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CITY OF OAKLAND

AGENDA REPORT

TO: DEANNA J. SANTANA
CITY ADMINISTRATOR

FROM: Katano Kasaine
Treasurer

SUBJECT: Actuarial Status of the PFRS' and OMERS' Retirement Systems

DATE: June 4, 2013

City Administrator Approval [signature]

Date 6/10/13

COUNCIL DISTRICT: City-Wide

RECOMMENDATION

Staff recommends that the City Council accepts this informational report regarding the Actuary Valuation reports of the Oakland Police & Fire Retirement System (PFRS) and the Oakland Municipal Employees' Retirement System (OMERS) as of July 1, 2012.

EXECUTIVE SUMMARY

Based on the most recent PFRS Actuarial Study dated July 1, 2012, the PFRS Fund is 39.1% funded and has an Unfunded Actuarial Liability of $401.1 million. (This PFRS Funding Status does not include the City of Oakland recent deposit of $210 million in Pension Obligation Bond (POB) proceeds.) On July 30, 2012, which is after the current valuation date, the City sold Pension Obligation Bonds and deposited the proceeds of $210 million into PFRS. The post analysis, which includes the bonds, increases the funding to approximately 68.2% or decreases the unfunded liability to $203.7 million.

With the funding agreement in place, the City will not contribute to PFRS until July 1, 2017. The projected contribution will be approximately $35.1 million dollars.

Based on a recent OMERS Actuarial Study dated July 1, 2012, the OMERS Systems is fully funded with a funded status of 122.5%. The City is not required to make any contributions due to the System's funded status.

OUTCOME

This report is informational only. The purpose of this report is to summarize the current actuarial status of the Oakland Police and Fire Retirement System (PFRS) and the Oakland Municipal Employees' Retirement System (OMERS) as of July 1, 2012.

BACKGROUND/LEGISLATIVE HISTORY

PFRS is a closed defined benefit plan, which was created pursuant to Article XXVI of the City Charter. The System provides retirement, disability and survivor benefits for eligible sworn safety employees of the City. The System serves the City's sworn employees hired prior to July 1, 1976 who have not transferred to the California Public Employees' Retirement System (CalPERS). The System is governed by a board of seven trustees; the Mayor or his/her designate, three Mayoral appointees approved by the City Council, an elected active or retired member of the Police Department, an elected active or retired member from the Fire Department, and an elected member position which alternates between the Police Department and Fire Department membership. PFRS trustees receive no compensation.

OMERS is a closed defined benefit plan, which was created pursuant to Article XX of the City Charter. The System covers the City's non-sworn employees hired prior to September 1970 who have not transferred to CalPERS. The System is govemed by a board of seven trustees, composed of the City Treasurer, the City Auditor, three members elected by the retired and deferred membership of the System, and Mayor appointed representatives of a local life insurance company and a local bank in accordance with Section 2002 of the Oakland Charter. OMERS trustees receive no compensation.

ANALYSIS - PFRS

PFRS Membership

The City Charter establishes plan membership, contribution, and benefit provisions. The System serves the City's sworn employees hired prior to July 1, 1976 who have not transferred to the California Public Employees' Retirement System (CalPERS). The System provides that any member who completes at least 25 years of service, regardless of age, or completes 20 years of service and attains age 55, or has attained age 65, is eligible for retirement benefits. The System also provides for various death, disability and survivors' benefits. After retirement, benefits change according to the corresponding rank of active sworn personnel. Upon a retiree's death, benefits are continued to an eligible surviving spouse at a two-thirds level for service and non-duty disabled retirees and at a 100% level for retirements for duty related deaths. Currently all of the System's members are retired with the exception of one.

The PFRS membership as of July 1, 2012 is 1,082, which includes one active employee, 756 retirees and 325 beneficiaries. The average age of the PFRS membership is 75 years old. Table 1 shows additional detail regarding the PFRS membership.

Table 1
PFRS Membership
as of July 1, 2012

Membership	POLICE	FIRE	TOTAL
Retiree	446	310	756
Beneficiary	170	155	325
Active	1	0	1
Total Membership	617	465	1,082

PFRS Actuarial Assumptions

The PFRS Actuarial Assumptions are recommended by the Actuary through an experience study and are approved by the PFRS Board. No assumption changes were made since the previous actuarial valuation. The following are the significant assumptions used to compute contribution requirements:

- 6.75% investment rate of return
- 3.25% inflation rate, US
- 3.375% inflation rate, Bay Area
- Based on the current contract, Police will receive no increases until a 2.0% increase on July 1, 2014 and a 2.0% increase on January 1, 2015. Police are assumed to begin receiving annual increases of 2.0% effective immediately following the expiration of the current contract on July 1, 2015 for 3 years. Beginning July 1, 2018, they are assumed to receive annual 3.0% increases for 3 years. Beginning July 1, 2021, they are assumed to receive annual increases of 3.975%.
- Based on the current contract, Fire receive no increases until July 1, 2014, when the current contract expires. For fiscal years 2011/12, 2012/13 and 2013/14, Fire agreed to an 8.85% reduction. Annual 2.0% increases are assumed to begin on July 1, 2014, changing to 3.0% annual increases beginning July 1, 2017 for 3 years. Begimning July 1, 2020, they are assumed to receive annual 3.975% increases.

PFRS Actuarial Valuation and Funding Status

The latest actuarial valuation as of July 1, 2012 was performed by Actuary, Bartel Associates. As of this report, the PFRS Funded Ratio (actuarial value of assets divided by present value of future benefits) is 39.1%. The City's next Annual Required Contribution to the System is not due until FY 2017/2018 and is projected to be $35.1 million.

The City sold Pension Obligation Bonds and deposited the proceeds of $210 million on July 30, 2012, which is after the current valuation date. This deposit is considered as an advance contribution from the City and no contributions are expected until July 1, 2017. Considering the deposit of $210 million in POB assets, the Unfunded Liability is projected to be $203.7 million and the funded status is projected to be 68.2% as of July 1, 2013.

Following is a summary of the July 1, 2012 PFRS Actuarial valuation results.

Table 2
Schedule of Funding Progress
Police and Fire Retirement System
($millions)

Valuation date as of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Liability	Funded Status
2009	$782.5	$347.2	$435.3	44.4%
2010	792.2	297.8	494.4	37.6%
2011	683.2	256.4	426.8	37.5%
2012*	658.3	257.2	401.1	39.1%
Projected 2013 (w. POB)	640.9	437.2	203.7	68.2%

* Funding stated does not include City of Oakland recent deposit of $210 million in POB proceeds on July 30, 2012.

Since the previous valuation dated July 1, 2011, there were experience gains on liabilities and assets. In FY 2011/12 the System had investment earnings of 0.8% on market value which were compensated for by increased recognition of investment gains incurred during FY 2009/10 and FY 2010/11 resulting in earnings on actuarial value of 7.9%. This earning was above the 6.75% investment earnings assumption. The System's staff rechecked the eligibility of current spouses to properly update beneficiary information. As a result, 35 recently divorced and widowed spouses were removed from the valuation data, decreasing the projected liabilities by $6.0 million.

Projected City of Oakland Contributions

Article XXVI Section 2619 (6) required that the City fully fund the PFRS Plan by 2026. The following table summarizes the projected employer contributions assuming 6.75% future market value returns.

Table 3
Projected Employer Contributions
Police and Fire Retirement System
(in millions)

Fiscal Year Ending	Employer Contribution
2014	$0.0
2015	0.0
2016	0.0
2017	0.0
2018	35.1
2019	35.9
2020	37.0
2021	37.9
2022	39.3
2023	40.7
2024	42.1
2025	43.6
2026	44.8

ANALYSIS – OMERS

OMERS Membership

The City Charter establishes plan membership, contribution, and benefit provisions. The System provides that any member who completes at least 20 years of service and has attained age 52 or completes at least five years of service and attains age 60 is eligible for retirement benefits. The member shall receive a service retirement allowance that is calculated on a basis that takes into account the final three years average compensation, age, and the number of years of service. In addition, the System provides disability, death and survivors benefits for the members. Upon the retiree's death, payments are continued to the retiree's eligible spouse at the 50% level.

The OMERS membership as of July 1, 2012 is 28, which includes 11 retirees, 11 beneficiaries, and 6 Alameda County Health Department transferees. The average age of the OMERS membership is 89 years old.

OMERS Actuarial Assumptions

The OMERS Actuarial Assumptions are recommended by the Actuary through an experience study and are approved by the OMERS Board. As part of the July 1, 2012 valuation the Actuary recommended assumption changes based on an experience study. These recommended changes were approved by the OMERS Board at their December 20, 2012 Board meeting. The approved assumption changes are as follows:

- Lowered the assumed discount rate from 6.50% to 6.25%

- Decreasing the assumed rate of increase in administrative expenses (based on the increase in Bay Area CPI) from 3.50% to 3.375%.

OMERS Actuarial Valuation and Funding Status

The OMERS actuarial valuation as of July 1, 2012 was also performed by Actuary, Bartel Associates. As of this report, the OMERS Funded Ratio is 122.5%. No contribution is required to the Plan as a result of its Funded Status.

The System is currently studying the possible purchase of a group annuity contract to cover the liabilities for future payments for all current participants.

Table 4
Schedule of Funding Progress
Oakland Municipal Employees' Retirement System
(in millions)

Valuation date as of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Liability	Funded Status
2007	$7.52	$9.37	$(1.86)	124.7%
2009	5.50	4.98	0.52	90.6%
2010	5.47	4.73	0.74	86.4%
2012	3.63	4.45	(0.82)	122.5%

PUBLIC OUTREACH/INTEREST

This item did not require any additional public outreach other than the required posting on the City's website.

COORDINATION

This report has been prepared by the Retirement Division in coordination with City Attorney's Office, and Budget Office.

COST SUMMARY/IMPLICATIONS

As a result of the City's advanced payment to PFRS no payment is required until July 1, 2017. The next Annual Required Contribution is projected to be $35.1 million in FY 2017/18.

Based on a recent OMERS Actuarial Study dated July 1, 2012, the OMERS System is fully funded and no City contributions are required to the System.

SUSTAINABLE OPPORTUNITIES

Economic: There are no economic opportunities associated with this report.

