D and are used in the calculation of the annual normal costs, except for the Public Agency Indexed Level.

Economic Assumptions:

Investment Return	7.50% compounded annually (net of administrative expenses).

Demographic Assumptions:

Attained Age	Male Mortality Rate	Female Mortality Rate
25	.0003	.0002
30	.0004	.0003
35	.0006	.0005
40	.0011	.0009
45	.0023	.0020
50	.0050	.0047
55	.0060	.0042
60	.0071	.0044
65	.0083	.0059
70	.0131	.0099
75	.0221	.0172
80	.0390	.0290
85	.0697	.0524
90	.1297	.0989
95	.2244	.1849
100	.3254	.3002

Additional Actuarial Assumptions Applicable to the Public Agency Indexed Level

The Public Agency Indexed Level's Accrued Liability and Entry Age Normal cost for active members are calculated based on the actuarial assumptions for our Public Agency miscellaneous 2% @ 55 and police 2% @ 50 pension plans. The final valuation results equals the sum of the results valued on the basis of a miscellaneous 2% @ 55 plan plus the results valued on the basis of a police 2% @ 50 plan, where all miscellaneous employees are valued using miscellaneous 2% @ 55 assumptions, and all safety employees are valued using police 2% @ 50 assumptions.

The actuarial assumptions for each of these plans are as follows:

Eligible Survivor Status

For active members of both the Miscellaneous and Safety Police plans, the probability of having eligible survivor(s) at the date of death is assumed according to the following table:

Age at Death	Percent having Eligible Survivor(s)
Age 20 and under	30%
Between ages 21 and 24	50%
Between ages 25 and 29	70%
Between ages 30 and 39	90%
Between ages 40 and 49	95%
Between ages 50 and 54	90%
Age 55 and above	85%

Average claims are developed at every age using actual experience from the program. These average claims are then multiplied by the percentages in the above table. The results are used to estimate expected claims in the active population.

Benefit amounts and Present Value of benefits were based on average claim experience. A sample of the average claim experience is shown in the table below:

Age at Death	Present Value of Average Claim at the Time of Death*
20 and below	$31,707
25	$93,090
30	$125,004
35	$118,385
40	$111,656
45	$96,873
50	$79,591
55	$67,140
60	$63,054
65	$62,093
70	$62,147
75	$59,820
80 and above	$50,429

Average claims were calculated using actual experience from the 1959 Survivor program and smoothed using a polynomial regression model.

*Values are based on an initial benefit of $500/$1,000/$1,500 for one, two, or three survivors, respectively. This was the benefit level on June 30, 2000, when the Indexed Level first became effective. The valuation program increases these amounts by 2% per year up to the current valuation year.

Public Agency Miscellaneous 2% @ 55

Non-Industrial (Not Job-Related) Death and Non-Industrial (Not Job-Related) Disability

Rates vary by age and sex. See sample rates in table below.

	Male		Female	
	Non-Industrial (Not Job-Related)	Non-Industrial (Not Job-Related)	Non-Industrial (Not Job-Related)	Non-Industrial (Not Job-Related)
Attained Age	Death	Disability	Death	Disability
20	0.00031	0.00017	0.00020	0.00010
25	0.00040	0.00017	0.00023	0.00010
30	0.00049	0.00019	0.00025	0.00024
35	0.00057	0.00049	0.00035	0.00081
40	0.00075	0.00122	0.00050	0.00155
45	0.00106	0.00191	0.00071	0.00218
50	0.00155	0.00213	0.00100	0.00229
55	0.00228	0.00221	0.00138	0.00179
60	0.00308	0.00222	0.00182	0.00135

Service Retirement

Rates vary by age and service. See table sample below.

