

**EMPLOYEES' RETIREMENT SYSTEM OF THE STATE OF
HAWAII**

REPORT TO BOARD OF TRUSTEES ON THE 88TH ANNUAL
ACTUARIAL VALUATION

FOR THE YEAR ENDING JUNE 30, 2013

December 31, 2013

Board of Trustees
Employees' Retirement System of
The State of Hawaii
City Financial Tower
201 Merchant St., Ste. 1400
Honolulu, HI 96813-2980

Dear Trustees:

SUBJECT: ACTUARIAL VALUATION AS OF JUNE 30, 2013

We certify that the information contained in the 2013 actuarial valuation report is accurate and fairly presents the actuarial position of the Employees' Retirement System of the State of Hawaii (ERS) as of June 30, 2013.

All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the Hawaii statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. One or more of them are an Enrolled Actuary and/or a Member of the American Academy of Actuaries. All are experienced in performing valuations for large public retirement systems.

ACTUARIAL VALUATIONS

The primary purpose of the valuation report is to determine the adequacy of the current employer contribution rate through measuring the resulting funding period, to describe the current financial condition of ERS, and to analyze changes in ERS's condition. In addition, the report provides information required by ERS in connection with Governmental Accounting Standards Board Statement No. 25 (GASB No. 25), and it provides various summaries of the data.

Valuations are prepared annually, as of June 30th of each year, the last day of ERS's plan year and fiscal year.

FINANCING OBJECTIVES

Contribution rates are established by Law that, over time, are intended to remain level as a percent of payroll. The employee and employer contribution rates have been set by Law and are intended to provide for the normal cost plus the level percentage of payroll required to amortize the unfunded actuarial accrued liability (UAAL) over a period not in excess of 30 years.

PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES

The actuarial accrued liability, the unfunded actuarial accrued liability (UAAL), and the determination of the resulting funding period illustrate the progress toward the realization of financing objectives. The System continues to recognize the deferred investment losses from the severe downturn in the investment markets during fiscal year 2009. However, the System had an offsetting liability experience gain which was caused primarily by lower than expected salary increases. As a result, the UAAL grew less than expected and based on this actuarial valuation as of June 30, 2013, ERS's underfunded status as measured by the UAAL is now \$8.495 billion.

The 2011 Legislature made significant changes to the future employer contribution rates. The current 23.00% of pay contribution rate for Police and Fire employees will gradually increase to 25.00%, and the 16.00% of pay contribution rate for All Other Employees will gradually increase to 17.00%. The Legislature also made changes to the benefits and member contribution rates for employees hired after June 30, 2012. Because these changes result in significantly higher contributions towards the unfunded liability in the future than in the current year, we believe it is more appropriate to determine the funding period using an open group projection rather than a static mathematical formula, which assumes that all amortization payments in the future will be the same percentage of pay as in the current year.

Based on the future increases in the employer contribution rates and the changes to the benefits and member contributions of future employees, we have determined that the funding period for paying off the UAAL of the System (in aggregate) is 28 years. Because this period does not exceed 30 years, the financing objectives of ERS are currently being realized. (Hawaii Revised Statutes §88-122(e)(1) state that the employer contribution rates are subject to adjustment when the funding period is in excess of 30 years.)

The System is currently deferring \$391 million in deferred investment losses (compared with \$957 million last year). Without offsetting gains, these losses will increase the unfunded liability and possibly lengthen the funding period as they are recognized in future valuations.

BENEFIT PROVISIONS AND LEGISLATIVE CHANGES

This is the first valuation with members covered under the new benefit tier.

There have been no changes in the benefit provisions since the prior valuation. See Table 16 of this report for more details on the benefit provisions for members of the System.

ASSUMPTIONS AND METHODS

The actuarial assumptions used were adopted by the Board in December of 2010 based on the recommendations provided by an Experience Study performed by GRS.

There have been no changes to the assumptions or methods since the prior valuation. Further detail on the assumptions and methods may be found in Table 18 of this report.

In our opinion, the assumptions are internally consistent and are reasonably based on the actual experience of ERS. These assumptions are also in full compliance with all parameters established by GASB No. 25.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. The actuarial calculations are intended to provide information for rational decision making.

DATA

Member data for retired, active, and inactive participants was supplied as of March 31, 2013, by ERS's staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was supplied by ERS's staff.

RESPONSIBILITY FOR TABLES AND SCHEDULES

The actuary is responsible for the information with respect to years after 1999 in the Required Supplementary Information, the Schedule of Employer Contributions, and the Notes to Required Supplementary Information in the Financial Section of the ERS's Comprehensive Annual Financial Report (CAFR). Information with respect to years prior to 2000 was supplied by ERS.

Tables and schedules in the Actuarial Section of the CAFR were generally prepared directly by the Actuary. However, certain of these tables were prepared by ERS utilizing information from this report. When the tables were prepared by ERS from our report, they are so noted.

The undersigned are independent actuaries and consultants. Mr. Newton is an Enrolled Actuary, a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries. Finally, all of the undersigned are experienced in performing valuations for large public retirement systems.

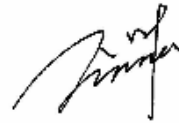
Sincerely,



Joseph P. Newton, FSA, EA
Senior Consultant & Actuary



Lewis Ward
Consultant



Linna Ye, ASA, MAAA
Actuary

J:\3046\2013\VAL\2013_Val.doc

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u> <u>NUMBER</u>	
		COVER LETTER
SECTION A	1	EXECUTIVE SUMMARY
SECTION B	3	INTRODUCTION
SECTION C	5	FUNDED STATUS
SECTION D	8	ANALYSIS OF CHANGES
SECTION E	11	ERS ASSETS
SECTION F	13	BENEFIT PROVISIONS
SECTION G	15	GASB 25 DISCLOSURE
SECTION H	17	ACTUARIAL ASSUMPTIONS AND METHODS
SECTION I	19	MEMBERSHIP DATA
SECTION J	21	SUMMARY AND CLOSING COMMENTS
SECTION K	23	ACTUARIAL CERTIFICATION STATEMENT
SECTION L	26	TABLES
SECTION M	76	STATISTICAL TABLES
SECTION N	105	DEFINITION OF ACTUARIAL TERMS

SECTION A

EXECUTIVE SUMMARY

Executive Summary

The following table summarizes the key results of the June 30, 2013 actuarial valuation of the Employees' Retirement System of the State of Hawaii (ERS).

Item	2013	2012
Membership		
• Number of		
- Active members	66,226	65,599
- Retirees and beneficiaries	41,812	40,774
- Inactive, vested	7,312	6,909
- Total	115,350	113,282
• Covered payroll for active members	\$3,720.8 million	\$3,706.1 million
• Actual benefit payments and refunds	\$1,067.8 million	\$1,022.6 million
Assets		
• Actuarial (smoothed) value	\$12,748.8 million	\$12,242.5 million
• Market value	\$12,357.8 million	\$11,285.9 million
• Return on actuarial value	6.7%	5.1%
• Return on market value	12.3%	(0.6%)
• Employer contributions during fiscal year	\$581,447,212	\$548,353,394
• External cash flow %	(2.5%)	(2.7%)
Actuarial Information		
• Total normal cost % (employee + employer)	11.02%	11.05%
• Unfunded actuarial accrued liability (UAAL)	\$8,494.9 million	\$8,440.9 million
• Funded ratio (based on smoothed assets)	60.0%	59.2%
• Funded ratio (based on market assets)	58.2%	54.6%
• Funding period (years)*	28.0	30.0
• Employer contribution rate % of projected payroll**		
For FY beginning July 1	16.76%	16.11%
• GASB ARC for FY 2014		
% of projected payroll		
Police & Fire Employees	25.36%	25.79%
All Other Employees	17.61%	17.72%
Composite - All Employees	18.46%	18.64%

* Funding Period based on actuarial value of assets, scheduled increases in employer contribution rates, and an open group projection reflecting changes in benefits and future member contribution rates.

** Weighted average of 23.0% Contribution Rate for Police and Firefighters and 16.0% Contribution Rate for All Other Employees for FY 2014, 22.0% and 15.5% respectively for FY 2013.

SECTION B

INTRODUCTION

Introduction

The results of the June 30, 2013 actuarial valuation of ERS are presented in this report.

The primary purpose of the valuation report is to determine the adequacy of the current employer contribution rates through measuring the resulting funding period, to describe the current financial condition of ERS, and to analyze changes in ERS's condition. In addition, this report presents information required by ERS in connection with Governmental Accounting Standards Board Statement No. 25 (GASB No. 25).

Section C discusses the funded status of ERS. Section D analyzes the change in the UAAL. Section G discusses the disclosure requirements of GASB No. 25.

Sections E, F, H, and I discuss background information used in the preparation of this report-- benefit provisions, actuarial assumptions and methods, financial information, and membership data. Section K contains the actuarial certification.

All the tables referenced by the other sections appear in Section L.

SECTION C
FUNDED STATUS

Funded Status

Table 1 shows the development of the Plan's liabilities and funded status for the current year and compares it with those of the prior year.

The calculation of the funded status involves the following steps and includes the following comments:

- The actuarial present value of future benefits is determined for the present members, including retired members, beneficiaries, inactive members, and active members. This amounts to \$24.7 billion. Table 2 shows the development of this total for the current year and the prior year.
- The individual entry age normal funding method is used to allocate the actuarial present value of future benefits between that portion due for the current year (the normal cost), prior years (the actuarial accrued liability) and future years (the present value of future normal cost). Under the individual entry age normal cost method, the current and future normal costs are determined as a level percentage of payroll. Table 3 shows an analysis of the normal cost for the current year and the prior year. The amount needed to fund the current and future normal costs is 19.84% of pay for Police and Fire employees and 9.91% for All Other employees. It includes all of the employees' contribution (if any) and the employers' normal cost rate.
- A part of the normal cost is paid by the employee contributions of 12.24% of pay for Police and Firefighters, leaving 7.60% of pay to be funded by the employers. Thus the current year's employer normal cost for Police and Firefighters is deemed to be 7.60% of the valuation payroll. As for the All Other Employees group, the average weighted effective employee contribution rate is 4.38% of pay, leaving 5.53% of pay to be funded by the employers. This is shown in Line 3 of Table 1.
- The UAAL is \$8.495 billion for 2013, an increase from \$8.441 billion in 2012. As indicated in Table 1, the UAAL equals the difference between the total actuarial accrued liability (Item 7) and current actuarial assets (Item 8).

- In determining the number of years that will be required to amortize the UAAL, an assumption is made concerning future growth of the ERS covered payroll. GASB Statement No. 25 requires that the payroll growth assumption not consider growth in the active employee census. While the determination of the funding period under Hawaii Revised Statutes §88-122(e)(1) is not required to be GASB compliant, we have retained the GASB compliant assumption that active membership will not grow in our open group projection.
- As shown in Item 10 of Table 1 and on Table 9c, the period to fund the UAAL is 30 years for Police and Fire and 28 years for the All Other Employees group. The aggregate funding period for ERS is 28 years. Since the aggregate funding period based on the contribution rates does not exceed 30 years, the rates are adequate to meet the requirements of Hawaii Revised Statutes §88-122(e)(1).
- Note that GASB No. 25 requires that the Annual Required Contribution (ARC) be determined in a manner that assumes the current year's amortization rate will be the same in the future except for payroll growth. Please see section G of this report for a more thorough discussion of this issue as well as the ARC determined by this valuation.

As of the valuation date, ERS has a funded ratio of 60.0%, based on the actuarial value of assets.

Due to the significant changes in the future contribution rates and benefits for employees hired after June 30, 2012, the ERS funding policy uses an open group projection for determining how many years it will take to eliminate the unfunded liabilities of the System. As shown on Table 9c, the System is expected to be fully funded in 2041 which is 28 years from now. Therefore, the funding period is equal to 28 years. The open group projection assumes that the number of active members will remain constant and that there will be no actuarial gains or losses on liabilities or investments.

SECTION D

ANALYSIS OF CHANGES

Analysis of Changes

Section C has noted that the unfunded actuarial accrued liability (UAAL) is \$8.495 billion as of June 30, 2013 compared to the \$8.441 billion UAAL for 2012.