Environmental: There are no environmental opportunities associated with this report.

Social Equity: There are no social equity opportunities associated with this report.

CEQA

This report is not a project under CEQA.

For questions regarding this report, please contact Katano Kasaine, Treasurer, at (510) 238-2989.

Respectfully submitted,

Katano Kasaine

KATANO KASAINE
Treasurer

Prepared by:
Téir Jenkins, Retirement Systems Accountant
Retirement Division

Attachments:

Appendix A: PFRS July 1, 2012 Actuarial Valuation
Appendix B: OMERS July 1, 2012 Actuarial Valuation

- APPENDIX A -

JULY 1, 2012
PFRS ACTUARIAL VALUATION

CITY OF OAKLAND

BARTEL ASSOCIATES, LLC

Oakland Police and Fire Retirement System

July 1, 2012
Actuarial Valuation

May 2013

BARTEL ASSOCIATES, LLC

ACTUARIAL VALUATION

CITY OF OAKLAND
OAKLAND POLICE AND FIRE RETIREMENT SYSTEM (PFRS)

We are pleased to present the results of our July 1, 2012 actuarial valuation of the Oakland Police and Fire Retirement System (PFRS).

The purpose of this valuation is to:

- calculate actuarial liabilities, funded status, and contribution levels, and
- determine the July 1, 2012 System actuarial liabilities and funded status pursuant to Governmental Accounting Standards Board Statement Nos. 25 and 50 (GASB 25 and 50).

The report is based on the System's benefit provisions, participant data and financial information supplied by the System and summarized in this report which we relied on and did not audit. We reviewed the participant data for reasonableness.

To the best of our knowledge, this report is complete and accurate and has been conducted using generally accepted actuarial principles and practices. Additionally, in our opinion, actuarial methods and assumptions comply with GASB Statements No. 25 and 50. As members of the American Academy of Actuaries meeting the Academy Qualification Standards, we certify the actuarial results and opinions herein.

Sincerely,

John E. Bartel, ASA, MAAA, FCA
President

Marilyn Oliver, FSA, MAAA, EA, FCA
Vice President

Deanna Van Valer, ASA, MAAA, EA, FCA
Assistant Vice President

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SECTION 1
SUMMARY

Following is a summary of valuation results. See notes following the table for a description of terms.

	--------*amounts in $000's*---------		
	July 1, 2011	July 1, 2012	% change
■ Participant Counts			
• Actives	1	1	0%
• Terminated Vested	-	-	0%
• Service Retirees	510	489	-4%
• Disability Retirees	277	267	-4%
• Beneficiaries	319	325	2%
• Total	1,107	1,082	-2%
■ Actuarial Liabilities			
• Present Value of Projected Benefits	$ 683,162	$ 658,279	-4%
■ Assets			
• Market Value of Assets	$ 284,882	$ 268,474	-6%
• 1 Year Annualized Rate of Return	25.0%	0.8%	
• Actuarial Value of Assets	$ 256,394	$ 257,221	0%
• 1 Year Annualized Rate of Return	9.9%	7.9%	
■ Plan Funded Status			
• Actuarial Liability	$ 683,162	$ 658,279	-4%
• Actuarial Value of Plan Assets	256,394	257,221	0%
• Unfunded Actuarial Liability (UAL)	426,768	401,058	-6%
• Funded Ratio	37.5%	39.1%	
■ FY City Contribution	2012/13	2013/14	
• Annual Amount[1]	$ 0	$ 0	
• Expected Total Police & Fire Payroll	129,176	119,782	
• As a % of Total Police & Fire Payroll	0.0%	0.0%	

[1] The 2012/13 and 2013/14 contributions are zero based on the funding agreement between the City and System. As part of this agreement, $210 million in Pension Obligation Bond proceeds was deposited into the PFRS trust in late July 2012 and the City is not required to contribute during the prepayment period (7/1/2012 - 6/30/2017).

SECTION 1
SUMMARY

Purpose of Actuarial Valuation

The actual costs of a defined benefit plan are determined entirely by the amount of the benefit promise, the actual salaries and service of the plan participants, and how long they and their beneficiaries live to receive payments. An actuarial valuation is a mathematical model which attempts to quantify this actual cost by setting assumptions that, it is hoped, duplicate reality as closely as possible. In addition, the actuarial methodology provides a reasonable plan, or method, towards funding the expected costs of the plan. This information assists the plan trustees so they can make informed decisions regarding plan investments and how much in contributions will be required from the employer to eventually fully pay for the plan's costs.

Summary Information

The Oakland Police and Fire Retirement System (PFRS) is a closed defined benefit pension plan. It was closed to new members on June 30, 1976. There is only one remaining active member.

Results

Since the last valuation there were experience gains on liabilities and assets. 2011/12 investment earnings of 0.8% on market value were compensated for by increased recognition of investment gains incurred during the 2009/10 and 2010/11 fiscal years resulting in earnings on actuarial value of 7.9%. This was above the 6.75% investment earnings assumption. The System checked the eligibility of current spouses to properly update beneficiary information. Spouses were removed from the valuation data in 35 cases, decreasing liabilities by $6.0 million. In addition, Fire retirees did not receive an expected increase in benefits from the MOU provision that suspended FLSA in lieu pay until June 29, 2012.

No assumption changes were made since the prior valuation.

The City sold Pension Obligation Bonds and deposited the proceeds of $210 million in July 2012. This deposit is considered as an advance contribution from the City and no contributions are expected until the 2017/18 fiscal year.

The Unfunded Actuarial Liability (UAL) as of July 1, 2012 is $401.1 million, as opposed to an expected UAL of $409.4 million. The funded ratio (actuarial value of assets / actuarial liabilities) was expected to increase from 37.5% to 38.4%. The actual funded ratio as of July 1, 2012 is 39.1%.

Definitions

The Present Value of Projected Benefits (PVPB) is the present value of all future benefits for current plan participants.

The Actuarial Liability (AL) represents the portion of the PVPB attributable to past service. Since all participants in this plan are either retired or assumed to retire at the valuation date, the Actuarial Liability is equal to the Present Value of Projected Benefits for this plan.

The Actuarial Value of Assets is a smoothed value of assets used to even out market fluctuations in asset values.

The Unfunded Actuarial Liability (UAL) is equal to the difference between the Actuarial Liability and the Actuarial Value of Assets.

SECTION 2
ASSET INFORMATION

Asset information is based on the System's audited financial statements.

Asset Reconciliation – Market Value of Assets

Following is a reconciliation of the July 1, 2011 and July 1, 2012 market value of assets.

(amounts in $000's)

	2011/12	
■ Beginning of Year Assets		$ 284,882
• Member Contributions	$ 7	
• City Contributions	45,508	
• Miscellaneous Income	67	
• Investment Income	2,266	
■ Total Additions		47,848
• Benefit Payments	63,272	
• Administrative Expenses	984	
■ Total Deductions		64,256
■ Net End of Year Assets		268,474
■ Approximate Return on Assets		0.8%

SECTION 2
ASSET INFORMATION

Asset Allocation – Market Value of Assets as of July 1, 2012

Information shown below is based on an allocation strategy of approximately 70% equities and 30% fixed income.

(amounts in $000's)

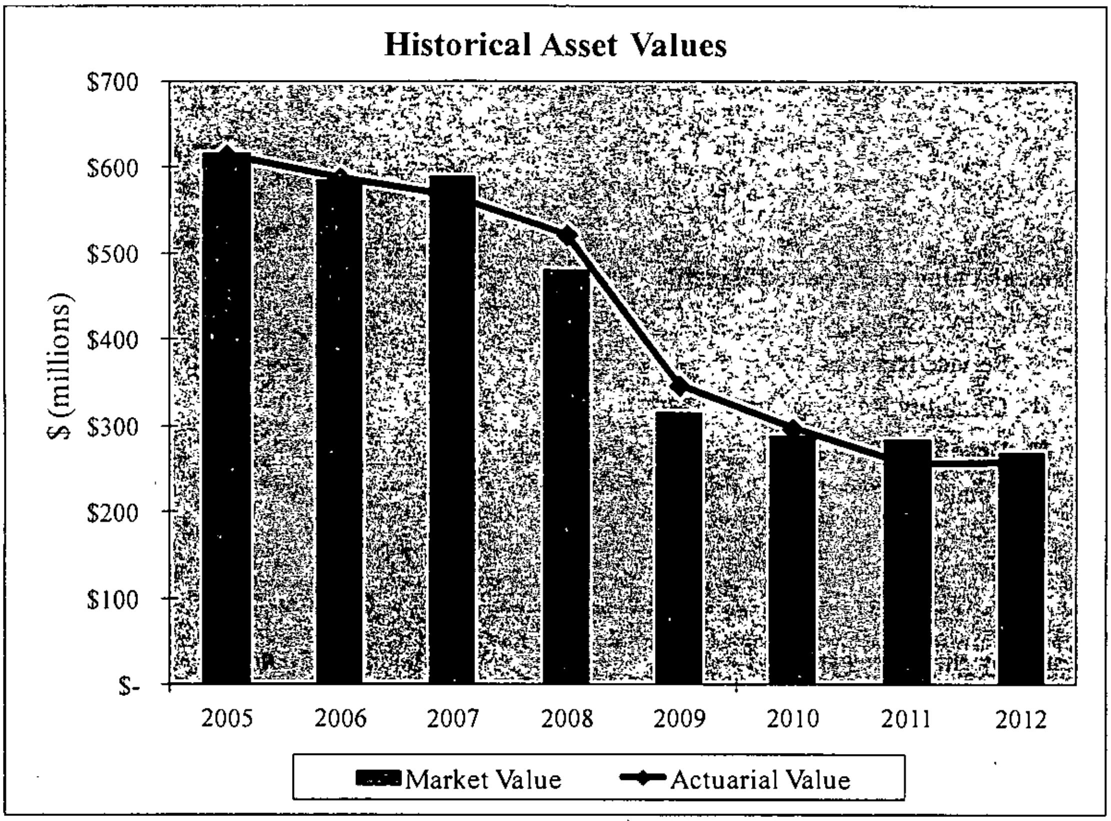
		Market Value	Percentage
■ Cash in City Treasury		$8,320	
■ Receivables		5,045	
■ Investments			
• Short-Term Investments	$ 4,314		1.6%
• Bonds	77,475		29.2%
• Domestic Equities and Mutual Funds	142,324		53.7%
• International Equities and Mutual Funds	40,959		15.5%
• Real Estate Mortgage Loans	33		0.0%
■ Total Investments		265,105	100.0%
■ Total Assets		278,470	
■ Liabilities		(9,996)	
■ Net Pension Benefit Trust Assets		268,474	

These figures do not take into account securities lending collateral of $14,126 and associated liabilities of ($14,126).