	Service Retirement					
	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.0140	0.0180	0.0210	0.0250	0.0270	0.0310
51	0.0120	0.0140	0.0170	0.0200	0.0210	0.0250
52	0.0130	0.0170	0.0190	0.0230	0.0250	0.0280
53	0.0150	0.0200	0.0230	0.0270	0.0300	0.0340
54	0.0260	0.0330	0.0380	0.0450	0.0510	0.0590
55	0.0480	0.0610	0.0740	0.0880	0.1000	0.1170
56	0.0420	0.0530	0.0630	0.0750	0.0850	0.1000
57	0.0440	0.0560	0.0670	0.0810	0.0910	0.1070
58	0.0490	0.0620	0.0740	0.0890	0.1000	0.1180
59	0.0570	0.0720	0.0860	0.1030	0.1180	0.1380
60	0.0670	0.0860	0.1030	0.1230	0.1390	0.1640
61	0.0810	0.1030	0.1240	0.1480	0.1680	0.1990
62	0.1160	0.1470	0.1780	0.2140	0.2430	0.2880
63	0.1140	0.1440	0.1740	0.2080	0.2370	0.2810
64	0.1080	0.1380	0.1660	0.1990	0.2270	0.2680
65	0.1550	0.1970	0.2380	0.2850	0.3250	0.3860
66	0.1320	0.1680	0.2030	0.2430	0.2760	0.3280
67	0.1220	0.1550	0.1890	0.2250	0.2560	0.3040
68	0.1110	0.1410	0.1700	0.2040	0.2320	0.2740
69	0.1140	0.1440	0.1740	0.2090	0.2380	0.2820
70	0.1300	0.1650	0.2000	0.2400	0.2720	0.3230

Public Agency Miscellaneous 2% @ 55 (continued)

Termination with Refund

Rates vary by entry age and service. See sample rates in table below.

Duration of Service	Termination with Refund Entry Age 20	25	30	35	40	45
0	0.1742	0.1674	0.1606	0.1537	0.1468	0.1400
1	0.1545	0.1477	0.1409	0.1339	0.1271	0.1203
2	0.1348	0.1280	0.1212	0.1142	0.1074	0.1006
3	0.1151	0.1083	0.1015	0.0945	0.0877	0.0809
4	0.0954	0.0886	0.0818	0.0748	0.0680	0.0612
5	0.0212	0.0193	0.0174	0.0155	0.0136	0.0116
10	0.0138	0.0121	0.0104	0.0088	0.0071	0.0055
15	0.0060	0.0051	0.0042	0.0032	0.0023	0.0014
20	0.0037	0.0029	0.0021	0.0013	0.0005	0.0001
25	0.0017	0.0011	0.0005	0.0001	0.0001	0.0001
30	0.0005	0.0001	0.0001	0.0001	0.0001	0.0001

Termination with Vested Deferred Benefits

Rates vary by entry age and service. See sample rates in table below.

Duration of Service	Termination with Vested Deferred Benefits Entry Age 20	25	30	35	40
5	0.0656	0.0597	0.0537	0.0477	0.0418
10	0.0530	0.0466	0.0403	0.0339	0.0000
15	0.0443	0.0373	0.0305	0.0000	0.0000
20	0.0333	0.0261	0.0000	0.0000	0.0000
25	0.0212	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000

Public Agency Police 2% @ 50

Non-Industrial (Not Job-Related) Death and Non-Industrial (Not Job-Related) Disability

Rates vary by age and sex. See sample rates in table below.

Attained Age	Male Non-Industrial (Not Job-Related) Death	Male Non-Industrial (Not Job-Related) Disability	Female Non-Industrial (Not Job-Related) Death	Female Non-Industrial (Not Job-Related) Disability
20	0.00031	0.00010	0.00020	0.00010
25	0.00040	0.00010	0.00023	0.00010
30	0.00049	0.00020	0.00025	0.00020
35	0.00057	0.00030	0.00035	0.00030
40	0.00075	0.00040	0.00050	0.00040
45	0.00106	0.00050	0.00071	0.00050
50	0.00155	0.00080	0.00100	0.00080
55	0.00228	0.00130	0.00138	0.00130
60	0.00308	0.00200	0.00182	0.00200

Public Agency Police 2% @ 50 (continued)

Industrial (Job-Related) Death and Industrial (Job-Related) Disability

Rates vary by age and sex. See sample rates in table below.

	Male		Female	
Attained Age	Industrial (Job-Related) Death	Industrial (Job-Related) Disability	Industrial (Job-Related) Death	Industrial (Job-Related) Disability
20	0.00003	0.00000	0.00003	0.00000
25	0.00007	0.00165	0.00007	0.00165
30	0.00010	0.00476	0.00010	0.00476
35	0.00012	0.00788	0.00012	0.00788
40	0.00013	0.01100	0.00013	0.01100
45	0.00014	0.01412	0.00014	0.01412
50	0.00015	0.01846	0.00015	0.01846
55	0.00016	0.04785	0.00016	0.04785
60	0.00017	0.06024	0.00017	0.06024

Service Retirement

Rates vary by age and service. See table sample below.