Table 7 develops the estimated yield for the year based on two measures of asset values. Table 9b takes the information contained in Table 6 and develops the expected value of actuarial assets for this valuation, based on the investment return assumption of 7.75%.

As shown in Item 5 of Table 9b, the expected value of actuarial assets as of June 30, 2013 is \$12.879 billion. As developed in Table 6, the actual value of actuarial assets as of the valuation date is \$12.749 billion (as repeated in Item 6 of Table 9b). Thus the asset loss for the year is the difference between the actual value and the expected value, or \$130.3 million (as shown in Item 7). This asset loss for the year is a direct reflection of the estimated yield for the year based on the value of actuarial assets, namely 6.67% (as shown in Item B4 of Table 7) being less than the assumed rate of return.

The actuarial asset valuation method is intended to smooth out year-to-year fluctuations in the market return. The expected actuarial value of assets is calculated and compared to the actual market value of assets. One fourth of the difference between these numbers is then recognized and added to the expected actuarial value of assets to get the final actuarial value of assets. This method has the advantage of more quickly converging towards the market value in years when the returns go in the opposite direction of the prior years, as was the case this year. All of the excess investment earnings from FY 2013 were offset against the prior year's deferred investment losses.

After an unfavorable year in FY 2012, the investment markets had an excellent year in FY 2013 resulting in a return of 12.30% on the market value of assets. The rate of return for the actuarial value was 6.67%, which is less than the market return due to the smoothing methodology used in the determination of the actuarial value of assets. The actuarial value of assets exceeds the market value of assets by \$391 million, so there are \$391 million in deferred investment losses still to be recognized in the actuarial value of assets. Please note that as of the last valuation there was \$957 million in deferred losses, so about \$566 million in deferred investment losses were recognized (or offset by investment gains) in this valuation.

Table 9a indicates that the total actuarial experience gain for the 2012/2013 plan year was \$241.9 million (Item 7). As noted above, the actuarial investment loss was equal to \$130.3 million. This means that there was a liability gain during the year equal to \$372.2 million. This experience gain is primarily due to actual salary increases being less than the current salary scale assumption.

Table 9c shows the current year's valuation results plus a 30-year open group projection of the System's assets and liabilities. As discussed previously, this projection assumes no actuarial gains or losses in the actuarial liabilities or the actuarial value of assets. In addition, the projection reflects the changes made to the future employer contribution rates as well as the changes to the

benefits and member contribution rates of employees hired after June 30, 2012. As may be seen by examining this table, unfunded liability of the System (Column 7) is expected to be eliminated in fiscal year 2041, which is 28 years from this valuation. Therefore, for the purpose of satisfying Hawaii Revised Statutes §88-122(e)(1) the funding period is considered to be 28 years.

SECTION E

ERS ASSETS

ERS Assets

Table 4 presents a summary of the market value of assets held by the ERS. About 76% of the total assets available for benefits are held in equities (including alternative investments) and real estate compared to about 68% last year. Table 5 shows a reconciliation of the assets from the beginning of the prior year to the valuation date.

Table 6 shows the development of the Actuarial Value of Assets (AVA). An actuarial value is used in order to dampen some of the year-to-year fluctuations which would occur if the market value were used instead. The method used, determines the actuarial value of assets as the expected actuarial value of assets plus 25% of the difference between the actual market value of assets and the expected actuarial value of assets.

Table 7 shows an estimate of the ERS's dollar-weighted rate of return for the year. This is shown on (i) the market value of assets (reflecting all realized and unrealized gains and losses), and (ii) the actuarial value of assets. While the dollar-weighted market return this year was 12.30%, the return on the actuarial value was 6.67%. The difference between these is due to the smoothing effect of the AVA valuation method.

Table 9b determines the asset gain or loss for the year, based on the difference between the actual fund return and the assumed rate of 7.75%.

Finally, Table 13 shows a history of cash flows for the trust.

SECTION F

BENEFIT PROVISIONS

Benefit Provisions

Table 16 summarizes the provisions of ERS used in this valuation. Table 17 is a historical record of prior legislative changes starting with changes effective in 1999. There were significant changes made by the 2011 Legislature to the benefit provisions of the System for employees hired after June 30, 2012. Because the Board has chosen to use the Individual Entry Age Normal Cost method, the normal cost and the growth of the accrued liabilities will be slowly impacted by the changes in the benefit provisions, as members under the new tier are hired to replace members who are covered under the older tier of benefits.

There have been no changes to the benefit provisions since the last valuation that had an actuarial impact on the valuation.

Legislation was also enacted in 2011 that impacted the employer contribution rates beginning in fiscal year 2013. The employer contribution rates for Police and Fire employees will increase according to the following schedule: 22.00% in FY2013, 23.00% in FY 2014, and 24.00% in FY 2015, and 25.00% in FY 2016 and beyond. The employer contribution rates for All Other Employees will increase according to the following schedule: 15.50% in FY2013, 16.00% in FY 2014, and 16.50% in FY 2015, and 17.00% in FY 2016 and beyond.

This valuation reflects benefits promised to members by the ERS's statutes. There are no ancillary benefits - retirement type benefits not required by the ERS's statutes but which might be deemed an ERS liability if continued beyond the availability of funding by the current funding source.

Act 179/2004 was adopted during FY2003/2004 and established the new Hybrid Plan that became effective on July 1, 2006. Current participants had the choice to elect to move to the new plan or stay in the current plan. There were 26,228 plan members who elected to so transfer. The Hybrid plan membership has since grown to more than 40,000 members.

SECTION G

GASB NO. 25 DISCLOSURE

GASB No. 25 Disclosure

Governmental Accounting Standards Board (GASB) Statement No. 25 governs reporting for government-sponsored retirement plans.

This report includes Tables 11a, 11b, and 11c--showing information required to be reported under GASB No. 25. Table 11a shows a history of funding progress (a comparison of actuarial assets with the actuarial accrued liability and a comparison of UAAL with compensation).

Table 11b shows the Schedule of Employer Contributions as computed under GASB No. 25, and it shows what percent of this amount was actually received. We have determined the GASB No. 25 Annual Required Contribution (ARC) using a 30-year amortization period. The ARC for fiscal year 2014 is 18.46% of pay for all employees (if determined separately, the ARC is 25.36% for Police and Fire and 17.61% for All Other Employees). The ARC has been determined based on the benefits of the current members only.

Table 11c shows other information that must be included in the notes section of the financial report. The auditor's notes should disclose the following events which may affect the comparability of the trend information shown in Tables 11a and 11b: the change in assumptions effective as of June 30, 2006, the new salary scale assumption effective June 30, 2007, the new assumptions effective June 30, 2011.

The GASB has recently revised the disclosure requirements for Governmental pension plans and their sponsors. These new statements (No. 67 & 68) are not yet effective and are not reflected in this report.

SECTION H

ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an investment return assumption. The ERS's Board adopts the assumptions used, taking into account the actuary's recommendations.

In addition to the actuarial assumptions, the actuary also makes use of an actuarial funding method to allocate costs to particular years. In common with most public sector plans, ERS uses the entry age normal method (individual normal cost). This method produces a relatively level pattern of funding for individual employees over time. We believe this method is appropriate for ERS.

In prior years, the Ultimate Normal Cost variation of the Entry Age Normal actuarial funding method was used. However, due to the reduction in benefits for future hires adopted by the 2011 Legislature and the release of the GASB preliminary views regarding disclosure of pension liabilities, the ERS Board in consultation with its actuary elected to switch, effective with the June 30, 2011 valuation, to the Individual Normal Cost variation of the Entry Age Normal actuarial funding method, for the purpose of determining the actuarial accrued liability and normal cost of ERS.

There have been no changes in the assumptions or methods since the prior valuation.

Please see Table 18 for a complete description of the actuarial assumptions and methods.

SECTION I

MEMBERSHIP DATA

Membership Data

Membership data was provided in electronic files, via a secured file transfer protocol, by the staff. Data for active members include sex, birthdate, service, pay rate as of March 2013, employer entity and accumulated employee contributions. Data for inactive, nonretired members was similar, but also includes the members' unreduced benefit. For retired members, data includes status (service retiree, disabled retiree or beneficiary), sex, birthdate, pension amount, pension COLA amount, form of payment, beneficiary sex and birthdate if applicable, and date of retirement.

While not verifying the correctness of the data at the source, we performed various tests to ensure the internal consistency of the data and its overall reasonableness. Membership statistics are summarized in Table 12a. Table 12b summarizes certain active member data, and the age/service distribution of active members is shown in Table 19. Tables 30-43 show various distributions of retirees.

Since last year, the number of active members increased by 627 members from 65,599 to 66,226. These 66,226 active members are distributed as follows:

Category	Number	% of Total
(1)	(2)	(3)
Police & Fire	4,971	7.5%
Contributory	1,437	2.2%
Noncontributory	17,941	27.1%
Hybrid Plan	<u>41,877</u>	<u>63.2%</u>
Total	66,226	100.00%

Total payroll increased 0.4% since last year. This figure is then increased by one year's pay increase to determine the member's rate of pay at July 1, 2013.

Average age and average service of the active members both increased this year. Average age increased from 47.6 years to 47.7 years, while average service remained at 13.5 years.

SECTION J

SUMMARY AND CLOSING COMMENTS

Summary and Closing Comments

To summarize the results of the actuarial valuation of the Employees' Retirement System as of June 30, 2013, it is our opinion that if all assumptions are met going forward, the present assets plus future required contributions will be sufficient to provide the benefits specified in the law. The large liability gains have resulted in a decrease in the estimated time to eliminate the unfunded liability of the System from 30 years to 28 years. The funding period is less than the 30-year maximum period specified by Hawaii Revised Statute 88-122(e)(1).

The return on investments decreased the amount of unrecognized investment losses from \$957 million last year to about \$391 million this year. In the absence of offsetting gains the funded position of the plan will increase slower than expected over the next several valuations as the deferred investment losses are recognized.

There are still concerns for the future. The key ones are as follow:

- The actuarial asset method is still deferring \$391 million in deferred investment losses.
- The funded ratio based on the market value of assets is still only 60%.
- The current economic condition in the State. The overall levels of membership and payroll have direct impact on amount of contributions into the System. If payroll does not grow as assumed, then the contribution dollar amounts will not grow as anticipated.

SECTION K

ACTUARIAL CERTIFICATION STATEMENT

Actuarial Certification Statement

	Police and Firefighters June 30, 2013 (1)	All Other Employees June 30, 2013 (2)	All Employees June 30, 2013 (3)
1. Gross normal cost as a percentage of pay	19.84%	9.91%	11.02%
2. Present value of future benefits			
a. Active employees	\$ 2,522,904,682	\$ 10,554,195,473	\$ 13,077,100,155
b. Inactive members	30,112,314	370,862,184	400,974,498
c. Pensioners and beneficiaries	1,893,955,759	9,288,579,288	11,182,535,047
d. Total	<u>\$ 4,446,972,755</u>	<u>\$ 20,213,636,945</u>	<u>\$ 24,660,609,700</u>
3. Present value of future employee and employer contributions			
a. Present value of future normal costs	\$ 763,958,646	\$ 2,652,906,677	\$ 3,416,865,323
b. Present value of future employee contributions	475,079,954	1,204,747,411	1,679,827,365
c. Present value of future employer normal costs (Item 3a - Item 3b)	\$ 288,878,692	\$ 1,448,159,266	\$ 1,737,037,958
4. Actuarial accrued liability (Item 2d - Item 3a)	\$ 3,683,014,109	\$ 17,560,730,268	\$ 21,243,744,377
5. Actuarial value of assets			
a. Annuity Savings Fund	\$ 785,434,715	\$ 1,157,773,800	\$ 1,943,208,515
b. Pension Accumulation Fund	1,602,408,966	9,203,210,629	10,805,619,595
c. Total	<u>\$ 2,387,843,681</u>	<u>\$ 10,360,984,429</u>	<u>\$ 12,748,828,110</u>
6. Unfunded actuarial accrued liability	\$ 1,295,170,428	\$ 7,199,745,839	\$ 8,494,916,267
7. Adequacy of contribution rates			
a. Statutory Contribution Rate for Fiscal Year Fiscal Year 2014	23.00%	16.00%	16.76%
b. Funding Period in years as of June 30, 2013*	30	28	28

* The Funding Period is calculated using an open group projection which reflects the impact of both the new employer contribution rates schedule and the benefits and member contribution rates for employees hired after June 30, 2012.