Development of Actuarial Value of Assets

The Actuarial Value of Assets is smoothed based on market results over a period of years. This method reduces volatility in contribution rates, and also reduces volatility in the size of the actuarial gains and losses due to asset returns. Because the plan is frozen to new membership and the membership is primarily composed of retirees and beneficiaries, it is important from a cash flow perspective that asset values used in calculating contribution rates not stray too far from market value. For this reason, a corridor of 10% around the market value is imposed upon the actuarial value. Following is the development of this year's actuarial value of assets.

		(amounts in $000's)
(1)	Actuarial Value of Assets July 1, 2011	$ 256,394
	2011/12 Contributions and Miscellaneous income	45,582
	2011/12 Benefit Payments and Administrative Expenses	(64,256)
	2011/12 Expected Investment Return at 6.75%	16,687
(2)	Expected Actuarial Value July 1, 2012	254,407
(3)	Market Value of Assets July 1, 2012	268,474
(4)	Difference between Market Value and Expected Actuarial Value	14,067
(5)	Preliminary Actuarial Value of Assets July 1, 2012: = (2) + 20%[(4)]	257,221
(6)	Ratio of Preliminary Actuarial Value to Market Value	96%
(7)	90% of Market Value	241,627
(8)	110% of Market Value	295,322
(9)	Actuarial Value of Assets July 1, 2012: = (5) but not less than (7) or over (8)	257,221
	Approximate Rate of Return on Actuarial Assets	7.9%



Historical Asset Values
$700
$600
$500
$400
$300
$200
$100
$-
$ (millions)
2005
2006
2007
2008
2009
2010
2011
2012
Market Value
Actuarial Value

SECTION 3
LIABILITY INFORMATION

A comparison of the Present Value of Benefits for the current and prior valuations follows. Note that numbers throughout the report may not add due to rounding.

(amounts in $000's)

	July 1, 2011	July 1, 2012
Present Value of Projected Benefits		
■ Active Employees	$ 1,078	$ 1,071
■ Service Retirees	372,319	353,875
■ Disability Retirees	194,530	185,626
■ Beneficiaries	115,235	117.707
■ Total	683,162	658,279

Results by employee category: (amounts in $000's)

	July 1, 2012		
	Police	Fire	Total
Present Value of Projected Benefits			
■ Active Employees	$ 1,071	$ 0	$ 1,071
■ Service Retirees	234,912	118,963	353,875
■ Disability Retirees	102,474	83,152	185,626
■ Beneficiaries	63,933	53.774	117.707
■ Total	402,390	255,889	658,279

(amounts in $000's)

	July 1, 2011	July 1, 2012
Plan Funded Status		
■ Actuarial Liability (AL)	$ 683,162	$ 658,279
■ Actuarial Value of Plan Assets (AVA)	256,394	257,221
■ Unfunded Actuarial Liability (UAL = AL – AVA)	426,768	401,058
■ Funded Ratio	37.5%	39.1%

SECTION 4
ACTUARIAL (GAIN)/LOSS ANALYSIS

Gains or losses occur when reality differs from expectations based on actuarial assumptions. Following is the gain/loss analysis of the unfunded actuarial liability for the one-year period between valuation dates (amounts in 000's).

	Unfunded/ (Surplus) Actuarial Liability
■ July 1, 2011	$ 426,768
■ July 1, 2012 Expected value	409,370
■ Source of (Gain) or Loss	
• Spouse data changes gain	(5,995)
• Administrative expenses loss	72
• Benefit payments loss	1,165
• Investment gain	(2,760)
• Gain due to no 7/1/12 FLSA-in-lieu increase for Fire[2]	(1,650)
• Demographic/Other loss	856
■ Total Changes	(8,312)
■ July 1, 2012	$ 401,058

During 2011/12 there were net gains on both liabilities and assets. Liability gains were generated by improved data on spouse eligibility and on suspension of expected Fire FLSA benefits which exceeded losses due to other sources – primarily mortality. Asset gains were due to the return on the actuarial value of assets of 7.9% which exceeded the assumed rate of return of 6.75% due to increased recognition of market value investment gains during the 2009/10 and 2010/11 fiscal years. Losses due to higher than expected benefit payments and administrative expenses served to lower the overall gain on assets. The overall result was a reduction in the Unfunded Actuarial Liability.

[2] The prior valuation assumed Fire FLSA-in-lieu pay would resume 7/1/2012 and continue indefinitely.

SECTION 5
PROJECTED EMPLOYER CONTRIBUTIONS

Projected Employer Contributions

The City of Oakland issued Pension Obligation Bonds (POBs) in July 2012. In an agreement with the System, the City contributed a total of $210 million from the bond proceeds in July 2012, which is treated as an advance contribution for fiscal years 2012/13 through 2016/17. The City will resume contributions in fiscal year 2017/18.

The following table shows the projected fiscal year 2017/18 contribution rate. Calculations are based on projected July 1, 2016 valuation results rolled forward to July 1, 2017 and assume: no contributions are made until 2017/18; there are no liability gains or losses; and the market value of assets earns 6.75%. Payments are based on funding unfunded actuarial liabilities by July 1, 2026 and are assumed to increase each year by the salary increase assumption. If gains occur in the interim they will likely result in a lower 2017/18 contribution and if losses occur the likely result will be a higher 2017/18 contribution and perhaps a 2016/17 contribution being appropriate.

	(amounts in $000's) **FY 2017/18**
■ Unfunded Actuarial Liability as of 7/1/2017	$ 261,610
■ Employer Contribution FY 2017/18	35,079
■ Projected Total Payroll for all Police & Fire	136,615
■ Annual Employer Contribution (percent of payroll)	25.7%

In order to track the impact of the POB, we have also calculated the 7/1/2013 funded status and fiscal year 2013/14 contribution rate as if the POB prepayment had not been made and contributions had been paid as due.

	(amounts in $000's) FY 2013/14 Without POB[3]
■ Projected Actuarial Liability as of 7/1/2013	$ 640,908
■ Projected Actuarial Value of Assets as of 7/1/2013	253,989
■ Unfunded Actuarial Liability as of 7/1/2013	386,919
■ Funded Ratio 7/1/2013	39.6%
■ Employer Contribution FY 2013/14	$ 37,677
■ Projected Total Payroll for all Police & Fire[4]	119,782
■ Employer Contribution (percent of payroll)	31.5%

In tracking the impact of the POB, one might also ask what the contribution rate would be if the $ystem resumed contributions on a going-forward basis. Below is the resulting contribution for FY 2013/14.

	(amounts in $000's) FY 2013/14 With POB
■ Projected Actuarial Liability as of 7/1/2013	$ 640,908
■ Projected Actuarial Value of Assets as of 7/1/2013	437,219
■ Unfunded Actuarial Liability as of 7/1/2013	203,689
■ Funded Ratio 7/1/2013	68.2%
■ Employer Contribution FY 2013/14	$ 20,270
■ Projected Total Payroll for all Police & Fire[4]	119,782
■ Employer Contribution (percent of payroll)	16.9%

[3] Assumes 2012/13 contribution of $38,451.

[4] Projected with COLA assumptions and assuming constant workforce from CalPERS Safety Payroll of $119,644,190 and PFRS covered payroll of $137,487 for the fiscal year ended 6/30/2012.

SECTION 6
HEADCOUNT AND BENEFIT PAYMENT PROJECTION

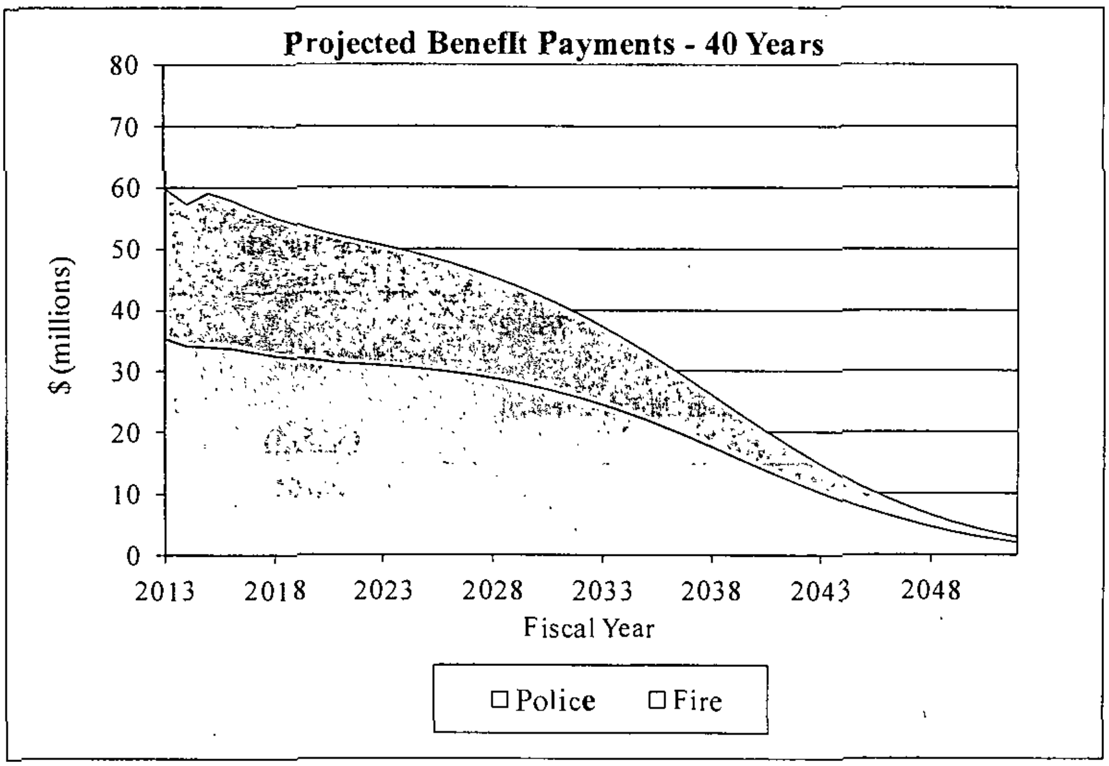
Projection of Beginning of Fiscal Year Headcount and Benefit Payments during Fiscal Year[5]