	Service Retirement					
	Duration of Service					
Age	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
50	0.0050	0.0050	0.0050	0.0050	0.0170	0.0890
51	0.0050	0.0050	0.0050	0.0050	0.0170	0.0870
52	0.0180	0.0180	0.0180	0.0180	0.0420	0.1320
53	0.0440	0.0440	0.0440	0.0440	0.0900	0.2170
54	0.0650	0.0650	0.0650	0.0650	0.1260	0.2830
55	0.0860	0.0860	0.0860	0.0860	0.1660	0.3540
56	0.0670	0.0670	0.0670	0.0670	0.1300	0.2890
57	0.0660	0.0660	0.0660	0.0660	0.1290	0.2880
58	0.0660	0.0660	0.0660	0.0660	0.1290	0.2880
59	0.1390	0.1390	0.1390	0.1390	0.1760	0.3120
60	0.1230	0.1230	0.1230	0.1230	0.1530	0.2780
61	0.1100	0.1100	0.1100	0.1100	0.1380	0.2560
62	0.1300	0.1300	0.1300	0.1300	0.1620	0.2910
63	0.1300	0.1300	0.1300	0.1300	0.1620	0.2910
64	0.1300	0.1300	0.1300	0.1300	0.1620	0.2910
65	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Public Agency Police 2% @ 50 (continued)

Termination with Refund

Rates vary by entry age and service. See sample rates in table below.

	Termination with Refund					
Duration of	Entry Age					
Service	20	25	30	35	40	45
0	0.1013	0.1013	0.1013	0.1013	0.1013	0.1013
1	0.0636	0.0636	0.0636	0.0636	0.0636	0.0636
2	0.0271	0.0271	0.0271	0.0271	0.0271	0.0271
3	0.0258	0.0258	0.0258	0.0258	0.0258	0.0258
4	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245
5	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086
10	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
15	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
20	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
25	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012
30	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009

Termination with Vested Deferred Benefits

Rates vary by entry age and service. See sample rates in table below.

	Termination with Vested Deferred Benefits				
Duration of	Entry Age				
Service	20	25	30	35	40
5	0.0163	0.0163	0.0163	0.0163	0.0163
10	0.0126	0.0126	0.0126	0.0126	0.0000
15	0.0082	0.0082	0.0082	0.0000	0.0000
20	0.0065	0.0065	0.0000	0.0000	0.0000
25	0.0058	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix B - Principal Plan Provisions

The 1959 Survivor program was designed to provide pre-retirement death benefits comparable to those provided by Social Security, formally the Federal Old Age and Survivor Insurance (OASI) program, to CalPERS' members not covered by Social Security.

Eligibility

The benefit is available only to those members not covered by Social Security OASI benefits. For public agencies, this benefit is provided by contract with CalPERS. Only those public agencies that contract for the 1st, 2nd, 3rd, 4th, or Indexed level of the program are eligible for the benefits valued in this report. Public Agency 1st and 2nd levels have been closed since January 1, 1994 and 3rd level has been closed since July 1, 2001. For State and Schools members, the 5th level benefit is provided by State statute to certain groups of employees. Members who are eligible for the benefit are given a one-time option to join at the time of contract. Members hired subsequent to the time of contract are automatically enrolled in the program.

Spousal or Domestic Partner Benefit

The benefit is a monthly payment to eligible surviving spouses or domestic partners age 62 or older for Public Agency Levels 1, 2 and 3 and age 60 or older for all other levels. The benefit is also payable under these deferred ages for spouses or partners that have care of children under the age of 22. As an example, assume an agency contracts for the Level 3 benefit and an active member dies and leaves behind a 35 year old spouse and 2 children, ages 5 and 15. The following table describes how the benefit would be paid over the course of time.