Actuarial Certification Statement

The actuarial valuation as of June 30, 2013 is based on the provisions of Chapter 88 of the Hawaii Revised Statutes, as amended. The assumptions used in the cost calculations were those adopted by the Board of Trustees on December 20, 2010 based on the actuary's actuarial experience investigation report covering the five-year period July 1, 2005 – June 30, 2010. The investment return assumption is formally adopted by the Board effective with the June 30, 2012 actuarial valuation (this assumption was previously prescribed by statute). The actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures.

In our opinion, the contributions required to meet ERS's liabilities were calculated in accordance with the provisions of Chapter 88 regarding the funding of the Employees' Retirement System on an actuarial reserve basis.

All of our work conforms with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned is an independent actuary and consultant. Mr. Newton is an Enrolled Actuary, a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries. Finally, he is experienced in performing valuations for large public retirement systems.



Joseph P. Newton, FSA, EA
Senior Consultant & Actuary

SECTION L

TABLES

TABLE OF CONTENTS

<u>TABLE NO.</u>	<u>PAGE NUMBER</u>	
1	27	DEVELOPMENT OF EMPLOYER COST
2	28	ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
3	29	ANALYSIS OF NORMAL COST
4	30	PLAN NET ASSETS
5	31	RECONCILIATION OF PLAN NET ASSETS
6	32	DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
7	33	ESTIMATION OF YIELDS
8	34	ALLOCATION OF CASH AND INVESTMENTS
9A	35	TOTAL EXPERIENCE GAIN OR LOSS
9B	36	INVESTMENT EXPERIENCE GAIN OR LOSS
9C	37	ANALYSIS OF CHANGES IN VALUATION RESULTS
10	38	EMPLOYER COVERED PAYROLL
11A	39	SCHEDULE OF FUNDING PROGRESS
11B	40	SCHEDULE OF EMPLOYER CONTRIBUTIONS
11C	41	NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
12A	42	MEMBERSHIP DATA
12B	43	HISTORICAL SUMMARY OF ACTIVE MEMBER DATA
13	44	HISTORY OF CASH FLOW
14	45	SOLVENCY TEST
15	46	HIGHLIGHTS LAST FIVE ANNUAL ACTUARIAL VALUATIONS
16	47	SUMMARY OF BENEFIT PROVISIONS
17	61	SUMMARY OF PLAN CHANGES
18	64	SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

Development of Employer Cost

	Police and Firefighters June 30, 2013 (1)	All Other Employees June 30, 2013 (2)	All Employees June 30, 2013 (3)
1. Payroll (adjusted for one year's pay increase)	\$ 425,955,308	\$ 3,480,715,308	\$ 3,906,670,616
2. Gross normal cost (Table 3)	19.84%	9.91%	11.02%
3. Employer normal cost rate (Table 3)	7.60%	5.53%	5.76%
4. Present value future benefits (Table 2)	\$ 4,446,972,755	\$ 20,213,636,945	\$ 24,660,609,700
5. Present value future employer normal cost	\$ 288,878,692	\$ 1,448,159,266	\$ 1,737,037,958
6. Present value future employee contributions	\$ 475,079,954	\$ 1,204,747,411	\$ 1,679,827,365
7. Actuarial accrued liability (Item 4 - Item 5 - Item 6)	\$ 3,683,014,109	\$ 17,560,730,268	\$ 21,243,744,377
8. Actuarial value of assets	\$ 2,387,843,681	\$ 10,360,984,429	\$ 12,748,828,110
9. Unfunded actuarial accrued liability (UAAL) (Item 7 - Item 8)	\$ 1,295,170,428	\$ 7,199,745,839	\$ 8,494,916,267
10. Funding Period*	30	28	28

	Police and Firefighters June 30, 2012 (1)	All Other Employees June 30, 2012 (2)	All Employees June 30, 2012 (3)
1. Payroll (adjusted for one year's pay increase)	\$ 430,059,235	\$ 3,459,916,960	\$ 3,889,976,195
2. Gross normal cost (Table 3)	20.18%	9.88%	11.05%
3. Employer normal cost rate (Table 3)	7.98%	5.69%	5.97%
4. Present value future benefits (Table 2)	\$ 4,364,686,391	\$ 19,752,801,000	\$ 24,117,487,391
5. Present value future employer normal cost	\$ 309,654,338	\$ 1,503,612,037	\$ 1,813,266,375
6. Present value future employee contributions	\$ 477,712,638	\$ 1,143,105,560	\$ 1,620,818,198
7. Actuarial accrued liability (Item 4 - Item 5 - Item 6)	\$ 3,577,319,415	\$ 17,106,083,403	\$ 20,683,402,818
8. Actuarial value of assets	\$ 2,265,367,189	\$ 9,977,126,619	\$ 12,242,493,808
9. Unfunded actuarial accrued liability (UAAL) (Item 7 - Item 8)	\$ 1,311,952,226	\$ 7,128,956,784	\$ 8,440,909,010
10. Funding Period*	32	30	30

* The Funding Period is calculated using an open group projection which reflects the impact of both the new employer contribution rates schedule and the benefits and member contribution rates for employees hired after June 30, 2012.

Actuarial Present Value of Future Benefits

	Police and Firefighters June 30, 2013 (1)	All Other Employees June 30, 2013 (2)	All Employees June 30, 2013 (3)
1. Active members			
a. Service retirement benefits	\$ 2,393,112,014	\$ 9,560,436,194	\$ 11,953,548,208
b. Termination Benefits	80,314,208	669,557,420	749,871,628
c. Survivor benefits	38,096,802	233,658,581	271,755,383
d. Disability retirement benefits	11,381,658	90,543,278	101,924,936
e. Total	<u>\$ 2,522,904,682</u>	<u>\$ 10,554,195,473</u>	<u>\$ 13,077,100,155</u>
2. Retired members			
a. Service retirement	\$ 1,791,126,664	\$ 8,729,793,532	\$ 10,520,920,196
b. Disability retirement	29,248,957	163,528,639	192,777,596
c. Beneficiaries	73,580,138	395,257,117	468,837,255
d. Total	<u>\$ 1,893,955,759</u>	<u>\$ 9,288,579,288</u>	<u>\$ 11,182,535,047</u>
3. Inactive members			
a. Vested terminations	\$ 27,759,262	\$ 336,765,219	\$ 364,524,481
b. Nonvested terminations	2,353,052	34,096,965	36,450,017
c. Total	<u>\$ 30,112,314</u>	<u>\$ 370,862,184</u>	<u>\$ 400,974,498</u>
4. Total actuarial present value of future benefits	<u>\$ 4,446,972,755</u>	<u>\$ 20,213,636,945</u>	<u>\$ 24,660,609,700</u>

	Police and Firefighters June 30, 2012 (1)	All Other Employees June 30, 2012 (2)	All Employees June 30, 2012 (3)
1. Active members			
a. Service retirement benefits	\$ 2,427,038,150	\$ 9,472,785,286	\$ 11,899,823,436
b. Termination Benefits	81,234,064	675,204,395	756,438,459
c. Survivor benefits	38,411,081	229,671,592	268,082,673
d. Disability retirement benefits	11,390,703	90,135,790	101,526,493
e. Total	<u>\$ 2,558,073,998</u>	<u>\$ 10,467,797,063</u>	<u>\$ 13,025,871,061</u>
2. Retired members			
a. Service retirement	\$ 1,681,198,962	\$ 8,398,931,943	\$ 10,080,130,905
b. Disability retirement	28,580,600	151,834,521	180,415,121
c. Beneficiaries	68,608,377	378,037,110	446,645,487
d. Total	<u>\$ 1,778,387,939</u>	<u>\$ 8,928,803,574</u>	<u>\$ 10,707,191,513</u>
3. Inactive members			
a. Vested terminations	\$ 25,755,410	\$ 324,745,398	\$ 350,500,808
b. Nonvested terminations	2,469,044	31,454,965	33,924,009
c. Total	<u>\$ 28,224,454</u>	<u>\$ 356,200,363</u>	<u>\$ 384,424,817</u>
4. Total actuarial present value of future benefits	<u>\$ 4,364,686,391</u>	<u>\$ 19,752,801,000</u>	<u>\$ 24,117,487,391</u>

Analysis of Normal Cost

	Police and Firefighters June 30, 2013 <u>(1)</u>	All Other Employees June 30, 2013 <u>(2)</u>	All Employees June 30, 2013 <u>(3)</u>
1. Normal cost as a percent of pay			
a. Service retirement benefits	17.02%	7.45%	8.52%
b. Deferred termination benefits	0.80%	0.70%	0.71%
c. Refunds	1.37%	1.31%	1.32%
d. Disability retirement benefits	0.17%	0.16%	0.16%
e. Survivor benefits	0.48%	0.29%	0.31%
f. Total	<u>19.84%</u>	<u>9.91%</u>	<u>11.02%</u>
2. Employee contribution rate	12.24%	4.38%	5.26%
3. Effective employer normal cost rate (Item 1f - Item 2)	7.60%	5.53%	5.76%

	Police and Firefighters June 30, 2012 <u>(1)</u>	All Other Employees June 30, 2012 <u>(2)</u>	All Employees June 30, 2012 <u>(3)</u>
1. Normal cost as a percent of pay			
a. Service retirement benefits	17.29%	7.40%	8.53%
b. Deferred termination benefits	0.84%	0.79%	0.79%
c. Refunds	1.34%	1.24%	1.25%
d. Disability retirement benefits	0.18%	0.16%	0.16%
e. Survivor benefits	0.53%	0.29%	0.32%
f. Total	<u>20.18%</u>	<u>9.88%</u>	<u>11.05%</u>
2. Employee contribution rate	12.20%	4.19%	5.08%
3. Effective employer normal cost rate (Item 1f - Item 2)	7.98%	5.69%	5.97%

Plan Net Assets
(Assets at Market or Fair Value)

Item	Valuation as of	
	June 30, 2013	June 30, 2012
1. Cash and cash equivalents	\$ 375,751,204	\$ 525,423,925
2. Receivables:		
a. Accounts receivable and others	\$ 23,021,831	\$ 14,283,164
b. Investment sale proceeds	417,454,112	240,036,101
c. Accrued income	41,322,029	41,816,085
d. Employer contributions	27,287,944	17,049,280
e. Member contributions	4,684,532	4,309,283
f. Subtotal	<u>\$ 513,770,448</u>	<u>\$ 317,493,913</u>
3. Investments		
a. Equity securities	\$ 7,801,688,190	\$ 6,299,148,317
b. Fixed income securities	2,630,703,273	3,224,836,477
c. Real estate investments	1,242,936,282	1,234,105,797
d. Real estate mortgages	-	-
e. Alternative investments	614,940,544	597,080,284
f. Subtotal	<u>\$ 12,290,268,289</u>	<u>\$ 11,355,170,875</u>
4. Other		
a. Invested securities lending collateral	\$ -	\$ 923,932,665
b. Equipment at cost, net of depreciation	9,374,587	7,337,058
c. Other assets	-	-
d. Subtotal	<u>\$ 9,374,587</u>	<u>\$ 931,269,723</u>
5. Total assets	\$ 13,189,164,528	\$ 13,129,358,436
6. Liabilities		
a. Bank overdraft	\$ -	\$ -
b. Accounts payable	55,717,299	76,985,822
c. Investment commitments payable	493,615,557	553,877,713
d. Due to employers	-	-
e. Securities lending collateral	-	923,932,665
f. Notes payable	282,006,046	288,632,414
g. Total liabilities	<u>\$ 831,338,902</u>	<u>\$ 1,843,428,614</u>
7. Total market value of assets available for benefits (Item 5 - Item 6g)	\$ 12,357,825,626	\$ 11,285,929,822