	Police		Fire		Total	
Fiscal Year Ending June 30.	Count at Start of FY	Benefits during FY (000's)	Count at Start of FY	Benefits during FY (000's)	Count at Start of FY	Benefits during FY (000's)
2013	617	$ 35.442	465	$ 24.376	1,082	$ 59,818
2014	598	34.268	465	23,091	1,063	57,359
2015	578	34.085	422	25.081	1,000	59,166
2016	559	33.853	401	24,175	960	58,028
2017	539	33,248	380	23,264	919	56,512
2018	519	32,611	359	22,570	878	55,181
2019	500	32,258	339	21,865	839	54,123
2020	481	31,868	320	21,151	801	53,019
2021	462	31,440	301	20,623	763	52,063
2022	443	31,266	283	20,079	726	51,345
2023	424	$ 31,043	266	$ 19,519	690	$ 50,562
2024	406	30,767	249	18,942	655	49,709
2025	387	30,431	233	18,348	620	48,779
2026	369	30,026	217	17,733	586	47,759
2027	351	29,544	203	17,097	554	46,641
2028	333	28,975	188	16,439	521	45,414
2029	315	28,311	175	15,755	490	44,066
2030	296	27,547	162	15,045	458	42,592
2031	278	26,675	149	14,306	427	40,981
2032	259	25,694	137	13,539	396	39,233
2033	240	$ 24,606	125	$ 12,746	365	$ 37,352
2034	222	23,412	113	11,929	335	35,341
2035	203	22,122	102	11,094	305	33,216
2036	185	20,746	92	10,244	277	30,990
2037	167	19,301	82	9,386	249	28,687
2038	149	17,803	72	8,529	221	26,332
2039	133	16,273	63	7,683	196	23,956
2040	117	14,735	55	6,859	172	21,594
2041	102	13,213	48	6,065	150	19,278
2042	88	11.730	41	5,312	129	17,042

[5] Expected count at beginning of fiscal year (for example, July 1, 2012 for the fiscal year ending June 30, 2013). Expected benefit payments for each fiscal year take into account mortality during the year. Fire payments through FY 2013/14 reflect a temporary 8.85% decrease in benefit payments, as well as the collection of 7 months of overpayments due to the retroactive application of this reduction.

HEADCOUNT AND BENEFIT PAYMENT PROJECTION

	Police		Fire		Total	
Fiscal Year Ending June 30,	Count at Start of FY	Benefits during FY (000's)	Count at Start of FY	Benefits during FY (000's)	Count at Start of FY	Benefits during FY (000's)
2043	75	$ 10,308	34	$ 4,608	109	$ 14,916
2044	64	8,968	29	3,959	93	12,927
2045	53	7,726	24	3,368	77	11,094
2046	44	6,591	20	2,840	64	9,431
2047	36	5,573	16	2,375	52	7,948
2048	30	4,672	13	1,972	43	6,644
2049	24	3,886	10	1,626	34	5,512
2050	19	3,209	8	1,334	27	4,543
2051	15	2,634	7	1,090	22	3,724
2052	12	2,150	5	887	17	3,037



The increase in projected benefit payments in FY 2014/15 is due to the end of the temporary 8.85% salary reduction for Fire.

Police Litigation

Under pending litigation, pensionable compensation for Police retirees would not include shift differential pay and would include pay for holidays based on straight time. The impact of these changes is shown in the following table. The calculations are based on monthly benefit amounts and estimated overpayments provided by the System and the following assumptions:

- Benefits are based on 11 holidays per year starting 7/1/2012 until the current contract expires on June 30, 2015 and 13 holidays per year thereafter.
- Two scenarios are shown. Under one scenario all Police ranks are compensated at 8 hours for each holiday. Under another scenario Police Officers are compensated at 10 hours for each holiday and all other ranks are compensated at 8 hours.
- The revised benefit amounts would be effective beginning June 14, 2008. The System would collect overpayments from the estates of retirees that deceased between June 14, 2008 and July 1, 2012. Overpayments made to current retirees during that same period would be collected by reducing monthly benefits by 10% until repayment is complete.

	(amounts in $000's)	
	8 Hours per Holiday for All Police Ranks	**10 Hours per Holiday for Police Officers**
■ Present Value of Projected Benefits - 7/1/12 Valuation Assumptions	$ 658,279	$ 658,279
■ Decrease due to changes in shift differential and holiday pay	(33,515)	(31,125)
■ Total PVPB	624,764	627,154
■ Current Funded Ratio	39.1%	39.1%
■ increase in Funded Ratio	2.1%	1.9%
■ Funded Ratio	41.2%	41.0%

SECTION 7
BENEFIT CHANGES

Fire FLSA-in-Lieu Pay

The current Fire MOU provides for payment of FLSA-in-lieu at the rate of .75 hours per pay period for members of the Firefighters bargaining unit. It also calls for the temporary suspension of these payments from July 2009 through June 2012 with payments resuming thereafter.

It is our understanding that it has been determined that FLSA-in-lieu is not allowable under the Fair Labor Standards Act and payments were not resumed July 1, 2012. We have not included these future pension payments for FLSA-in-lieu in our valuation. Shown below is the impact on valuation results had these payments been resumed on July 1, 2012 and continued until the end of the current contract (June 30, 2014).

	(amounts in S000's) July 1, 2012
■ Present Value of Projected Benefits - 7/1/12 Valuation Assumptions	$ 658,279
■ Increase due to Fire FLSA-in-lieu pay	311
■ Total PVPB	658,590
■ Current Funded Ratio	39.1%
■ Decrease in Funded Ratio	0.0%
■ Funded Ratio after FLSA change	39.1%

SECTION 8
GASB REPORTING & DISCLOSURE INFORMATION

Changes to Accounting Standards

Government Accounting Standards Board Statement Numbers 25 and 50 (GASB 25 and 50) require defined benefit plans to disclose certain information. In addition, Government Accounting Standards Board Statement Number 27 requires employers to disclose certain information which is in part based on the Annual Required Contribution calculated under GASB 25.

Effective for the 2013/14 fiscal year, reporting and disclosure for the System will be governed by a new standard (GASB 67). Reporting and disclosure on the new basis will be addressed in the July 1, 2013 valuation for the System.

For employers, GASB 27 will continue to apply for the 2013/14 fiscal year. However, effective for the 2014/15 fiscal year reporting and disclosure will be governed by a new standard (GASB 68).

Shown below is the Annual Required Contribution for 2013/14 calculated under GASB 25 which is necessary for City's 2013/14 financial statements under GASB 27.

Annual Required Contribution for FY 2013/14 City Financial Statements

The Plan's annual required contribution (ARC) for the fiscal year ending June 30, 2014 is based on the July 1, 2012 actuarial valuation. The ARC for this period is $18.0 million and is based on a 40-year level dollar amortization of the unfunded actuarial liability from the GASB 25 transition date, 23 years remaining as of July 1, 2013. The decrease in the ARC is due to the deposit in the fund in July, 2012 of $210 million in proceeds from issuance of Pension Obligation Bonds. The development of the 2013/14 ARC is shown below.

	(amounts in $000's)
■ Projected Unfunded Actuarial Liability as of 7/1/2013	$ 203,689
■ Amortization of UAAL	17,118
■ Budgeted 2013/14 Administrative Expenses	920
■ Total 2013/14 Annual Required Contribution	18,037

SECTION 8
GASB REPORTING & DISCLOSURE INFORMATION

Disclosure Information for System's 6/30/2013 Financial Statements

The Plan's annual required contribution (ARC) for the fiscal year ending June 30, 2013 is based on the July 1, 2011 actuarial valuation. The ARC for this period is $34.2 million and is based on a 40-year level dollar amortization of the unfunded actuarial liability from the GASB 25 transition date, 24 years remaining as of July 1, 2012.

Employer Contribution Schedule[6]
(dollars in millions)

Fiscal Year Ending June 30	Annual Required Contribution	Percentage Contributed
2002	$ 0.0	100%
2003	18.2	0
2004	24.0	0
2005	23.6	75
2006	23.6	0
2007	23.6	0
2008	28.6	0
2009	32.1	0
2010	37.5	0
2011	41.4	0
2012	45.1	101
2013	34.2	

6 For years before 2006, information is taken from the reports of the prior actuary.

SECTION 8
GASB REPORTING & DISCLOSURE INFORMATION

Funding Progress Schedule[7]
(dollars in millions)

Actuarial Valuation Date (July 1)	Actuarial Value of Assets (A)	Actuarial Accrued Liability (AAL) (B)	Unfunded AAL (UAAL) (B-A)	Funded Ratio (A/B)	Covered Total Plan Payroll (C)	Unfunded/ (Funded) AAL as a Percentage of Covered Plan Payroll ([B-A]/C)
2002	$674.7	$875.5	$200.8	77.1%	$2.6	7723%
2003	615.1	890.6	275.5	69.1	0.4	68875%
2004	621.6	890.2	268.6	69.8	0.3	89533%
2005	614.9	883.5	268.6	69.6	0.3	89533%
2006[8]	n/a	n/a	n/a	n/a	n/a	n/a
2007	566.0	888.1	322.1	63.7	0.4	80525%
2008[9]	n/a	n/a	n/a	n/a	n/a	n/a
2009	347.2	782.5	435.3	44.4	0.1	435300%
2010	297.8	792.2	494.4	37.6	0.1	494400%
2011	256.4	683.2	426.8	37.5	0.1	426800%
2012	257.2	658.3	401.1	39.1	0.1	401100%

The actuarial funding method used is the entry age normal cost method. Under the Entry Age Normal Cost method, the Present Value of Future Benefits (PVFB) is the present value of all future benefits for current plan participants. The Actuarial Accrued Liability (AAL) represents the portion of the PVFB attributable to past service. Since all participants in this plan are either retired or assumed to retire at the valuation date, the Actuarial Accrued Liability is equal to the Present Value of Projected Benefits for this plan.