Event	Monthly Benefit Paid
Member Death	$840
1st Child turns 22	$700
2nd Child turns 22*	$0
Spouse turns 62**	$350

* At this time, the spouse would be 52 years old and would not receive any benefit until age 62

** Spouse would continue to receive this benefit until his/her death

Child Benefit

Children are eligible under the age of 22 whether a spouse or domestic partner exists. For 3 or more children, the 3 survivor benefit is paid; for 2 children, the 2 survivor benefit is paid and so forth (see tables below). In all cases, unless a child is disabled, the benefit stops at age 22. If a child is disabled, the benefit is paid until the disability ceases.

Parental Benefit

If there is no eligible spouse or domestic partner or children, parent(s) dependent for at least half of their subsistence from the deceased member may be eligible for benefits. The parent(s) must be over age 62 for Public Agency Levels 1, 2 and 3 and over age 60 for all other levels.

Monthly Benefit Amounts

The monthly benefit amount depends upon the coverage level within the program.

Level 1 (For Members of Public Agencies who Contract)

a. spouse or domestic partner with two or more eligible children; or three or more eligible children	$430
b. spouse with one eligible child; or two eligible children only	$360
c. one eligible child only; or spouse age 62 or older; or eligible dependent parents	$180

Level 2 (For Members of Public Agencies who Contract)

a. spouse or domestic partner with two or more eligible children; or three or more eligible children	$538
b. spouse with one eligible child; or two eligible children only	$450
c. one eligible child only; or spouse age 62 or older; or eligible dependent parents	$225

Level 3 (For Members of Public Agencies who Contract)

a. spouse or domestic partner with two or more eligible children; or three or more eligible children	$840
b. spouse with one eligible child; or two eligible children only	$700
c. one eligible child only; or spouse age 62 or older; or eligible dependent parents	$350

Level 4 (For Members of Public Agencies who Contract)

a. spouse or domestic partner with two or more eligible children; or three or more eligible children	$2,280
b. spouse with one eligible child; or two eligible children only	$1,900
c. one eligible child only; or spouse age 60 or older; or eligible dependent parents	$950

Indexed Level (For Members of Public Agencies who Contract)

a. spouse or domestic partner with two or more eligible children; or three or more eligible children	$2,059[1]
b. spouse with one eligible child; or two eligible children only	$1,373[1]
c. one eligible child only; or spouse age 60 or older; or eligible dependent parents	$686[1]

Level 5 – (For State and Schools Members)

a. spouse or domestic partner with two or more eligible children; or three or more eligible children	$1,800
b. spouse with one eligible child; or two eligible children only	$1,500
c. one eligible child only; or spouse age 60 or older; or eligible dependent parents	$750

[1] - These figures indicate calendar year benefit amounts for the Indexed Level in effect for calendar year 2016. Benefit amounts will increase by 2 percent each January 1.

Comparison of Social Security and CalPERS 1959 Survivor Benefits

The following tables compare current Social Security survivor benefits with current benefit levels paid under the 1959 Survivor Program.

	Social Security		
Survivor Group	**Low**	**Average**	**High**
One Survivor	$ 755	$ 1,139	$ 1,676
Two Survivors	$ 1,510	$ 2,278	$ 3,352
Three Survivors	$ 1,512	$ 2,798	$ 3,913

Unlike the 1959 Survivor Benefit (with the exception of the Indexed level), federal Social Security benefits normally receive an automatic cost-of-living adjustment every year. Also, unlike the 1959 Survivor Benefit, Social Security benefits are based on a worker's actual earnings up to the maximum covered. The values shown assume death at age 45 (benefits slightly higher at lower ages, lower at higher ages), and steady earnings. "Low" is 2015 salary of $25,000, "Average" is $50,000, and "High" is $90,000.

	CalPERS 1959 Survivor Benefit					
Survivor Group	**First**	**Second**	**Third**	**Fourth**	**Indexed[2]**	**Schools/ State 5th**
One Survivor	$ 180	$ 225	$ 350	$ 950	$ 686	$ 750
Two Survivors	$ 360	$ 450	$ 700	$ 1,900	$ 1,373	$ 1,500
Three Survivors	$ 430	$ 538	$ 840	$ 2,280	$ 2,059	$ 1,800

[2] – Amounts effective January 1, 2016

Summary of Plan Changes

Existing public agency employers joining the Public Agency 4th or Indexed Level Pool during the 2016-17 Fiscal Year are required to pay only the Unfunded Liability based on their own membership (amortized over a period of 5 years) which exists at the time they join plus the agency's normal cost for all members at the new benefit level for the first five years. If they have excess assets, then they will be allowed to use as much of it as necessary to offset any increased liabilities incurred at the higher level and required employer premiums incurred at the higher level.