Reconciliation of Plan Net Assets

	Year Ending	
	June 30, 2013	June 30, 2012
1. a. Value of assets at beginning of year	\$ 11,285,929,822	\$11,642,278,077
b. Adjustment due to post valuation changes in CAFR assets	2,111,644	9,965,843
c. Adjusted value of assets at beginning of year	\$ 11,288,041,466	\$11,652,243,920
2. Revenue for the year		
a. Contributions		
i. Member contributions	\$ 185,837,186	\$ 178,764,888
ii. Employer contributions	581,447,212	548,353,394
iii. Total	\$ 767,284,398	\$ 727,118,282
b. Income		
i. Interest, dividends, and other income	\$ 327,857,580	\$ 320,276,589
ii. Investment expenses	(37,088,469)	(36,644,634)
iii. Net	\$ 290,769,111	\$ 283,631,955
c. Net realized and unrealized gains (loss)	\$ 1,091,773,487	\$ (342,794,865)
d. Net income (loss)	\$ 1,382,542,598	\$ (59,162,910)
e. Total revenue	\$ 2,149,826,996	\$ 667,955,372
3. Expenditures for the year		
a. Refunds	\$ 7,204,411	\$ 7,187,606
b. Benefit payments	1,060,561,148	1,015,447,668
c. Administrative and miscellaneous expenses	12,277,277	11,634,196
d. Total expenditures	\$ 1,080,042,836	\$ 1,034,269,470
4. Increase (decrease) in net assets (Item 2e - Item 3d)	\$ 1,069,784,160	\$ (366,314,098)
5. Value of assets at end of year (Item 1c + Item 4)	\$ 12,357,825,626	\$11,285,929,822

Development of Actuarial Value of Assets

	Year Ending June 30, 2013	Year Ending June 30, 2012
1. Actuarial value of assets, beginning of year	\$ 12,242,493,808	\$ 11,942,753,360
2. Net new investments		
a. Contributions	\$ 767,284,398	\$ 727,118,282
b. Benefits paid	(1,060,561,148)	(1,015,447,668)
c. Refunds	(7,204,411)	(7,187,606)
d. Subtotal	(300,481,161)	(295,516,992)
3. Market value of assets at end of year	\$ 12,357,825,626	\$ 11,285,929,822
4. Expected return	\$ 937,149,625	\$ 914,112,102
5. Expected actuarial value of assets, end of year	\$ 12,879,162,272	\$ 12,561,348,470
6. Excess/(shortfall) return (Item 3-Item 5)	\$ (521,336,646)	\$ (1,275,418,648)
7. Excess/(shortfall) recognized (25% of Item 6)	\$ (130,334,162)	\$ (318,854,662)
8. Actuarial value of assets as of June 30, 2013 (Item 5 + Item 7)	\$ 12,748,828,110	\$ 12,242,493,808
9. Ratio of actuarial value to market value	103.2%	108.5%

Estimation of Yields

	<u>June 30, 2013</u>	<u>June 30, 2012</u>
	(1)	(2)
A. Market value yield		
1. Beginning of year market assets	\$ 11,288,041,466	\$ 11,652,243,920
2. Investment income		
a. Change in assets (Item 3 - Item 1)	\$ 1,069,784,160	\$ (366,314,098)
b. Cash Flow (excluding expenses)	<u>(300,481,161)</u>	<u>(295,516,992)</u>
c. Total investment income based on market value (Item 2a less Item 2b)	\$ 1,370,265,321	\$ (70,797,106)
3. End of year market assets	\$ 12,357,825,626	\$ 11,285,929,822
4. Estimated dollar weighted market value yield (net of investment and administrative expenses)	12.30%	(0.62%)
B. Actuarial value yield		
1. Beginning of year actuarial assets	\$ 12,242,493,808	\$ 11,942,753,360
2. Investment income (based on asset valuation method)		
a. Change in assets (Item 3 - Item 1)	\$ 506,334,302	\$ 299,740,448
b. Cash Flow	<u>(300,481,161)</u>	<u>(295,516,992)</u>
c. Total investment income based on market value (Item 2a less Item 2b)	\$ 806,815,463	\$ 595,257,440
3. End of year actuarial assets	\$ 12,748,828,110	\$ 12,242,493,808
4. Estimated actuarial value yield (net of investment and administrative expenses)	6.67%	5.05%

Allocation of Cash and Investments

	<u>June 30, 2013</u>	<u>June 30, 2012</u>
	(1)	(2)
1. Cash and short-term equivalents	3.0%	4.4%
2. Fixed income securities	20.8%	27.1%
3. Equity securities	61.5%	53.1%
4. Real estate	9.8%	10.4%
5. Other	<u>4.9%</u>	<u>5.0%</u>
6. Total investments	100.0%	100.0%

Total Experience Gain or Loss

Item (1)	Police and Firefighters (2)	All Other Employees (3)	All Employees (4)
A. Calculation of total actuarial gain or loss			
1. Unfunded actuarial accrued liability (UAAL), as of June 30, 2012	\$ 1,311,952,226	\$ 7,128,956,784	\$ 8,440,909,010
2. Normal cost for the year (employer and employee)	\$ 86,785,954	\$ 335,585,181	\$ 422,371,134
3. Less: contributions and assessments for the year	\$ (131,482,079)	\$ (635,802,319)	\$ (767,284,398)
4. Interest at 7.75 %			
a. On UAAL	\$ 101,676,298	\$ 552,494,151	\$ 654,170,449
b. On normal cost	3,362,956	13,003,926	16,366,882
c. On contributions	(5,094,931)	(24,637,340)	(29,732,271)
d. Total	\$ 99,944,323	\$ 540,860,737	\$ 640,805,060
5. Expected UAAL as of June 30, 2013 (Sum of Items 1 - 4)	\$ 1,367,200,424	\$ 7,369,600,383	\$ 8,736,800,806
6. Actual UAAL as of June 30, 2013	\$ 1,295,170,428	\$ 7,199,745,839	\$ 8,494,916,267
7. Total gain (loss) for the year (Item 5 - Item 6)	\$ 72,029,996	\$ 169,854,544	\$ 241,884,539
B. Source of gains and losses			
8. Asset gain (loss) for the year (Table 9b)	\$ (24,411,468)	\$ (105,922,694)	\$ (130,334,162)
9. Gain (loss) due to change in actuarial assumptions	-	-	-
10. Gain (loss) due to change in actuarial method	-	-	-
11. Other liability gain (loss)	96,441,464	275,777,238	372,218,702
12. Change in benefit provisions	-	-	-
13. Total gain (loss) for the year	\$ 72,029,996	\$ 169,854,544	\$ 241,884,540

Investment Experience Gain or Loss

Item (1)	June 30, 2013 (2)	June 30, 2012 (3)
1. Actuarial assets, beginning of year	\$ 12,242,493,808	\$ 11,942,753,360
2. Total contributions during year	\$ 767,284,398	\$ 727,118,282
3. Benefits and refunds paid	\$ (1,067,765,559)	\$ (1,022,635,274)
4. Assumed net investment income at 7.75%		
a. Beginning of year assets	\$ 948,793,270	\$ 925,563,385
b. Contributions	29,732,270	28,175,833
c. Benefits and refunds paid	(41,375,915)	(39,627,117)
d. Total	\$ 937,149,625	\$ 914,112,101
5. Expected actuarial assets, end of year (Sum of items 1 through 4)	\$ 12,879,162,272	\$ 12,561,348,469
6. Actual actuarial assets, end of year	\$ 12,748,828,110	\$ 12,242,493,808
7. Asset gain (loss) for year (Item 6 - Item 5)	\$ (130,334,162)	\$ (318,854,661)
8. Asset gain (loss) as a percent of actuarial value of assets, end of year (Item 7 / Item 6)	(1.02%)	(2.60%)

Projection Results Based on June 30, 2013 Actuarial Valuation

Valuation as of June 30,	Employer Contribution Rate for Fiscal Year Following Valuation Date	Compensation (in Millions)	Employer Contributions (in Millions)	Actuarial Accrued Liability (AAL, in Millions)	Actuarial Value of Assets (AVA, in Millions)	Unfunded Actuarial Accrued Liability (UAAL, in Millions)	Funded Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2013	16.77%	\$ 3,885.9	\$ 652	\$ 21,244	\$ 12,749	\$ 8,495	60.0%
2014	17.32%	3,995.9	692	22,140	13,438	8,701	60.7%
2015	17.87%	4,098.0	732	23,034	14,156	8,878	61.5%
2016	17.87%	4,207.3	752	23,924	14,900	9,024	62.3%
2017	17.86%	4,326.2	773	24,808	15,649	9,159	63.1%
2018	17.86%	4,452.9	795	25,686	16,405	9,281	63.9%
2019	17.86%	4,588.4	819	26,558	17,171	9,387	64.7%
2020	17.85%	4,731.8	845	27,423	17,947	9,476	65.4%
2021	17.85%	4,883.6	872	28,281	18,738	9,543	66.3%
2022	17.84%	5,043.9	900	29,133	19,546	9,587	67.1%
2023	17.84%	5,213.0	930	29,978	20,374	9,604	68.0%
2024	17.83%	5,390.5	961	30,817	21,227	9,590	68.9%
2025	17.83%	5,576.1	994	31,649	22,108	9,541	69.9%
2026	17.82%	5,770.3	1,028	32,472	23,018	9,453	70.9%
2027	17.81%	5,973.9	1,064	33,286	23,964	9,322	72.0%
2028	17.81%	6,187.2	1,102	34,093	24,951	9,142	73.2%
2029	17.80%	6,411.2	1,141	34,893	25,986	8,907	74.5%
2030	17.80%	6,645.4	1,183	35,688	27,077	8,611	75.9%
2031	17.80%	6,890.4	1,226	36,482	28,233	8,248	77.4%
2032	17.79%	7,146.2	1,272	37,274	29,464	7,811	79.0%
2033	17.79%	7,413.3	1,319	38,069	30,778	7,290	80.8%
2034	17.79%	7,692.9	1,368	38,868	32,189	6,679	82.8%
2035	17.79%	7,985.2	1,420	39,677	33,710	5,967	85.0%
2036	17.78%	8,290.5	1,474	40,498	35,353	5,144	87.3%
2037	17.78%	8,609.7	1,531	41,334	37,135	4,200	89.8%
2038	17.78%	8,944.2	1,591	42,193	39,071	3,121	92.6%
2039	17.79%	9,293.5	1,653	43,077	41,181	1,896	95.6%
2040	17.79%	9,658.4	1,718	43,994	43,484	510	98.8%
2041	17.79%	10,039.1	1,786	44,950	46,002	(1,052)	102.3%
2042	17.79%	10,436.3	1,856	45,950	48,755	(2,806)	106.1%
2043	17.79%	10,850.3	1,930	47,002	51,771	(4,769)	110.1%

Employer Covered Payroll

	Police and Firefighters		All Other Employees		All Employees	
	March 31, 2013	March 31, 2012	March 31, 2013	March 31, 2012	March 31, 2013	March 31, 2012
	(1)	(2)	(3)	(4)	(5)	(6)
State of Hawaii	\$ 16,083,546	\$ 15,001,298	\$ 2,768,036,737	\$ 2,739,123,806	\$ 2,784,120,283	\$ 2,754,125,104
City & County of Honolulu	247,900,345	253,299,076	296,729,868	303,574,544	\$ 544,630,213	556,873,620
Board of Water Supply	-	-	32,127,222	31,476,461	\$ 32,127,222	31,476,461
County of Hawaii	61,098,403	61,075,867	82,469,996	83,221,946	\$ 143,568,399	144,297,813
County of Maui	53,732,680	54,979,802	88,991,927	90,674,962	\$ 142,724,607	145,654,764
County of Kauai	23,964,561	22,688,280	49,674,677	51,020,526	\$ 73,639,238	73,708,806
Total All Employers	\$ 402,779,535	\$ 407,044,323	\$ 3,318,030,427	\$ 3,299,092,245	\$ 3,720,809,962	\$ 3,706,136,568

Schedule of Funding Progress
(As required by GASB #25)

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial		Annual Covered Payroll	UAAL as % of Payroll (4)/(6)
			Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
June 30, 1998	\$ 7,906.2	\$ 8,492.0	\$ 585.8	93.1%	\$ 2,135.9	27.4%
June 30, 1999	8,590.8	9,181.7	590.9	93.6%	2,186.5	27.0%
June 30, 2000	9,204.7	9,698.9	494.2	94.9%	2,275.3	21.7%
June 30, 2001	9,516.0	10,506.9	991.0	90.6%	2,444.2	40.5%
June 30, 2002	9,415.2	11,210.2	1,795.1	84.0%	2,671.7	67.2%
June 30, 2003	9,074.0	11,952.1	2,878.1	75.9%	2,826.7	101.8%
June 30, 2004	8,797.1	12,271.3	3,474.2	71.7%	2,865.1	121.3%
June 30, 2005	8,914.8	12,986.0	4,071.1	68.6%	3,041.1	133.9%
June 30, 2006 *	9,529.4	14,661.4	5,132.0	65.0%	3,238.3	158.5%
June 30, 2007 **	10,589.8	15,696.5	5,106.8	67.5%	3,507.0	145.6%
June 30, 2008	11,381.0	16,549.1	5,168.1	68.8%	3,782.1	136.6%
June 30, 2009	11,400.1	17,636.4	6,236.3	64.6%	4,030.1	154.7%
June 30, 2010	11,345.6	18,483.7	7,138.1	61.4%	3,895.7	183.2%
June 30, 2011 **	11,942.8	20,096.9	8,154.2	59.4%	3,916.0	208.2%
June 30, 2012	12,242.5	20,683.4	8,440.9	59.2%	3,890.0	217.0%
June 30, 2013	12,748.8	21,243.7	8,494.9	60.0%	3,906.7	217.4%

Note : Dollar amounts in millions.