Following is a summary of July 1, 2012 actuarial assumptions and methods. These assumptions were used to calculate the FY 2013/14 ARC and the July 1, 2012 Funding Progress Schedule information.

Interest rate:	6.75%
Healthy Mortality:	RP-2000 Table for females, 97% of the RP-2000 Table with ages setback 1 year for males. Mortality improvement projected with Scale AA
Disabled Mortality	CalPERS Industrial Disability Mortality Table (1997-2007 Experience Study) projected with Scale AA
Retirement:	Current actives are assumed to retire immediately

7 For years before 2006, information is taken from the reports of the prior actuary.

8 No actuarial valuation was performed as of July 1, 2006.

9 No actuarial valuation was performed as of July 1, 2008.

Inflation, US:	3.25% per year
Inflation, Bay Area:	3.375% per year
Future Benefit Increases:	After provisions in current MOUs, 2% per year for 3 years, 3% per year for 3 years, increasing to 3.975% per year (3.375% Bay Area inflation plus 0.6% productivity increase) beginning 7/1/2020 for Fire and 7/1/2021 for Police
Actuarial Cost Method:	Entry Age Normal Cost Method
Actuarial Value of Assets:	Recognizes 1/5 of the difference between market value and an expected actuarial value of assets each year. Must stay within a corridor of 10% around the Market Value of Assets.
Amortization:	Level Dollar Payments over 23 Years from 7/1/2013
Administrative Expenses:	Budgeted Expenses for the current fiscal year

Changes during the Year

No assumption changes were made for the July 1, 2012 valuation. Benefits for Fire were expected to increase beginning July 2012 for the resumption of FLSA-in-lieu pay, but these amounts continue to be suspended.

SECTION 9
PLAN PROVISIONS

A. **Plan Effective Date**

Originally established effective July 1, 1951.

B. **Plan Year**

July 1 to June 30.

C. **Participation**

The plan is closed with no new members since June 30, 1976.

D. **Eligibility for Service Retirement**

25 years of service, or 20 years of service and age 55, or age 65. A reduced early retirement is available with 20 years of service.

E. **Salary**

Current pensionable earnings attached to final 3-year average rank including holiday and uniform allowances and ARCA decision benefits for Police members.

F. **Employee Contributions**

Each participant contributes a certain percentage based on his or her age at entry into the plan. Sample rates are as follows:

Entry Age	Member Rate
20	6.15%
25	5.81%
30	5.41%
35	7.53%
40	6.89%

G. **Service Retirement Benefit**

50% of Salary plus 1.67% for each Year of Service in excess of the eligibility service threshold up to 16.67% (10 years). Benefits are prorated for retirements with less than 20 years of service.

H. **Duty Disability Retirement Benefit**

Same as service retirement benefit if 25 or more years of service.

I. **Non-Duty Disability Retirement Benefit**

Same as service retirement benefit if age 55 attained.

J. Death Benefit – Post Retirement Death

$1,000 paid to designated beneficiary of former members without spouses upon death.

K. Cost of Living

Benefit increases are based on increases in salary for rank at retirement as defined in E on the previous page.

L. Benefit Forms

Lifetime benefit to the member, 66-2/3% continuance to spouse if death after retirement is not duty-related. 100% continuance to spouse for duty-related death.

Actuarial Methods

The actuarial cost method used for funding purposes in this valuation is a modification of the Aggregate Cost Method. For GASB 25 purposes, the Entry Age Normal (EAN) method is used.

Under the modified Aggregate method, the excess of the Actuarial Present Value of Projected Benefits (PVPB) of the group over the Actuarial Value of Assets is amortized to July 1, 2026 as a level percent of total City pay for all Safety employees, whether covered by this system or CalPERS. Thus, assuming that all actuarial assumptions are realized, it will be fully amortized by 2026.

Under the Entry Age Normal Cost method, the Actuarial Liability (AL) represents the portion of the Present Value of Projected Benefits (PVPB) attributable to past service. The difference between the AL and the Actuarial Value of Assets is the Unfunded Actuarial Liability (UAL). Since all its members are either retired or assumed to retire at the valuation date for PFRS, the AL equals the Present Value of Projected Benefits and the UAL under this method and under the modified Aggregate method are the same. For GASB 25/27 purposes, the Unfunded Actuarial Liability (UAL) is amortized as a level dollar amount over 40 years from transition (1996), with 24 years remaining as of 7/1/2012.

Assets

The Actuarial Value of Assets gradually recognizes changes in market value occurring after July 1, 2005 over time. This method recognizes 1/5 of the difference between market value and an expected actuarial value of assets each year. In addition, the Actuarial Value of Assets must stay within a corridor of 10% around the Market Value of Assets.

The expected actuarial value is equal to the prior year's actuarial value adjusted for the year's cash flows and with interest credited at the actuarially assumed investment return rate (8% before July 1, 2009, 7.5% for 2009/10, 7.0% for 2010/11, and 6.75% after July 1, 2011).

Expenses

Investment expenses are assumed to be paid by earnings in excess of the assumed rate of return. The approved budgeted administrative expenses for FY 2013/14 are incorporated into the GASB 25/27 ARC. For purposes of projecting the FY 2017/18 contribution, budgeted administrative expenses are used for 2013/14 and 2014/15, and subsequent years are assumed to increase in line with Bay Area CPI at the rate of 3.375% per year.

SECTION 10
METHODS AND ASSUMPTIONS

Data

The City provided the actual current benefit payment amounts paid as of 7/1/2012 for all Police and Fire retirees and beneficiaries currently receiving payments. The Fire retirees' benefit amounts reflect the MOU provision to temporarily reduce salaries by 8.85%. The 8.85% reductions were effective July 1, 2011 but were not implemented until March 2012. The Board decided to collect the 7 months of overpayments over the remaining life of the MOU, from March 2012 to July 2014. Actual monthly amounts to collect overpayments were valued.

June 30, 2012 asset information was supplied by the City based on audited financial statement information.

In addition, the City checked the eligibility of current spouses in order to properly update beneficiary information. In 35 cases, current retiree spouses were removed from the valuation data because the couple had divorced, the spouse had predeceased the retiree, or the couple married after retirement.

Actuarial Assumptions

Assumptions used in the valuation are as follows:

- **Discount rate**

  6.75%

- **Inflation**

  3.25% , US

  3.375%, Bay Area

- **Post-Retirement Increases (Based on Salary Increases for Rank at Retirement)**

  3.375% Inflation, 0.6% Productivity

  Total 3.975%

  Based on the current contract, Police will receive no increases until a 2.0% increase on July 1, 2014 and a 2.0% increase on January 1, 2015. Police are assumed to begin receiving annual 2.0% increases effective immediately following the expiration of the current contract on July 1, 2015 for 3 years. Beginning July 1, 2018 they are assumed to receive annual 3.0% increases for 3 years. Beginning July 1, 2021 they are assumed to receive annual 3.975% increases.

  Based on the current contract, Fire receive no increases until July 1, 2014, when the current contract expires. For fiscal years 2011/12, 2012/13 and 2013/14, Fire agreed to an 8.85% reduction. Annual 2.0% increases are assumed to begin on July 1, 2014, changing to 3.0% annual increases beginning July 1, 2017 for 3 years. Beginning July 1, 2020 they are assumed to receive annual 3.975% increases.

- **Termination And Pre-retirement Disability and Mortality**

  None.

- **Retirement**

  Active employee assumed to retire at the valuation date.

- **Healthy Mortality (for service retirees and beneficiaries)**

  The RP-2000 Table for females, 97% of the RP-2000 Table with ages setback 1 year for males. Mortality improvement was projected with Scale AA with a base year of 2006.

- Disabled Mortality (for disability retirees)

  CalPERS Industrial Disability from the 1997-2007 Experience Study projected for mortality improvement with Scale AA using a base year of 2010.

- Survivor Continuance

  30% of disabled retirees' deaths are duty-related and thus entitle the surviving spouse to 100% continuance of the retiree's allowance.

SECTION 11
PARTICIPANT DATA

Data Summary

Following summarizes participant demographic information for the July 1, 2011 and July 1, 2012 actuarial valuations. The data was provided by the City. It was checked for reasonableness, but not audited.

	July 1, 2011			July 1, 2012		
	Police	Fire	Total	Police	Fire	Total
■ Participant Counts						
• Actives	1	-	1	1	-	1
• Service Retirees	313	197	510	301	188	489
• Disability Retirees	152	125	277	145	122	267
• Beneficiaries	164	155	319	170	155	325
• Total	630	477	1,107	617	465	1,082
■ Actives						
• Average Age	72.7	-	72.7	73.7	-	73.7
• Average Service	43.4	-	43.4	44.4	-	44.4
• Salary	$137,000	-	$137,000	$137,000	-	$137,000
■ All Inactives						
• Average Age	72.6	77.0	74.5	73.4	77.7	75.2
• Avg. Monthly Bnft.[10]	$4,889	$4,576	$4,754	$4,854	$4,580	$4,736
■ Service Retirees						
• Average Age	70.0	77.2	72.8	70.9	77.9	73.6
• Avg. Monthly Bnft.	$5,340	$5,210	$5,289	$5,332	$5,249	$5,300
■ Disabled Retirees						
• Average Age	70.7	71.6	71.1	71.1	72.4	71.7
• Avg. Monthly Bnft.	$5,094	$4,712	$4,922	$5,085	$4,736	$4,926
■ Beneficiaries						
• Average Age	79.3	81.1	80.2	79.8	81.6	80.6
• Avg. Monthly Bnft.	$3,838	$3,662	$3,752	$3,810	$3,646	$3,732

[10] The 2011 and 2012 amounts reflect 8.85% reduction in Fire salary and decreases for Fire Holiday and FLSA-in-lieu pay. The 2012 amounts for Fire do not reflect the collection of overpayments due to the 7-month late application of the 8.85% reduction. Spouses covered under qualified domestic relations orders are not counted separately.