Appendix C - Demographic and Experience Information

Current and Deferred Beneficiaries – All Levels of the 1959 Survivor Program for Public Agencies, State and Schools

Currently, there are 4,158 cases where liability exists. These cases include widows or widowers in deferred status even though presently there are no benefits being paid. There are 9 possible beneficiary combinations that can be associated with each case. The combinations presented below are given as of the date of the valuation, for all levels of the 1959 Survivor program.

Status	Number	Percent
Widow deferred	807	19.4%
Widow only receiving	2,510	60.4%
Widow with one child	325	7.8%
Widow with two or more children	274	6.6%
One child	159	3.8%
Two children	53	1.3%
Three or more children	19	0.5%
One parent	11	0.3%
Two parents	0	0.0%
Totals	4,158	100.0%[1]

Beneficiary Combinations at Date of Death – All Levels of the 1959 Survivor Program for Public Agencies, State and Schools

There exist 7,478 cases of death associated with the 1959 Survivor program since its inception where 1959 Survivor benefits became payable. With this data, a historical account of each combination can be made. Further, probabilities can be approximated with respect to these combinations when a member dies. Below is a list of all combinations on record, numbers and associated percentages as of the time of death, for all levels of the 1959 Survivor program.

Status	Number	Percent
Widow deferred	2,162	28.9%
Widow only receiving	1,050	14.0%
Widow with one child	1,235	16.5%
Widow with two or more children	2,012	26.9%
One child	439	5.9%
Two children	339	4.5%
Three or more children	214	2.9%
One parent	24	0.3%
Two parents	3	0.0%
Totals	7,478	100.0%[1]

[1] – Percentages may not sum to 100% due to rounding

Appendix D - 1959 Survivor Deaths Per Year

1959 Survivor Deaths Per Year

Displayed on the following page is a year-by-year account of the number of deaths under the program since 1959 and the death rate each year since 1980 for public agencies, State, and Schools. The historic covered active counts are not available prior to 1980. Deaths given in the exhibit are on a calendar year basis. Counts represent mid-year active exposure. The historic covered active counts may not match those reported in the prior year's valuation. This is due to the fact that in some cases there is a time gap between a member's death and the determination of which type of death benefit that member will receive.