* Assumption changes and new Hybrid Plan effective June 30, 2006.

** New assumption effective on valuation date.

Schedule of Employer Contributions
(As required by GASB #25)

Fiscal Year	Annual Required Contribution	Actual Contribution	Percentage Contributed
(1)	(2)	(3)	(4)
1998	\$ 307,680	\$ 310,627	101.0%
1999	185,387	154,470	83.3%
2000	172,255	22,392	13.0%
2001	164,397	8,132	4.9%
2002	167,459	167,459	100.0%
2003	190,586	190,586	100.0%
2004	235,686	235,686	100.0%
2005	328,717	328,717	100.0%
2006*	423,446	423,446	100.0%
2007	476,754	454,494	95.3%
2008	510,727	488,770	95.7%
2009	526,538	578,635	109.9%
2010	536,237	547,613	102.1%
2011	582,535	534,858	91.8%
2012	654,755	548,353	83.7%
2013	667,142	581,447	87.2%

Note : Dollar amounts in thousands

* Effective July 1, 2005 the required contributions are based on contribution rates and not specific dollar

Notes to Required Supplementary Information
(as required by GASB #25)

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

Valuation date	June 30, 2013
Actuarial cost method	Entry Age Normal
Amortization method	Level percent, open
Remaining amortization period as of June 30, 2013*	30 years
Asset valuation method	4-year smoothed market
Actuarial assumptions:	
Investment rate of return**	7.75%
Projected salary increases **	
Police and Fire Employees	19.00% to 5.00%
General Employees	8.00% to 4.00%
Teachers	8.50% to 5.00%
**Includes inflation at	3.00%
Cost-of-living adjustments (COLAs)***	2.5%/1.5%

*Remaining amortization period for Annual Required Contribution is 30 years.

***COLAs are not compounded, they are based on original pension amount.

Membership Data

	Police and Firefighters		All Other Employees		All Employees	
	June 30, 2013 (1)	June 30, 2012 (2)	June 30, 2013 (3)	June 30, 2012 (4)	June 30, 2013 (5)	June 30, 2012 (6)
1. Active members						
a. Number	4,971	4,894	61,255	60,705	66,226	65,599
b. Total payroll	\$ 402,779,535	\$ 407,044,323	\$ 3,318,030,427	\$ 3,299,092,245	\$ 3,720,809,962	\$ 3,706,136,568
c. Average salary	\$ 81,026	\$ 83,172	\$ 54,168	\$ 54,346	\$ 56,184	\$ 56,497
d. Average age	41.8	41.7	48.1	48.0	47.7	47.6
e. Average service	14.0	14.0	13.5	13.5	13.5	13.5
2. Inactive members						
a. Number	251	238	7,061	6,671	7,312	6,909
b. Total annual deferred benefits	\$ 3,871,611	\$ 3,698,263	\$ 51,478,187	\$ 49,990,999	\$ 55,349,798	\$ 53,689,262
c. Average annual deferred benefit	\$ 15,425	\$ 15,539	\$ 7,290	\$ 7,494	\$ 7,570	\$ 7,771
3. Service retirees						
a. Number	3,165	3,089	34,013	33,219	37,178	36,308
b. Total annual benefits	\$ 148,633,887	\$ 139,356,138	\$ 819,710,342	\$ 782,957,292	\$ 968,344,229	\$ 922,313,430
c. Average annual benefit	\$ 46,962	\$ 45,114	\$ 24,100	\$ 23,570	\$ 26,046	\$ 25,402
4. Disabled retirees						
a. Number	152	156	1,411	1,366	1,563	1,522
b. Total annual benefits	\$ 2,855,319	\$ 2,798,191	\$ 16,132,190	\$ 15,079,381	\$ 18,987,509	\$ 17,877,572
c. Average annual benefit	\$ 18,785	\$ 17,937	\$ 11,433	\$ 11,039	\$ 12,148	\$ 11,746
5. Beneficiaries						
a. Number	223	210	2,848	2,734	3,071	2,944
b. Total annual benefits	\$ 6,625,501	\$ 6,079,075	\$ 39,323,155	\$ 36,973,964	\$ 45,948,656	\$ 43,053,039
c. Average annual benefit	\$ 29,711	\$ 28,948	\$ 13,807	\$ 13,524	\$ 14,962	\$ 14,624

Historical Summary of Active Member Data

Year Ending June 30,	Active Members		Covered Payroll		Average Salary		Average Age	Average Service
	Number	Percent Increase	Amount in \$ Millions	Percent Increase	\$ Amount	Percent Increase		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1993	57,467	3.7%	\$ 1,976.1	8.1%	\$ 34,387	4.2%		
1994	58,890	2.5%	2,029.9	2.7%	34,469	0.2%		
1995	58,498	-0.7%	2,083.0	2.6%	35,608	3.3%		
1996	56,985	-2.6%	1,990.1	-4.5%	34,923	-1.9%		
1997	57,044	0.1%	2,019.3	1.5%	35,399	1.4%		
1998	57,797	1.3%	2,135.9	5.8%	36,955	4.4%		
1999	58,387	0.9%	2,186.5	2.4%	37,448	1.3%		
2000	59,191	1.4%	2,275.3	4.1%	38,440	2.6%	45.5	13.0
2001	59,992	1.4%	2,350.2	3.3%	39,175	1.9%	45.6	13.3
2002	62,208	3.7%	2,568.7	9.3%	41,292	5.4%	45.8	13.2
2003	62,292	0.1%	2,718.4	5.8%	43,640	5.7%	46.0	13.1
2004	62,573	0.5%	2,755.5	1.4%	44,037	0.9%	46.0	13.0
2005	63,073	0.8%	2,924.5	6.1%	46,368	5.3%	46.3	13.0
2006	64,069	1.6%	3,113.7	6.5%	48,599	4.8%	46.4	13.0
2007	65,251	1.8%	3,340.5	7.3%	51,194	5.3%	46.5	13.0
2008	66,589	2.1%	3,601.7	7.8%	54,089	5.7%	46.6	12.9
2009	67,912	2.0%	3,838.0	6.6%	56,514	4.5%	46.8	12.9
2010	65,890	-3.0%	3,713.6	-3.2%	56,360	-0.3%	47.1	13.2
2011	65,310	-0.9%	3,731.4	0.5%	57,133	1.4%	47.4	13.4
2012	65,599	0.4%	3,706.1	-0.7%	56,497	-1.1%	47.6	13.5
2013	66,226	1.0%	3,720.8	0.4%	56,184	-0.6%	47.7	13.5

History of Cash Flow

Year Ending June 30,	Contributions			Expenditures				External Cash Flow for the Year ²	Market Value of Assets	External Cash Flow as Percent of Market Value
	Employee	Employer	Total	Benefit Payments	Refunds	Administrative Expenses ¹	Total			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2002	\$ 55.4	\$ 167.5	\$ 222.9	\$ (530.4)	\$ (38.4)	\$ (5.8)	\$ (574.6)	\$ (351.7)	\$ 7,907.0	(4.4%)
2003	57.2	190.6	247.8	(569.2)	(36.2)	(6.8)	(612.2)	(364.4)	7,687.2	(4.7%)
2004	55.1	235.7	290.8	(636.2)	(2.3)	(10.5)	(649.0)	(358.2)	8,565.4	(4.2%)
2005	57.1	328.7	385.8	(676.3)	(3.4)	(7.3)	(687.0)	(301.2)	9,195.9	(3.3%)
2006	56.3	423.4	479.7	(720.5)	(2.5)	(8.5)	(731.5)	(251.8)	9,932.4	(2.5%)
2007	144.7	454.5	599.2	(761.0)	(3.5)	(9.6)	(774.1)	(174.9)	11,434.3	(1.5%)
2008	163.4	488.8	652.2	(792.3)	(3.7)	(10.7)	(806.7)	(154.5)	10,846.8	(1.4%)
2009	184.5	578.6	763.1	(839.1)	(3.5)	(12.3)	(854.9)	(91.8)	8,818.0	(1.0%)
2010	360.0	547.6	907.6	(906.4)	(7.8)	(12.2)	(926.4)	(18.8)	9,821.6	(0.2%)
2011	231.0	534.9	765.9	(960.2)	(7.9)	(13.3)	(981.4)	(215.5)	11,642.3	(1.9%)
2012	178.8	548.4	727.2	(1,015.4)	(7.2)	(11.6)	(1,034.2)	(307.0)	11,285.9	(2.7%)
2013	\$ 185.8	\$ 581.4	\$ 767.2	\$ (1,060.6)	\$ (7.2)	\$ (12.3)	\$ (1,080.1)	\$ (312.9)	\$ 12,357.8	(2.5%)

Amounts in \$ millions

¹ Excludes investment expenses² Column (9) = Column (4) + Column (8)

Solvency Test

	<u>June 30, 2013</u>	<u>June 30, 2012</u>
	(1)	(2)
1. Actuarial accrued liability (AAL)		
a. Active member contributions	\$ 1,658,194,978	\$ 1,485,144,874
b. Retirees and beneficiaries	11,182,535,047	10,707,191,513
c. Active and inactive members	<u>8,403,014,352</u>	<u>8,491,066,431</u>
d. Total	\$ 21,243,744,377	\$ 20,683,402,818
2. Actuarial value of assets	\$ 12,748,828,110	\$ 12,242,493,808
3. Cumulative portion of AAL covered		
a. Active member contributions	100%	100%
b. Retirees and beneficiaries	99%	100%
c. Active and inactive members	0%	1%

Highlights of Last Five Annual Actuarial Valuations
2009 through 2013

Item	Valuation Date: June 30				
	2009	2010	2011	2012	2013
Number of active members	67,912	65,890	65,310	65,599	66,226
Number of inactive members	6,016	6,895	6,649	6,909	7,312
Number of pensioners	34,429	35,763	36,871	37,830	38,741
Number of beneficiaries	2,570	2,678	2,818	2,944	3,071
Average monthly contributory plan pension amount	\$ 2,019	\$ 2,118	\$ 2,221	\$ 2,315	\$ 2,414
Average monthly noncontributory plan pension amount	\$ 1,421	\$ 1,457	\$ 1,509	\$ 1,538	\$ 1,562
Average monthly hybrid plan pension amount	\$ 1,602	\$ 1,857	\$ 2,055	\$ 2,090	\$ 2,092
Average monthly beneficiary amount	\$ 1,109	\$ 1,151	\$ 1,188	\$ 1,219	\$ 1,247
Total actuarial value of assets (\$millions)	\$ 11,400	\$ 11,346	\$ 11,943	\$ 12,242	\$ 12,749
Unfunded actuarial accrued liability (\$millions)	\$ 6,236.3	\$ 7,138.1	\$ 8,154.2	\$ 8,440.9	\$ 8,494.9
Funding Period (in years) ⁽¹⁾	28.2	41.3	25.0	30.0	28.0
Item (Dollar amounts in millions)	Fiscal Year				
	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Employer appropriations ⁽²⁾	\$ 578.6	\$ 547.6	\$ 534.9	\$ 548.4	\$ 581.4

⁽¹⁾ Beginning with the 2011 valuation, the funding period was determined using an open group projection. Prior valuations determined the remaining amortization based on the assumption that the amortization payment would remain constant as a percentage of pay.