Data Reconciliation
7/1/2011 to 7/1/2012

Police

	Actives	Service Retirees	Disability Retirees	Beneficiaries	Total
■ **July 1, 2011**	1	313	152	164	630
• Retired	-	-	-	-	-
• Died	-	(12)	(7)	(5)	(24)
• New Beneficiary	-	-	-	11	11
■ **July 1, 2012**	1	301	145	170	617

Fire

	Actives	Service Retirees	Disability Retirees	Beneficiaries	Total
■ **July 1, 2011**	-	197	125	155	477
• Retired	-	-	-	-	-
• Died	-	(9)	(3)	(9)	(21)
• New Beneficiary	-	-	-	9	9
■ **July 1, 2012**	-	188	122	155	465

Total

	Actives	Service Retirees	Disability Retirees	Beneficiaries	Total
■ **July 1, 2011**	1	510	277	319	1,107
• Retired	-	-	-	-	-
• Died	-	(21)	(10)	(14)	(45)
• New Beneficiary	-	-	-	20	20
■ **July 1, 2012**	1	489	267	325	1,082

Distribution of Service Retirees

	Police		Fire		Total	
	Count	Monthly Benefit	Count	Monthly Benefit[11]	Count	Monthly Benefit
Under 50	-	$ -	-	$ -	-	$ -
50 - 54	-	-	-	-	-	-
55 - 59	10	52,787	-	-	10	52,787
60 - 64	54	297,357	12	56,388	66	353,745
65 - 69	112	563,429	40	205,736	152	769,165
70 - 74	60	314,701	27	139,153	87	453,853
75 - 79	18	109,385	28	149,531	46	258,916
80 - 84	20	108,411	34	183,725	54	292,136
85 - 89	19	113,559	24	131,838	43	245,396
90 - 94	7	40,210	20	104,748	27	144,959
95 - 99	1	4,973	3	15,629	4	20,602
100 & over	-	-	-	-	-	-
Total	301	1,604,811	188	986,748	489	2,591,559

Distribution of Disability Retirees

	Police		Fire		Total	
	Count	Monthly Benefit	Count	Monthly Benefit[12]	Count	Monthly Benefit
Under 50	-	$ -	-	$ -	-	$ -
50 - 54	-	-	-	-	-	-
55 - 59	1	4,963	-	-	1	4,963
60 - 64	29	147,290	26	110,519	55	257,809
65 - 69	53	256,090	35	162,866	88	418,956
70 - 74	26	133,179	23	117,528	49	250,707
75 - 79	11	58,245	13	60,979	24	119,223
80 - 84	12	62,981	9	47,829	21	110,810
85 - 89	11	64,574	9	44,793	20	109,367
90 - 94	2	10,035	7	33,290	9	43,324
95 - 99	-	-	-	-	-	-
100 & over	-	-	-	-	-	-
Total	145	737,356	122	577,803	267	1,315,159

[11] Reflects 8.85% temporary reductions for Fire, but does not reflect collection of overpayments.

Distribution of Beneficiaries

	Police		Fire		Total	
	Count	Monthly Benefit	Count	Monthly Benefit[12]	Count	Monthly Benefit
Under 50	-	$ -	-	$ -	-	$ -
50 – 54	1	4,622	1	3,592	2	8,214
55 – 59	8	32,831	4	17,115	12	49,946
60 – 64	13	53,423	11	41,857	24	95,280
65 – 69	18	61,709	7	26,299	25	88,008
70 – 74	13	47,399	14	50,491	27	97,890
75 – 79	18	70,691	19	62,302	37	132,993
80 – 84	27	110,651	30	104,994	57	215,644
85 – 89	45	160,858	42	150,785	87	311,643
90 – 94	21	84,914	16	59,420	37	144,334
95 – 99	6	20,648	10	42,915	16	63,563
100 & over	-	-	1	5,318	1	5,318
Total	170	647,745	155	565,087	325	1,212,833

12 Reflects 8.85% temporary reductions for Fire, but does not reflect collection of overpayments.

APPENDIX A
LIFE EXPECTANCIES

Life Expectancies for healthy retirees and beneficiaries are based on the RP-2000 table for females and 97% of the RP-2000 table with ages set back 1 year for males. Mortality improvement is projected with Scale AA.

Age at 7/1/12	Male	Female
50	34.6	35.2
55	29.5	30.2
60	24.6	25.5
65	20.0	21.0
70	15.8	16.9
75	12.0	13.2
80	8.8	10.0
85	6.2	7.3
90	4.3	5.2
95	3.1	4.0
100	2.4	3.3

Life Expectancies for disabled retirees are based on the CalPERS Industrial Disability table from the 1997-2007 Experience Study projected for mortality improvement with Scale AA.

Age at 7/1/12	Male	Female
50	32.4	33.6
55	27.6	29.0
60	23.0	24.6
65	18.5	20.4
70	14.5	16.5
75	10.9	12.8
80	7.8	9.5
85	5.7	6.7
90	4.1	4.6
95	2.7	3.0

APPENDIX B
PROJECTED CONTRIBUTIONS

Projected Employer Contributions

The following summarizes the projected employer contributions assuming 6.75% future market value returns (amounts in millions).

Fiscal Year Ending	Employer Contribution
2014	$ 0.0
2015	0.0
2016	0.0
2017	0.0
2018	35.1
2019	35.9
2020	37.0
2021	37.9
2022	39.3
2023	40.7
2024	42.1
2025	43.6
2026	44.8

- APPENDIX B -

JULY 1, 2012
OMERS ACTUARIAL VALUATION

CITY OF
OAKLAND

BARTEL
ASSOCIATES, LLC

Oakland Municipal Employees' Retirement System

July 1, 2012
Actuarial Valuation

May 2013

BARTEL ASSOCIATES, LLC

ACTUARIAL VALUATION

CITY OF OAKLAND
OAKLAND MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM (OMERS)

We are pleased to present the results of our July 1, 2012 actuarial valuation of die Oakland Municipal Employees' Retirement System (OMERS).

The purpose of this valuation is to:

- calculate actuarial liabilities, funded status, and contribution levels including the 2013/14 fiscal year employer contribution, and,
- determine July 1, 2012 System actuarial liabilities and funded status pursuant to Governmental Accounting Standards Board Statement Nos. 25 and 50 (GASB 25 and 50).

The report is based on the System's benefit provisions summarized in Section 10, participant data furnished by the System, and the System's financial information. We reviewed the financial and participant data for reasonableness but did not perform an audit. The valuation was prepared using generally accepted actuarial principles and practices, and methods and assumptions summarized in Section 11.

As members of the American Academy of Actuaries, meeting Academy Qualification Standards, we certify the actuarial results and opinions in this report.

Sincerely,

John E. Bartel, ASA, MAAA, FCA
President

Marilyn Oliver, FSA, MAAA, EA, FCA
Vice President

Deanna Van Valer, ASA, MAAA, EA, FCA
Assistant Vice President

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SECTION 1
EXECUTIVE SUMMARY

Following are valuation results. Note that numbers throughout this report may not add due to rounding.

	July 1, 2010	July 1, 2012	% change
■ Participant Counts			
• Service Retirees	23	12	-48%
• Disability Retirees	2	1	-50%
• Beneficiaries	20	15	-25%
• Total	45	28	-38%
■ Demographic Information			
• Average Age	90	89	
• Annual Benefit Payments	$575,000	$390,000	-32%
• Administrative Expenses	346,000	239,000	-31%
■ Actuarial Liabilities			
• Present Value of Projected Benefit Payments	$2,922,000	$1,970,000	-33%
• Present Value of Administrative Expenses	2,549,000	1,660,000	-35%
• Total Actuarial Liabilities	5,471,000	3,630,000	-34%
■ Assets			
• Actuarial Value (= Market Value)	4,728,000	4,448,000	-6%
• Annualized Rate of Return from Prior Val	15.7%	12.7%[1]	
■ Plan Funded Status			
• Total Actuarial Liability	5,471,000	3,630,000	-34%
• Actuarial Value of Plan Assets	4,728,000	4,448,000	-6%
• Unfunded Actuarial Liability	743,000	(818,000)	
• Funded Ratio	86.4%	122.5%	
■ City Contribution for fiscal year [2]			
Fiscal Year	2012/13	2013/14	
• Recommended Contribution	161,000	0	

1 Average rate of return for 2010/11 and 2011/12.

2 See page 7. Subject to Retirement Board and City Council approval of recommended methodology.

SECTION 1
EXECUTIVE SUMMARY

Purpose of Actuarial Valuation

The actual plan cost is determined by benefits due to plan participants, how long they and their beneficiaries live to receive payments, and expenses charged to the fund. The actuarial valuation is a mathematical model that attempts to quantify this actual cost by setting assumptions that, it is hoped, duplicate reality as closely as possible. In addition, the actuarial methodology provides a reasonable plan, or method, for funding the expected costs of the plan produced by the model. This information is prepared to assist plan trustees so they can make informed decisions regarding plan investments and how much in contributions will be required from the employer to eventually fully pay for the plan's cost.

System Background

The Oakland Municipal Employees' Retirement System (OMERS) is a closed defined benefit pension plan. It covers the City's non-uniformed employees hired prior to September 1970 who have not elected to transfer to CalPERS. Plan membership as of July 1, 2012 is comprised of 28 retirees and beneficiaries whose average age is 89.

Changes since the Prior Valuation

As part of the July 1, 2012 valuation we reviewed the assumptions used in the prior valuation. Recommended assumption changes included:

- Lowering the assumed discount rate from 6.50% to 6.25%
- Decreasing the assumed rate of increase in administrative expenses (based on the increase in Bay Area CPI) from 3.50% to 3.375%.

These changes increased/(decreased) the Actuarial Liability by $39,000 and ($2,000) respectively.

Data changes included the following:

- The System performed a survey of current retirees to obtain updated data on their eligible spouses. Based upon the survey results, due to divorce or death, 3 spouses of current retirees were removed from the valuation data.
- Based upon review, the COLA benefit payable to a former Health Department retiree was adjusted.