Appendix D - continued
1959 Survivor Deaths Per Year

	Public Agency			State			School		
Calendar Year	Deaths	Mid-year Active Counts	Death Rate	Deaths	Mid-year Active Counts	Death Rate	Deaths	Mid-year Active Counts	Death Rate
1959	2		*	1		*	1		*
1960	2		*	65		*	10		*
1961	1		*	79		*	10		*
1962	8		*	61		*	15		*
1963	12		*	49		*	9		*
1964	14		*	62		*	14		*
1965	18		*	76		*	8		*
1966	25		*	60		*	5		*
1967	39		*	66		*	12		*
1968	20		*	79		*	9		*
1969	35		*	86		*	12		*
1970	39		*	72		*	10		*
1971	37		*	66		*	11		*
1972	46		*	67		*	10		*
1973	52		*	70		*	13		*
1974	53		*	66		*	5		*
1975	56		*	89		*	11		*
1976	52		*	67		*	3		*
1977	57		*	67		*	18		*
1978	71		*	91		*	13		*
1979	56		*	81		*	7		*
1980	60		*	81		*	6		*
1981	72	54,354	0.13%	73	38,192	0.19%	10	7,843	0.13%
1982	75	56,401	0.13%	79	37,030	0.21%	10	7,987	0.13%
1983	77	59,917	0.13%	68	37,186	0.18%	8	7,685	0.10%
1984	74	65,480	0.11%	63	38,488	0.16%	4	7,104	0.06%
1985	68	66,927	0.10%	80	39,175	0.20%	5	6,842	0.07%
1986	64	68,500	0.09%	40	39,391	0.10%	8	6,500	0.12%
1987	60	69,340	0.09%	51	40,315	0.13%	11	6,200	0.18%
1988	72	84,808	0.08%	50	41,980	0.12%	9	7,100	0.13%
1989	66	82,046	0.08%	60	44,069	0.14%	6	6,899	0.09%
1990	85	86,196	0.10%	59	45,502	0.13%	7	7,942	0.09%
1991	95	91,574	0.10%	41	47,708	0.09%	7	7,752	0.09%
1992	83	95,840	0.09%	45	48,872	0.09%	8	6,823	0.12%
1993	74	97,752	0.08%	52	46,872	0.11%	3	6,776	0.04%
1994	68	98,088	0.07%	56	47,323	0.12%	11	6,653	0.17%
1995	72	99,235	0.07%	51	47,689	0.11%	10	6,751	0.15%
1996	82	100,494	0.08%	53	51,746	0.10%	6	6,726	0.09%
1997	69	102,475	0.07%	59	55,084	0.11%	4	6,794	0.06%
1998	85	112,389	0.08%	57	55,435	0.10%	6	6,956	0.09%
1999	90	118,850	0.08%	58	59,406	0.10%	3	7,444	0.04%
2000	78	121,538	0.06%	57	60,349	0.09%	7	8,338	0.08%
2001	83	116,161	0.07%	58	64,309	0.09%	5	7,884	0.06%
2002	84	129,355	0.06%	47	65,558	0.07%	5	9,195	0.05%
2003	91	129,620	0.07%	70	68,791	0.10%	6	9,390	0.06%
2004	93	131,633	0.07%	59	64,252	0.09%	3	9,325	0.03%
2005	101	133,510	0.08%	65	70,193	0.09%	7	9,402	0.07%
2006	84	137,095	0.06%	68	71,742	0.09%	13	9,469	0.14%
2007	104	140,012	0.07%	69	76,902	0.09%	5	10,131	0.05%
2008	103	144,828	0.07%	50	81,369	0.06%	8	10,550	0.08%
2009	97	143,207	0.07%	60	82,434	0.07%	7	10,562	0.07%
2010	83	138,470	0.06%	54	79,587	0.07%	7	10,203	0.07%
2011	108	134,255	0.08%	56	77,714	0.07%	7	9,811	0.07%
2012	90	132,754	0.07%	50	71,759	0.07%	6	10,123	0.06%
2013	77	129,796	0.06%	56	71,180	0.08%	4	9,944	0.04%
2014	65	132,024	0.05%	53	72,848	0.07%	3	10,287	0.03%

Death counts may change from previous valuations due mainly to reclassification of the benefit that ultimately gets paid to the beneficiary.

Appendix E - Glossary of Actuarial Terms

Accrued Liability	The portion of the actuarial present value of projected benefits allocated to service before the valuation date in accordance with the actuarial cost method.
Actuarial Assumptions	Assumptions made about the occurrence of future events that will affect pension costs. Assumptions generally can be broken down into two categories: demographic and economic. Demographic assumptions include such things as mortality, disability and retirement rates. Economic assumptions include investment return, salary growth and inflation.
Actuarial Cost Method	A procedure employed by actuaries for the allocation of the actuarial present value of projected benefits to time periods, usually in the form of a normal cost and an actuarial accrued liability to achieve certain funding goals for a pension plan. Sometimes this is referred to as the "funding method."
Actuarial Valuation	The determination, as of a valuation date, of the normal cost, actuarial accrued liability, actuarial value of assets and related actuarial present values for a pension plan.
Actuarial Value of Assets	The value of assets used for funding purposes. The actuarial value of assets has been set to equal the fair market value of assets for this System.
Amortization Period	The period of time used for determining the amount, timing, and pattern of recognition of contributions.
Normal Cost	The portion of the actuarial present value of projected benefits that is allocated to a period, typically twelve months, under the actuarial cost method. The normal cost may include a provision for expenses.
Pension Actuary	A person who is responsible for the calculations necessary to properly fund a pension plan.
Present Value of Benefits	Sometimes called the "actuarial present value of benefits," the total dollars needed as of the valuation date to make future payments of all benefits, earned in the past or expected to be earned in the future, for current members by application of a particular set of actuarial assumptions.