⁽²⁾ Beginning with the fiscal year beginning July 1, 2005 a dollar contribution amount is not determined under the provisions of Act 181/2004. Instead a fixed percentage of payroll is contributed (15.75% for Police and Fire, 13.75% for All Others). Beginning July 1, 2008, the percentages increased to 19.70% for Police and Fire, 15.00% for All Others. Beginning July 1, 2012, the percentages increased to 22.0% for Police and Fire, 15.5% for All Others. Beginning July 1, 2013, the percentages increased to 23.0% for Police and Fire, 16.0% for All Others.

**Summary of Benefit Provisions
(For Members Hired Prior to 7/1/2012)**

	<u>Noncontributory Plan</u>	<u>Contributory Plan</u>	<u>Hybrid Plan</u>
Employee Contributions	No employee contributions	7.8% of salary	6.0% of salary
Normal Retirement			
Eligibility	Age 62 and 10 years credited service; or Age 55 and 30 years credited service	Age 55 and 5 years credited service	Age 62 and 5 years credited service; or Age 55 and 30 years credited service
Benefit	1 ¼% of average final compensation times years of credited service (Average final compensation or AFC is an average of the highest salaries during any three years of credited service, excluding any salary paid in lieu of vacation or if ERS membership occurred prior to 1/1/71, AFC may be an average of the highest salaries during any five years of credited service including any salary paid in lieu of vacation.)	2% of average final compensation times years of credited service (Average final compensation or AFC is an average of the highest salaries during any three years of credited service, excluding any salary paid in lieu of vacation or if ERS membership occurred prior to 1/1/71, AFC may be an average of the highest salaries during any five years of credited service including any salary paid in lieu of vacation.)	2% of average final compensation times years of credited service, split formula for unconverted noncontributory service at 1 ¼% (Average final compensation or AFC is an average of the highest salaries during any three years of credited service, excluding any salary paid in lieu of vacation or if ERS membership occurred prior to 1/1/71, AFC may be an average of the highest salaries during any five years of credited service including any salary paid in lieu of vacation.)

	<u>Noncontributory Plan</u>	<u>Contributory Plan</u>	<u>Hybrid Plan</u>
Early Retirement			
Eligibility	Age 55 and 20 years credited service	Any age and 25 years credited service	Age 55 with 20 years credited service
Benefit	Maximum allowance reduced 6% per year under age 62	Maximum allowance reduced 5% per year under age 55 plus 4% per year under age 50	Maximum allowance reduced 5% for each year under age 62
Deferred Vesting			
Eligibility	10 years credited service	5 years credited service and contributions left in the ERS	5 years credited service and contributions left in the ERS
Benefit	Accrued maximum allowance payable at age 65	Accrued maximum allowance payable at age 55	Accrued maximum allowance payable at age 62
Annuity Savings Account			
Interest	Not applicable	4.5% per annum on employee contributions and accrued interest	4.5% per annum on employee contributions and accrued interest
Eligibility	Not applicable	Requests refund and forfeits future retirement benefit	Requests refund and forfeits future retirement benefit
Benefit			
- Terminates with less than 5 years credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest
- Terminates with 5 or more years of credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's Hybrid Plan contributions and accrued interest, both times 150%. Return of non-

	Noncontributory Plan	Contributory Plan	Hybrid balance transfers and accrued interest. Hybrid Plan
Ordinary Disability			
Eligibility	10 years credited service	10 years credited service	10 years credited service
Benefit	1 ¼% of AFC times years of credited service, unreduced for age (Minimum is 12.5% AFC)	1 ¾% of AFC times years of credited service, unreduced for age (Minimum is 30% AFC)	2% of AFC times years of credited service, unreduced for age, split formula for unconverted noncontributory service at 1 ¼% (Minimum is 30% AFC)

**Service-Connected
Disability**

Eligibility	Any age or credited service	Any age or credited service	Any age or credited service
Benefit	Accrued maximum allowance, but not less than 15% AFC.	Totally disabled: lifetime pension of 66 2/3% AFC plus annuity.	Lifetime pension of 35% of AFC plus refund of member's contributions and accrued interest.
	For accidents that occur on or after July 1, 2004, lifetime pension of 35% of AFC.	Occupationally disabled: same benefit (66 2/3% pension plus annuity) paid for 3 years and then pension is reduced to 33 1/3% AFC if not totally disabled.	
		For accidents on or after July 7, 1998, lifetime pension of 50% of AFC plus refund of member's contributions and accrued interest.	

	Noncontributory Plan	Contributory Plan	Hybrid Plan
Ordinary Death			
Eligibility	Active employee at time of death with at least 10 years of credited service	Active employee at time of death with at least 1 year of service	Active employee at time of death with at least 5 years of service
Benefit	<p>Surviving spouse/reciprocal beneficiary and dependent children receive a benefit equal to a percentage of member's accrued maximum allowance unreduced for age; or</p> <p>Option B (100% Joint and Survivor) benefit for surviving spouse if member was eligible for retirement at time of death and a percentage of member's accrued maximum allowance unreduced for age for the dependent children</p>	<p>Lump sum payment of member's contributions and accrued interest plus a percentage of the salary earned in the 12 months preceding death; or</p> <p>Option 3 (50% Joint and Survivor) benefit if member was not eligible for retirement at the time of death, credited with 10 years of service, and one beneficiary designated (benefit calculated using the ordinary disability retirement formula); or</p> <p>Option 2 (100% Joint and Survivor) benefit if member was eligible for retirement at the time of death and one beneficiary designated</p>	<p>Return of member's Hybrid Plan contributions and accrued interest (both times 150%) plus return of non-Hybrid balance transfers and accrued interest; or</p> <p>Option 3 (50% Joint Survivor) lifetime benefit if credited with at least 10 years of service and one beneficiary designated; or</p> <p>Option 2 (100% Joint Survivor) lifetime monthly benefit if member was eligible for service retirement at time of death, and one beneficiary designated</p>

	Noncontributory Plan	Contributory Plan	Hybrid Plan
Service-Connected Death			
Eligibility	Any age or service	Any age or service	Any age or service
Benefit	<p>Surviving spouse/reciprocal beneficiary receives pension equal to 30% of AFC (until remarriage or re-entry into a new reciprocal beneficiary relationship); additional benefits payable to surviving dependent children (up to age 18)</p> <p>If there is no spouse/reciprocal beneficiary or dependent children, no benefit is payable.</p>	<p>Lump sum payment of member's contributions and accrued interest, plus pension of 50% AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship);</p> <p>If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit.</p> <p>If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.</p>	<p>Lump sum payment of member's contributions and accrued interest, plus pension of 50% AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship);</p> <p>If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit.</p> <p>If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.</p>

For members hired after June 30, 2011, the interest crediting rate on employee contributions and accrued interest is 2.0% per annum.

The plan provisions summarized above apply to teachers and most State and County employees. Special provisions applicable to other groups of employees are outlined below:

- A. Police officers, firefighters, investigators of the Department of the Prosecuting Attorney and the Attorney General, narcotic enforcement investigators, and public safety investigators contribute 12.2% of their monthly salary to the ERS instead of 7.8%. These members may retire at age 55 with 5 years of credited service or at any age with 25 years of credited service and receive a retirement benefit of 2 ½% of average final compensation (AFC) for each year of such service up to a maximum of 80% AFC, provided the last 5 years of credited service in any of these occupations.
- B. Judges, elected officials, and legislative officers may retire at age 55 with at least 5 years of credited service, or at any age with at least 10 years of credited service and receive a pension of 3 ½% of AFC for each year of such service plus an annuity from their contributions allocable to the period of such service. This benefit cannot exceed 75% of the AFC. Judges hired after June 30, 1999 require 25 years of credited service in order to retire before age 55.
- C. Sewer workers in specified classifications, water safety officers, and emergency medical technicians (EMTs) may retire at any age if they are credited with 25 years of such service with the last 5 or more years in these occupations. (The 25-year feature is phased in through 7/1/2008 for EMTs.)
- D. Sewer workers in specified classifications, water safety officers, and emergency medical technicians (EMTs) that transfer to the Hybrid Plan contribute 9.75% of their monthly salary to the ERS. These members may retire at age 62 with 5 years of credited service or at any age if they are credited with 25 years of such service with the last 5 or more years in these occupations.

**Summary of Benefit Provisions
(For Members Hired After 6/30/2012)**

	Contributory Plan (for Police/Fire)	Contributory Plan (for Judges/Elected Officers)	Hybrid Plan
Employee Contributions	14.2% of base pay earnings	9.8% of base pay earnings	8.0% of base pay earnings 11.75% of base pay earnings for Sewer workers, water safety officers, and emergency medical technicians (EMTs)
Normal Retirement Eligibility	Age 60 and 10 years credited service	Age 60 and 10 years credited service	Age 65 and 10 years credited service; or Age 60 and 30 years credited service Sewer workers, water safety officers, and EMTs may retire with 25 years credited service at age 55.
Benefit	2.25% of average final compensation times years of credited service. (Average final compensation or AFC is an average of the highest base pay earnings during any five years of credited service, excluding any salary paid in lieu of vacation.) Maximum is 80% of AFC.	3.0% of average final compensation times years of credited service (Average final compensation or AFC is an average of the highest base pay earnings during any five years of credited service, excluding any salary paid in lieu of vacation.) Maximum is 75% of AFC.	1.75% of average final compensation times years of credited service (Average final compensation or AFC is an average of the highest base pay earnings during any five years of credited service, excluding any salary paid in lieu of vacation.)

	Contributory Plan (for Police Fire) Contributory Plan	Contributory Plan (for Judges/Elected Officers) Contributory Plan	Hybrid Plan
Early Retirement			
Eligibility	Age 55 and 25 years credited service	Age 55 and 25 years credited service Any age with 10 years for elected officers	Age 55 with 20 years credited service Sewer workers, water safety officers, and emergency medical technicians (EMTs) may retire with 25 years credited service.
Benefit	Maximum allowance reduced 6% per year under age 60	Maximum allowance reduced 6% per year under age 60	Maximum allowance reduced 5% for each year under age 65
Deferred Vesting			
Eligibility	10 years credited service and contributions left in the ERS		
Benefit	Accrued maximum allowance payable at age 60		Accrued maximum allowance payable at age 65
Annuity Savings Account			
Interest	2.0% per annum on employee contributions and accrued interest		
Eligibility	Requests refund and forfeits future retirement benefit		
Benefit			
- Terminates with less than 10 years credited service	Return of member's contributions and accrued interest		Return of member's contributions and accrued interest
- Terminates with 10 or more years of credited service	Return of member's contributions and accrued interest		Return of member's contributions and accrued interest, both times 120%.

	(for Police Fire)	(for Judges/Elected Officers)	Hybrid Plan
Ordinary Disability			
Eligibility	10 years credited service	10 years credited service	10 years credited service
Benefit	1 ¾% of AFC times years of credited service, unreduced for age (Minimum is 30% AFC)	3.0% of AFC times years of credited service, unreduced for age (Minimum is 30% AFC)	1 ¾% of AFC times years of credited service, unreduced for age (Minimum is 25% AFC)
Service-Connected Disability			
Eligibility	Any age or credited service	Any age or credited service	Any age or credited service
Benefit	Lifetime pension of 50% of AFC plus refund of member's contributions and accrued interest.		Lifetime pension of 35% of AFC plus refund of member's contributions and accrued interest.