These changes increased/(decreased) the Actuarial Liability by ($89,000) and $23,000 respectively.

SECTION 1
EXECUTIVE SUMMARY

Discussion of Results

Along with the changes mentioned above, higher than expected investment returns averaging 12.7% per year, lower administrative charges than anticipated, and a greater number of deaths with fewer surviving spouses than anticipated increased the funded ratio (assets divided by actuarial liabilities) from 86.4% in the 7/1/2010 valuation to 122.5% and resulted in a recommended contribution of $0 for FY 2013/14. It is our understanding that the California Public Employees' Pension Reform Act of 2013, PEPRA, does not require a contribution to the plan for FY 2013/14 under Section 7522.52. However, we advise the System to consult with their attorney on this matter.

Projections of future numbers of members, cash flows, and fund balances are shown in Sections 6 and 7.

Definitions

The Present Value of Projected Benefits (PVPB) is the present value of all future benefits for current plan participants. The Actuarial Liability (AL) represents the portion of the PVPB attributable to service through the date a participant is expected to commence benefits. Because all OMERS participants are currently receiving benefits, the Present Value of Benefits equals the Actuarial Liability.

SECTION 2
LIABILITY INFORMATION

A comparison of the Present Value of Benefits for the current and prior valuations is shown below. The Actuarial Liability equals the Present Value of Benefits since all plan participants are currently receiving payments. Note that numbers in the report may not add due to rounding.

	July 1, 2010	July 1, 2012
Discount Rate	*6.5%*	*6.25%*
■ Present Value of Projected Benefit Payments		
• Service Retirees	$1,543,000	$ 923,000
• Disability Retirees	233,000	114,000
• Beneficiaries	1,145,000	933,000
• Total	2,922,000	1,970,000
■ Present Value of Projected Administrative Expenses	2,549,000	1,660,000
■ Total Actuarial Liabilities	5,471,000	3,630,000
■ Actuarial Value of Plan Assets	4,728,000	4,448,000
■ Unfunded Actuarial Liability	743,000	(818,000)

SECTION 3
ASSET INFORMATION

Asset information is based on financial information from the City and the System's audited financial statements.

Asset Reconciliation – Market Value of Assets

The following reconciles the July 1, 2010 and July 1, 2012 market value of assets.

	2010/11		2011/12	
■ Net Assets at Beginning of Year		$4,728,000		$4,873,000
• Member Contributions	$ 0		$ 0	
• City Contributions	0		0	
• Investment Income	919,000		215,000	
• Other Income	6,000		0	
■ Total Additions		925,000		215,000
• Benefit Payments	514,000		435,000	
• Administrative Expenses	266,000		205,000	
■ Total Deductions		780,000		640,000
■ Net Assets at End of Year		4,873,000		4,448,000
■ Approximate Return on Assets		21.2%		4.7%
■ Approximate Annualized Two-Year Return				12.7%

SECTION 3
ASSET INFORMATION

Asset Allocation – Market Value of Assets

The allocation of trust assets as of June 30, 2012 is based on information from the City and the System's audited financial statements.

		Market Value	Percentage
■ Cash		$ 60,000	1.4%
■ Receivables		7,000	0.2%
■ Investments			
• Short Term Investments	$ 47,000		1.1%
• Mutual Funds			
➢ Equities	3,105,000		69.8%
➢ Bonds	1,271,000		28.6%
• Total Mutual Funds	4,376,000		
■ Total Investments		4,423,000	
■ Total Assets		4,490,000	
■ Liabilities		(42,000)	-0.9%
■ Net Pension Benefit Trust Assets		4,448,000	100.0%

Development of Actuarial Value of Assets

The market value of assets is used for the actuarial value of assets.

SECTION 4
2013/14 EMPLOYER CONTRIBUTION

The derivation of the recommended 2013/14 contribution amount is shown below.

- July 1, 2012 UAL $(818,000)
- Recommended Employer Contribution for FY 2013/14 $0

It is our understanding that California Public Employees' Pension Reform Act of 2013, PEPRA, does not require a contribution to the plan for FY 2013/14 under Section 7522.52. However, we advise the System to consult with their attorney on this matter.

SECTION 5
ACTUARIAL GAIN/LOSS ANALYSIS

The following is the gain/loss analysis of plan assets, actuarial liability, and unfunded actuarial liability for the two-year period between valuation dates. The Unfunded/(Surplus) Actuarial Liability is equal to the Present Value of Benefits less the Actuarial Value of Assets.

	Present Value of Benefits	Actuarial Value of Assets	Unfunded/ (Surplus) Actuarial Liability
■ July 1, 2010	$5,471,000	$4,728,000	$743,000
• Normal Cost	0	0	0
• Employer Contributions	0	0	0
• Employee Contributions	0	0	0
• Expected Benefit Payments	(544,000)	(544,000)	0
• Expected Expenses	(346,000)	(346,000)	0
• Expected Interest	327,000	279,000	48,000
■ July 1, 2011 Expected value	4,908,000	4,118,000	790,000
• Normal Cost	0	0	0
• Employer Contributions	0	0	0
• Employee Contributions	0	0	0
• Expected Benefit Payments	(487,000)	(487,000)	0
• Expected Expenses	(364,000)	(364,000)	0
• Expected Interest	292,000	240,000	52,000
■ July 1, 2012 Expected value	4,349,000	3,507,000	842,000
■ July 1, 2012 Actual value prior to changes	3,659,000	4,448,000	(789,000)
■ Experience (Gain)/Loss [Asset Gain/(Loss)]	(690,000)	942,000	(1,632,000)
■ Changes			
• Improved spouse data	(89,000)	0	(89,000)
• Health retiree benefit correction	23,000	0	23,000
• Expenses increase rate assumption	(2,000)	0	(2,000)
• Discount rate assumption	39,000	0	39,000
■ July 1, 2012 Actual value after changes	3,630,000	4,448,000	(818,000)

Gains on assets are primarily due to better than expected investment returns. Gains on actuarial liabilities are primarily due to more deaths with fewer surviving spouses and lower administrative charges than anticipated. Numbers may not add due to rounding.

SECTION 6
HEADCOUNT & BENEFIT PAYMENT PROJECTION

Headcount and Benefit Payment Projection

July 1, 2012

Fiscal Year Ending June 30,	Beginning of Year Count	Benefits during Year
2013	28	$374,000
2014	25	327,000
2015	22	289,000
2016	19	254,000
2017	17	221,000
2018	14	192,000
2019	12	165,000
2020	10	141,000
2021	9	120,000
2022	7	102,000
2023	6	86,000
2024	5	73,000
2025	4	61,000
2026	3	51,000
2027	3	43,000
2028	2	35,000
2029	2	29,000
2030	1	24,000
2031	1	19,000
2032	1	16,000
2033	1	13,000
2034	0	10,000
2035	0	8,000
2036	0	6,000
2037	0	5,000
2038	0	4,000
2039	0	3,000
2040	0	2,000
2041	0	2,000
2042	0	1,000

SECTION 7
CASH FLOW ANALYSIS

The following is a projected cash flow for the plan over the next 20 years assuming all actuarial assumptions are met, including the 6.25% investment return, and that all contributions are made.

FYE June 30,	BOY Market Value of Assets	Benefit Payments	Contribution	Administrative Expenses	Investment Income (6.25% assumed)	Net Cash Income	EOY Market Value of Assets
2013	$4,448,000	$(374,000)	$0	$(239,000)	$259,000	$(354,000)	$4,094,000
2014	4,094,000	(327,000)	0	(243,000)	238.000	(332,000)	3,763,000
2015	3,763,000	(289,000)	0	(233,000)	219,000	(303,000)	3,460,000
2016	3,460,000	(254,000)	0	(222,000)	202,000	(275,000)	3,185,000
2017	3,185,000	(221,000)	0	(212,000)	186,000	(248,000)	2,937,000
2018	2,937,000	(192,000)	0	(192,000)	172,000	(211,000)	2,726,000
2019	2,726,000	(165,000)	0	(165,000)	160,000	(170,000)	2,556,000
2020	2,556,000	(141,000)	0	(141,000)	151,000	(131,000)	2,425,000
2021	2,425,000	(120,000)	0	(120,000)	144,000	(96,000)	2,329,000
2022	2,329,000	(102,000)	0	(102,000)	139,000	(65,000)	2,264,000
2023	2,264,000	(86,000)	0	(86,000)	136,000	(36,000)	2,228,000
2024	2,228,000	(73,000)	0	(73,000)	135,000	(11,000)	2,217,000
2025	2,217,000	(61,000)	0	(61,000)	135,000	13,000	2,230,000
2026	2,230,000	(51,000)	0	(51,000)	136,000	34,000	2,264,000
2027	2,264,000	(43,000)	0	(43,000)	139,000	54,000	2,318,000
2028	2,318,000	(35,000)	0	(35,000)	143,000	72,000	2,390,000
2029	2,390,000	(29,000)	0	(29,000)	148,000	89,000	2,479,000
2030	2,479,000	(24,000)	0	(24,000)	153,000	106,000	2,585,000
2031	2,585,000	(19,000)	0	(19,000)	160,000	122,000	2,707,000
2032	2,707,000	(16,000)	0	(16,000)	168,000	137,000	2,844,000

SECTION 8
SENSITIVITY: ANNUITIZATION

The System is contemplating purchasing a group annuity contract to cover the liabilities for future payments for all current participants. The sensitivity of liabilities to the decrease in assumed investment return rate that would accompany such a purchase is shown below. The purchase price of an annuity would include administrative fees. We have not estimated the amount that the insurer would charge for these fees. We also have not estimated the amount of administrative fees that would be required to continue to administer the System in accordance with provisions of the City Charter / Ordinances to the extent necessary after the purchase.

	Current Valuation	Annuitization
Discount Rate	***6.25%***	***3.00%***
■ Present Value of Projected Benefit Payments		
• Service Retirees	$ 923,000	$1,060,000
• Disability Retirees	114,000	130,000
• Beneficiaries	933,000	1,093,000
• Total	1,970,000	2,282,000
■ Present Value of Projected Administrative Expenses	1,660,000	Not calculated
■ Total Actuarial Liabilities	3,630,000	Not calculated

SECTION 9
GASB REPORTING AND DISCLOSURE

Government Accounting Standards Board Statements Numbers 25 and 50 (GASB 25 and 50) require defined benefit plans to disclose certain information. Tables containing this information follow. The actuarial methods and assumptions that calculations are based on appear below.

Actuarial Methods and Assumptions

- The Plan's Annual Required Contribution (ARC) for the fiscal year ending June 30, 2014 is based on the July 1, 2012 actuarial valuation. The ARC for this period is $0 and is based on closed 6 year level dollar amortization of the projected July 1, 2013 Unfunded Actuarial Liability (UAL).

- The actuarial funding method used is the Entry Age Normal Cost method. Under the Entry Age Normal Cost method, the Present Value of Future Benefits (PVFB) is the present value of all future benefits for current plan participants. The Actuarial Liability (AL) represents the portion of the PVFB attributable to past service.

The following is a summary of June 30, 2012 actuarial assumptions and methods.

Interest rate:	6.25%
Mortality:	RP-2000 Table projected to 2012, then projected by generation, Scale AA
Inflation, US:	3.25% per year
Future Benefit Increases:	3% per year increase, but increases for certain health department retirees do not begin until 2014
Actuarial Cost Method:	Entry Age Normal Cost Method
Amortization:	Closed Level Dollar Payments over 6 Years
Administrative Expenses:	Based on budgeted expenses for the coming year, increasing 3.375%. 2/3rds decreases in proportion to the population decrease. Total capped at 100% of benefit payments.

The discount rate assumption was changed for the 2012 valuation from 6.5% to 6.25% and resulted in an increase in the actuarial accrued liability of approximately $39,000. The expense increase assumption was decreased from 3.5% to 3.375% resulting in a decrease in the actuarial accrued liability of $2,000.

SECTION 9

GASB REPORTING AND DISCLOSURE

Disclosure Information

Disclosure information is shown below. For information for 7/1/2005 and earlier we have relied upon information supplied by the previous actuary, Milliman Actuaries and Consultants.

Employer Contribution Schedule

Fiscal Year Ending June 30,	Annual Required Contribution	Percentage Contributed
2002	$ 0	100%
2003	0	100
2004	0	100
2005	0	100
2006	0	100
2007	0	100
2008	0	100
2009	0	100
2010	0	100
2011	0	100
2012	120,000	0
2013	161,000	0
2014	0	100

Funding Progress Schedule

Actuarial Valuation Date (Juty 1)	Actuarial Value of Assets (A)	Actuarial Accrued Liability (AAL) (B)	Unfunded AAL (UAAL) (B-A)	Funded Ratio (A/B)	Covered Plan Payroll (C)	Unfunded (Funded) AAL as a Percentage of Covered Plan Payroll ([B-A]/C)
2007	9,371,000	7,516,000	(1,855,000)	124.7%	0	n/a
2009	4,981,000	5,499,000	518,000	90.6%	0	n/a
2010	4,728,000	5,471,000	743,000	86.4%	0	n/a
2012	4,448,000	3,630,000	(818,000)	122.5%	0	n/a

SECTION 10
PLAN PROVISIONS

A. Plan Effective Date

Originally established effective July 1, 1939.

B. Plan Year

July 1 to June 30.

C. Participation

The plan is closed with no new members since September 1970.

D. Eligibility for Service Retirement

10 years of service and age 60, or 20 years of service and age 52, or age 70.

E. Final Salary

Highest average compensation earnable during any period of at least three years.

F. Service Retirement Benefit

1.6667% of Final Salary for each Year of Service multiplied by the appropriate factor below:

Age	Plan Factor	Age	Plan Factor
52	0.5873519	59	0.9315346
53	0.6252677	60	1.0000000
54	0.6663179	61	1.0725358
55	0.7108259	62	1.1489548
56	0.7591330	63	1.2302338
57	0.8117158	64	1.3165137
58	0.8690080	65 & older	1.4096949

G. Disability Retirement Benefit

Eligibility: 5 years of service, under age 60

Benefit: 1.5% of Final Salary for each Year of Service, subject to minimum benefits based on service adjusted by salary under the Labor Code for disability or death arising out of the performance of duty.

H. Death Benefit – Post Retirement Death

$1,000 paid to designated beneficiary of former members without spouses upon death.

I. Benefit Forms

Lifetime benefit to the member, 50% continuance to spouse.

J. Cost of **Living**

Benefits increased based on CPI, but capped at 3%. COLA payments temporarily suspended for certain transfers to Alameda County Health Department due to overpayments.

SECTION 11
METHODS AND ASSUMPTIONS

Actuarial Methods

The actuarial cost method used for funding purposes and GASB 25/50 purposes in this valuation is the Entry Age Normal (EAN) method.

Under the Entry Age Normal Cost method, the Actuarial Liability (AL) represents the portion of the Present Value of Projected Benefits (PVPB) attributable to past service and is recognized over service through the date a participant is expected to commence benefits. The difference between the AL and the Actuarial Value of Assets is the Unfunded Actuarial Liability (UAL). Since all its members are in payment status, the AL equals the Present Value of Projected Benefits.

The 7/1/2012 Unfunded Actuarial Liability (UAL) is amortized as a level dollar amount over a closed 6 year period. In addition, the total contribution amount may not be less than the amount required to maintain the fund balance at the level necessary to pay benefits and administrative expenses during the contribution year.

Assets

The Actuarial Value of Assets is equal to the Market Value of Assets.

Administrative Expenses

Administrafive expenses are explicitly recognized in the present value of benefits. Administrative expenses for the current year are based on the budget for 2012/13. Future expenses are assumed to increase by 3.375% per year beginning with 2013/14, and the staff salary component of expenses assumes an end to furlough days after June 30, 2013. 2/3rds of expenses are assumed to decrease in proportion to the population decrease, and the remaining 1/3rd to increase at a flat 3.375%. Additionally the expenses are capped at 100% of the benefit payments.

Data

The City provided the current benefit payment amounts for all retirees and beneficiaries currently receiving payments. Benefit payment amounts supplied by the System were used for all retirees and beneficiaries except for one former Health Department retiree whose benefit was assumed to be corrected going forward.

SECTION 11
METHODS AND ASSUMPTIONS

Actuarial Assumptions

- **Investment return rate (discount rate)**

  6.25%, net of investment expenses (6.5% in prior valuation)

- **Inflation**

  3.25%

- **Post-Retirement Benefit Increases**

  'Non-Health' Retirees: 3% per year in all future years

  'Health' Retirees: 3% per year beginning July 1, 2014 for 4 of the 6 retirees, remaining retirees receive 3% in all future years

- **Healthy Mortality (for service retirees and beneficiaries)**

  RP-2000 Table projected to 2012, then projected for mortality improvement using generational Scale AA. Sample rates are as follows:

Age at 7/1/12	Male	Female
40	0.1%	0.1%
50	0.2%	0.1%
60	0.6%	0.5%
70	1.9%	1.6%
80	5.7%	4.2%
90	17.5%	12.7%

Sample life expectancies are shown in Exhibit A at the back of this report.

- **Disabled Mortality (for disabled retirees)**

  The 1997-07 CalPERS disabled mortality table. Sample rates are as follows:

Age	Male	Female
40	1.7%	0.7%
50	1.6%	1.2%
60	2.3%	1.6%
70	3.9%	3.0%
80	8.4%	5.6%
90	21.6%	14.9%

SECTION 12
PARTICIPANT DATA

Data Summary

Following summarizes participant demographic information for the July 1, 2010 and July 1, 2012 actuarial valuations. Data was checked for reasonableness, but not audited.

	July 1, 2010	July 1, 2012
■ Participant Counts		
• Service Retirees	23	12
• Disabled Retirees	2	1
• Beneficiaries	20	15
• Total	45	28
■ All Inactives		
• Average Age	89.5	88.9
• Avg. Monthly Benefit	$1,066	$1,160
■ Service Retirees		
• Average Age	89.8	90.2
• Avg. Monthly Benefit	$1,084	$1,329
■ Disabled Retirees		
• Average Age	86.4	85.0
• Avg. Monthly Benefit	$1,799	$1,768
■ Beneficiaries		
• Average Age	89.6	88.1
• Avg. Monthly Benefit	$ 971	$ 985

SECTION 12
PARTICIPANT DATA

Data Reconciliation
7/1/2010 to 7/1/2012

	Service Retirees	Disabled Retirees	Beneficiaries	Total
■ **July 1, 2010**	23	2	20	45
• Died	(11)	(1)	(6)	(18)
• New Beneficiary	-	-	1	1
■ **July 1, 2012**	12	1	15	28

Distribution of Retirees and Benefits

July 1, 2012

	Service Retirees		Disabled Retirees		Beneficiaries	
	Count	Monthly Benefit	Count	Monthly Benefit	Count	Monthly Benefit
Under 65	-	$ -	-	$ -	-	$ -
65 - 69	-	-	-	-	-	-
70 - 74	-	-	-	-	1	834
75 - 79	-	-	-	-	1	1,337
80 - 84	1	1,449	1	1,768	2	1,256
85 - 89	6	5,873	-	-	5	3,765
90 - 94	3	4,750	-	-	4	3,434
95 - 99	2	3,877	-	-	2	4,147
100 & over	-	-	-	-	-	-
Total	12	15,949	1	1,768	15	14,773

APPENDIX A - LIFE EXPECTANCIES

Life Expectancies for healthy retirees and beneficiaries

Age	Male	Female
40	44.5	45.7
45	39.2	40.5
50	34.0	35.5
55	28.9	30.5
60	24.0	25.8
65	19.4	21.3
70	15.2	17.2
75	11.5	13.4
80	8.3	10.2
85	5.8	7.4
90	4.0	5.3
95	2.9	4.0
100	2.3	3.3

Life Expectancies for disabied retirees

Age	Male	Female
40	29.0	34.2
45	26.3	30.6
50	23.4	27.0
55	20.3	23.9
60	17.2	20.7
65	14.3	17.3
70	11.6	14.2
75	8.9	11.3
80	6.7	8.6
85	4.7	6.2
90	3.4	4.5
95	2.3	3.0
100	1.5	1.8