	Contributory Plan (for Police Fire)	Contributory Plan (for Judges/Elected Officers)	Hybrid Plan
Ordinary Death			
Eligibility	Active employee at time of death with at least 1 years of credited service		Active employee at time of death with at least 10 years of service
Benefit	<p>Lump sum payment of member's contributions and accrued interest plus a percentage of the salary earned in the 12 months preceding death; or</p> <p>Option 3 (50% Joint Survivor) lifetime benefit if credited with at least 10 years of service and one beneficiary designated; or</p> <p>Option 2 (100% Joint Survivor) lifetime monthly benefit if member was eligible for service retirement at time of death, and one beneficiary designated</p>		<p>Return of member's Hybrid Plan contributions and interest; or</p> <p>Option 3 (50% Joint Survivor) lifetime benefit if credited with at least 10 years of service and one beneficiary designated; or</p> <p>Option 2 (100% Joint Survivor) lifetime monthly benefit if member was eligible for service retirement at time of death, and one beneficiary designated</p>

	Contributory Plan (for Police Fire)	Contributory Plan (for Judges/Elected Officers)	Hybrid Plan
Service-Connected Death			
Eligibility	Any age or service	Any age or service	Any age or service
Benefit	<p>Lump sum payment of member's contributions and interest, plus pension of 50% AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship);</p> <p>If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit.</p> <p>If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.</p>		

Post Retirement Benefit

Each retiree's original retirement allowance is increased by 1 ½% (if their membership date is after June 30, 2012) or 2 ½% (if their membership date is before July 1, 2012) on each July 1 beginning the calendar year after retirement. This cumulative benefit is not compounded.

Retirement Options**Contributory and Hybrid Plans**

Maximum Allowance: The member receives a lifetime maximum allowance and at death the difference between the value of the member's contributions at the time of retirement and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Option One: The member receives a reduced lifetime allowance based on age and at death, the difference between the initial insurance reserve and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Option Two (100% Joint and Survivor with Pop-Up): The member receives a reduced lifetime allowance based on ages of both the member and the sole beneficiary and at death of the member, the same allowance is paid to the designated beneficiary for life. Should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

Option Three (50% Joint and Survivor with Pop-Up): This plan is similar to Option Two. The member receives a reduced lifetime allowance which is higher than Option Two and is based on ages of both the member and the sole beneficiary; however, at death of the member one-half of the allowance is paid to the designated beneficiary for life. Like Option Two, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

Option Four: This option allows the member to devise a plan that will provide a benefit according to the member's specifications. It requires certification by the Actuary and approval of the Board of Trustees. The following Option Four plans have been approved:

Combination of Options Five and Maximum Allowance: The member receives a reduced lifetime allowance and is allowed to withdraw the pre-1987 nontaxable contribution, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid Plan members are not allowed the 75% option); at death, the difference between the value of the member's contributions at the time of retirement and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Combination of Options Five and One: The member receives a reduced lifetime allowance and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid Plan members are not allowed the 75% option); at death, the difference between the initial insurance reserve and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Combination of Options Five and Two: The member receives a reduced lifetime allowance based on ages of both member and the sole beneficiary, and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid Plan members are not allowed the 75% option); at death of the member, the same allowance is paid to the designated beneficiary for life. As in the case of Option Two, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance (as adjusted for the contribution withdrawal), and all payments will cease at the retiree's death.

Combination of Options Five and Three: The member receives a reduced lifetime allowance based on ages of both member and the sole beneficiary, and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid Plan members are not allowed the 75% option); at death of the member, one-half of the allowance is paid to the designated beneficiary for life. As in the case of Option Three, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance (as adjusted for the contribution withdrawal), and all payments will cease at the retiree's death.

Option Five: The member receives a reduced lifetime allowance and is allowed to withdraw all accumulated contributions; at death, the retirant is entitled to the pension for the entire month that death occurs.

Option Four and Option Five are restricted to those members with at least ten years of credited service excluding unused sick leave credit.

Regardless of the option selected, should death occur during the first year of retirement, the designated beneficiary may elect to receive benefits as if death had occurred immediately prior to retirement in lieu of the death benefits described above.

Noncontributory Plan

Maximum Allowance: The member receives a lifetime pension and at death, the retiree is entitled to the pension for the entire month that death occurs.

Option A (50% Joint and Survivor with Pop-Up): The member receives a reduced lifetime pension and at death of the member, one-half of the pension is paid to the sole designated beneficiary for life. Should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

Option B (100% Joint and Survivor with Pop-up): The member receives a reduced lifetime pension and at death of the member, the same pension is paid to the sole designated beneficiary for life. Like Option A, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

Option C (Ten-Year Guarantee): The member receives a reduced lifetime pension. Should death occur within ten years of retirement, the same pension will be paid to the designated beneficiary for the balance of the ten-year period. Should the designated beneficiary predecease the retiree, another beneficiary can be named.

Regardless of the option selected, should death occur during the first year of retirement, the designated beneficiary may elect to receive benefits as if death had occurred immediately prior to retirement in lieu of the death benefits described above.

Summary of Plan Changes

Act 65, effective July 1 1999

Requires judges who enter or re-enter service after June 30, 1999 to be at least 55 years old and five years of service or have 25 years of service to rehire.

Act 100, effective June 30, 1999

Uses actuarial investment earnings in excess of a ten percent (10%) actuarial investment yield rate to reduce the employer's contribution requirements by \$147.0 million and \$50.6 million for fiscal years ending June 30, 2000 and 2001, respectively.

Act 284, effective June 30, 2001

Provide an increase in pension benefits for current retirees with military service who retired prior to July 2, 1989. A retirant who rendered honorable active military service could be granted up to 4 years of military service credits based upon his/her years of credited service under the ERS, not to exceed his/her actual years of military service. The years of military service credits granted are based on the following schedule:

- 0 years for retirants with less than 8 years of credited service
- Up to 2 years of retirants with 8 years or more of credited service
- Up to 3 years of retirants with 20 years or more of credited service
- Up to 4 years of retirants with 25 years or more of credited service

For each year of military service credits granted on the schedule above, the retirant will be provided a \$36.00 increase in his/her monthly pension or retirement allowance.

Act 199, effective June 30, 2003

Emergency Medical Technicians (EMTs) are allowed to retire with an unreduced benefit after 25 years of service regardless of age, of which the last five or more years prior to retirement must be in that capacity. This feature is phased in one year at a time, July 1, 2003 through June 30, 2008.

Act 177, effective July 1, 2004

This Act allows police officers with a permanent service-connected disability to retain the 2-1/2% benefit multiplier for each year of service as a police officer.

Act 179, effective July 1, 2004

This Act increased the Noncontributory service-connected disability formula to 35% of average final compensation. The Act also changed the methodology for crediting interest on contributions for terminated members so that interest continues to accrue until the date of refund. The Act adds a “pop-up” feature to the joint & survivor benefit options if the beneficiary pre-deceases the retiree.

This Act also created the new Hybrid Plan which became effective July 1, 2006.

Act 181, effective July 1, 2004

This Act establishes fixed employer contribution rates as a percentage of compensation effective July 1, 2005. Employers will contribute 15.75% for their police officers and firefighters and 13.75% for other employees.

Act 183, effective July 1, 2004

This Act amends the ERS statutes to comply with the federal tax limits on compensation retroactive to July 1, 1996.

Act 56, effective December 1, 2004

This Act amends the ERS statutes to allow the automatic cost-of-living-adjustment to be reflected when determining actuarial equivalent optional forms of payment.

Act 256, effective July 5, 2007

Legislation was enacted to remove the statutory salary increase assumption from the statutes and to grant the System's Board of Trustees the authority to set the salary increase assumption. As a result of this legislation, the Board has adopted effective with this valuation the salary increase assumption recommended by GRS as a result of the Experience Study performed in 2006.

Legislation was also enacted to increase the employer contribution rates to the System. Effective July 1, 2008, the employer contribution rate for Police and Fire employees will increase from 15.75% to 19.70% and the rate for All Other employees will increase from 13.75% to 15.00%.

Act 163, effective June 23, 2011

Legislation was enacted that increased the future employer contribution rates to ERS. Employers of Police and Fire employees will contribute 22% of pay in FY 2013, 23% in FY 2014, 24% in FY 2015, and 25% in FY 2016 and beyond. Employers of All Other Employees will contribute 15.5% of pay in FY 2013, 16.0% in FY 2014, 16.5% in FY 2015, and 17.0% in FY 2016 and beyond.

Legislation was enacted that made numerous changes to the benefits and member contribution rates for employees hired after June 30, 2012. Key changes are shown below:

Benefit Provision	Police & Fire Employees	All Other Employees
Benefit Multiplier	2.25%	1.75%
Normal Retirement	Age 55 with 25 years of service, or age 60 with 10 years of service	Age 60 with 30 years of service, or age 65 with 10 years of service
Post-Retirement Increase	1.5%	1.5%
Hybrid Match	N/A	120%
Average Final Compensation	Highest 5 annual base salaries	Highest 5 annual base salaries
Eligibility for Deferred Benefit	10 years of service	10 years of service
Member Contribution Rate	14.20%	8.00%

Similar changes were also made to the benefits of Judges, Legislative Officers, etc.

Similar changes were also made to those employees in the All Other Employees group who are eligible to retire at 25 years of service including the addition of a minimum age requirement (55).

Finally, legislation was enacted that set the investment return assumption for the June 30, 2011 valuation at 7.75% (the rate recommended in the Experience Study presented to the Board in December of 2010). In addition, the legislation granted ERS's Board the authority to set this assumption for valuations after 2011.

Act 152, effective June 26, 2012

Legislation was enacted to require employers to pay additional contributions if a retiring employee, who was first employed prior to July 1, 2012 and who was last employed by the employer, has significant non-base pay increases included in their average final compensation. The additional contribution is equal to the actuarial present value of the additional benefits earned due to the "excessive" non-base pay increases.

Act 153, effective June 26, 2012

Legislation was enacted to eliminate most types of non-base pay from the definition of compensation for employees hired after June 30, 2012. For the impacted employees, non-base pay compensation will be excluded in determining both the contributions made by and on behalf of these employees and the benefits they will earn in the System.

**Summary of Actuarial Methods and Assumptions
(Adopted on June 30, 2007, and December 20, 2010)**

I. Valuation Date

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The normal cost and actuarial accrued liability are determined using the Entry Age Actuarial Cost Method. The actuarial accrued liability is assigned to years prior to the valuation, and the normal cost is assigned to the year following the valuation. The remaining costs are assigned to future years. The normal cost and accrued liability are determined on an individual basis.

The normal cost is the level percentage of payroll contribution required to accumulate the needed funds to pay all expected benefits. This percentage of payroll is then applied to the total compensation for the prior year for all active members, and is then adjusted for the payroll growth assumption.

The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is the excess of the actuarial accrued liability over the actuarial value of assets.

III. Funding of Unfunded Actuarial Accrued Liability

Since the State statutes governing the System establish the employee and employer contribution rates, the actuarial valuation determines the number of years required to amortize (or fund) the UAAL. Because of the legislated increases in future employer contribution rates and the new tier of benefits for employees hired after June 30, 2012, an open group projection of liabilities and assets was used to determine the length of time until the UAAL is eliminated. The open group projection assumed that the number of active members would remain static (i.e. each active employee who leaves employment due to termination, retirement, death or disability, would be replaced by exactly one new employee.

Because of this methodology for determining the funding period, any change in the unfunded actuarial accrued liability due to (i) actuarial gains and losses, (ii) changes in actuarial assumptions, or (iii) amendments, affects the funding period.

IV. Actuarial Value of Assets

The actuarial value of assets is equal to the expected actuarial value of assets plus 25% of the difference between the actual market value of assets and the expected actuarial value of assets. The expected actuarial value of assets is calculated net of investment and administrative expenses, and the expected investment return is equal to the assumed investment return rate multiplied by the prior year's actuarial value of assets, adjusted for contributions, benefits paid, and refunds.

V. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.75% per year, compounded annually, composed of an assumed 3.00% inflation rate and a 4.75% net real rate of return **(effective June 30, 2011)**.
2. Payroll growth rate: 3.50% per annum **(effective June 30, 2006)**.
3. Salary increase rate **(effective June 30, 2011)**: As shown below

Years of Service	General Employees		Teachers	
	Service-related Component	Total Annual Rate of Increase Including 3.00% Inflation Component and 1.00% General Increase Rate	Service-related Component	Total Annual Rate of Increase Including 3.00% Inflation Component and 1.50% General Increase Rate
(1)	(2)	(3)	(2)	(3)
1	4.00%	8.00%	4.00%	8.50%
2	3.00%	7.00%	3.25%	7.75%
3	2.00%	6.00%	2.50%	7.00%
4	1.25%	5.25%	2.00%	6.50%
5	1.00%	5.00%	1.50%	6.00%
6	0.75%	4.75%	1.00%	5.50%
7	0.50%	4.50%	1.00%	5.50%
8	0.50%	4.50%	0.75%	5.25%
9	0.50%	4.50%	0.75%	5.25%
10	0.25%	4.25%	0.75%	5.25%
11	0.25%	4.25%	0.50%	5.00%
12	0.25%	4.25%	0.50%	5.00%
13	0.25%	4.25%	0.50%	5.00%
14	0.25%	4.25%	0.50%	5.00%
15 or more	0.00%	4.00%	0.00%	4.50%

Police & Firefighters		
Years of Service	Service-related Component	Total Annual Rate of Increase Including 3.00% Inflation Component and 2.00% General Increase Rate
(1)	(2)	(3)
0	14.00%	19.00%
1	12.00%	17.00%
2 or more	0.00%	5.00%

Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, annualized if necessary, and then increased by the salary increase assumption.

B. Demographic Assumptions

1. Post-Retirement Mortality rates

General Employees (effective June 30, 2011)

- a. Healthy males – Client Specific Table for males, 89% multiplier.
- b. Healthy females - Client Specific Table for females, 89% multiplier.
- c. Disabled males - 1994 US Group Annuity Mortality Static Table for males set forward nine years.
- d. Disabled females - 1994 US Group Annuity Mortality Static Table for females set forward nine years.

Teachers

- a. Healthy males – Client Specific Table for male teachers, 65% multiplier (**effective June 30, 2011**).
- b. Healthy females - Client Specific Table for female teachers, 67% multiplier (**effective June 30, 2011**).
- c. Disabled males - 1994 US Group Annuity Mortality Static Table for males set forward five years (**effective June 30, 2011**).
- d. Disabled females - 1994 US Group Annuity Mortality Static Table for females set forward six years (**effective June 30, 2006**).

Police and Fire

- a. Healthy males – 1994 US Group Annuity Mortality Static Table for males, 85% multiplier (**effective June 30, 2006**).
- b. Healthy females - 1994 US Group Annuity Mortality Static Table for females, 85% multiplier (**effective June 30, 2006**).
- c. Disabled males - 1994 US Group Annuity Mortality Static Table for males set forward three years (**effective June 30, 2011**).
- d. Disabled females - 1994 US Group Annuity Mortality Static Table for females set forward three years (**effective June 30, 2011**).

Mortality Improvement: To account for future mortality improvement, the healthy mortality rates were chosen so that the assumed mortality rates are smaller than the rates observed in the most recent experience study (dated 12-20-2010). The margin at the time of the study was at least 7% for all groups (i.e. 7% more actual male deaths than expected). No future mortality improvement after the measurement date is assumed except as described above.

2. Pre-retirement Mortality Rates (**effective June 30, 2011**)

The male pre-retirement mortality rates are multiples of a table that has the RP-2000 Male Employee rates for ages 1 to 70 and the RP-2000 Combined Male rates for ages above 70. Similarly, the female pre-retirement rates are multiples of a table that has the RP-2000 Female Employee rates for ages 1 to 70 and the RP-2000 Combined Female rates for ages above 70. The following table shows the factors that are used in conjunction with the tables described above to derive the final ordinary and accidental death rates.

Type	General Employees		Teachers		Police and Fire	
	Males	Females	Males	Females	Males	Females
Ordinary	64%	48%	50%	40%	15%	15%
Accidental	16%	12%	10%	5%	35%	35%

3. Disability rates (**effective June 30, 2011**) – The assumed total disability rates for employees covered by the contributory plan, hybrid plan and the noncontributory plan at select ages are multiples of the client specific table that follows:

Age	Male & Female
25	0.000%
30	0.001%
35	0.008%
40	0.026%
45	0.064%
50	0.146%
55	0.198%
60	0.217%

Note: The disability rates project the percentage of employees at each age that is assumed to become disabled before retiring. Multiples of the rates above are assumed to be ordinary disability or accidental disability, and vary by employee group as follows:

Type	General Employees		Teachers		Police and Fire
	Male	Female	Male	Female	Male & Female
Ordinary	135%	85%	50%	40%	70%
Duty	30%	7%	5%	5%	35%

4. Termination Rates (**effective June 30, 2011**) - Separate male and female rates, based on both age and service, developed from 2010 Experience Study. Rates reflect terminations for causes other than death, disability or retirement. Employees eligible for retirement are assumed to have no probability of termination. Sample rates are shown below:

For first 6 years of service

Group	Expected Terminations per 100 Lives (Male Members)					
	Years of Service					
	0	1	2	3	4	5
General Employees	15.5	12.5	10.5	9.0	7.0	6.0
Teachers	33.0	23.0	15.0	13.0	11.0	9.0
Police & Fire	12.0	9.0	4.0	4.0	4.0	4.0

Group	Expected Terminations per 100 Lives (Female Members)					
	Years of Service					
	0	1	2	3	4	5
General Employees	18.5	16.5	12.5	10.0	8.0	7.0
Teachers	28.0	23.0	16.0	14.0	12.0	8.0
Police & Fire	12.0	9.0	4.0	4.0	4.0	4.0

After first 6 years of service

Age	Expected Terminations per 100 Lives				
	Years of Service				
	General Employees Males	General Employees Females	Teachers Males	Teachers Females	Police & Fire
(1)	(2)	(3)	(4)	(5)	(6)
20	7.15	8.12	6.22	7.12	2.03
25	6.50	7.83	4.98	6.72	1.91
30	5.46	5.84	4.12	6.15	2.53
35	4.40	4.04	3.95	4.99	2.75
40	3.60	3.30	3.60	3.70	2.01
45	3.02	2.65	2.88	2.88	1.18
50	2.54	2.41	2.34	2.36	0.79
55	2.52	2.41	2.34	2.36	0.24
60	2.52	2.41	2.34	2.36	0.00

5. Retirement rates (**effective June 30, 2011**) - Separate male and female rates, based on age, developed from the 2010 Experience Study. Sample rates are shown below:

Contributory Plan and Hybrid Plan

Age	Expected Retirements per 100 Lives				
	General Employees		Teachers		Police and Fire
	Male	Female	Male	Female	Male & Female
45	2	1	0	0	13
46	2	1	0	0	13
47	2	1	0	0	13
48	2	1	0	0	13
49	2	1	0	0	13
50	2	1	1	0	15
51	2	1	1	1	15
52	2	1	1	1	15
53	2	2	2	2	15
54	3	3	3	3	15
55	16	13	20	18	20
56	14	13	15	16	20
57	14	13	15	16	20
58	14	13	15	16	20
59	14	13	15	16	20
60	14	15	14	18	30
61	15	15	14	18	30
62	25	25	14	25	30
63	20	20	14	20	30
64	20	20	14	15	30
65	25	25	20	25	100
66	25	25	15	25	100
67	20	20	15	20	100
68	20	20	15	20	100
69	20	20	15	20	100
70	20	20	15	20	100
71	20	20	15	20	100
72	20	20	15	20	100
73	20	20	15	20	100
74	20	20	15	20	100
75	100	100	100	100	100

Retirement rates for 25 & out group ages 50-54 are 10% for both males and females

Noncontributory Plan

Expected Retirements per 100 Lives

Age	General Employees				Teachers			
	Unreduced Retirement		Reduced Retirement		Unreduced Retirement		Reduced Retirement	
	Male	Female	Male	Female			Male	Female
55	13	12	2	2	10	13	2	3
56	13	12	2	2	10	13	2	3
57	13	12	2	2	10	14	2	3
58	13	12	2	2	10	15	2	3
59	13	12	3	3	10	16	3	3
60	14	15	4	4	10	17	5	5
61	14	18	5	5	10	18	10	5
62	25	25			16	25		
63	25	25			12	20		
64	20	20			10	18		
65	25	22			20	30		
66	25	22			15	25		
67	25	22			15	25		
68	25	22			15	25		
69	25	22			15	25		
70	20	20			15	25		
71	20	20			15	25		
72	20	20			15	25		
73	20	20			15	25		
74	20	20			15	25		
75	100	100			100	100		

Retirement rates for the 25 & out group ages 50-54 are 10% for both males and females

For Hybrid plan, early retirement rates are reduced by a factor of 10% for each year prior to age 65 (if hired after June 30, 2012) or 62 (if hired before July 1, 2012) for a maximum of 10 years.

C. Other Assumptions

1. Percent married (**effective June 30, 2006**): 77% of male employees and 57.6% of female employees are assumed to be married.
2. Age difference (**effective June 30, 2006**): Male members are assumed to be four years older than their spouses, and female members are assumed to be four years younger than their spouses.
3. Percent electing annuity on death for contributory participants (when eligible): All of the spouses of married participants who die after becoming eligible for a retirement benefit are assumed to elect an annuity or a refund, whichever is more valuable at time of participant's death.
4. Percent electing deferred termination benefit: vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.
5. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt when eligible for early retirement.
6. Administrative expenses (**effective June 30, 2011**): The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses. For purposes of determining the investment return assumption administrative expenses are assumed to be equal to 40 basis points of each year's investment return.
7. Reemployment, purchase of service, transfers: No recognition is made of (i) future member reimbursements upon reemployment, (ii) future purchase of additional service, or (iii) special transfer provisions.
8. Sick Leave: It is assumed that all members will have their benefit service increased by sick leave and the following loads will be applied by group:

General Employees	3.75%
Teachers	4.25%
Police and Fire	5.00%

9. COLA delay: It is assumed that the first COLA will be received 9 months after retirement. Teachers are assumed to receive the first COLA 12 months after retirement.
10. There will be no recoveries once disabled.
11. No surviving spouse will remarry and there will be no children's benefit.

12. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
13. Decrement timing: Retirements and terminations of Teachers are assumed to occur at the beginning of the year. All other decrements are assumed to occur mid-year.
14. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
15. Decrement relativity: Decrement rates are used directly from the Experience Study, without adjustment for multiple decrement table effects.
16. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
17. Benefit Service: All members are assumed to accrue 1 year of service each year. Exact fractional service is used to determine the amount of benefit payable.

VI. Participant Data

Participant data was supplied for (i) active members, (ii) inactive vested members, who are entitled to a future deferred benefit, (iii) members and beneficiaries receiving benefits.

Salary supplied for the current year was based on the earnings for the March preceding the valuation date. This salary was compared to March base pay plus a twelve-month average of overtime, with the greater of the two being used for valuation pay.

VII. Dates of Adoption of Assumptions and Methods

Generally, actuarial assumptions and methods were adopted by the Board of Trustees on December 20, 2010 as recommended by Gabriel, Roeder, Smith & Company (GRS). The legislature set the investment return assumption for the 2011 valuation to the assumption recommended by GRS. The ERS Board has adopted the assumption beginning with the 2012 valuation.

SECTION M

STATISTICAL TABLES

STATISTICAL TABLES

TABLE No.	PAGE NUMBER	CONTENT OF TABLE
19	77	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – ALL EMPLOYEES
20	78	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – NONCONTRIBUTORY MEMBERS, ALL
21	79	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – NONCONTRIBUTORY MEMBERS, GENERAL EMPLOYEES
22	80	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – NONCONTRIBUTORY MEMBERS, TEACHERS
23	81	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – CONTRIBUTORY MEMBERS, ALL
24	82	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – CONTRIBUTORY MEMBERS, GENERAL EMPLOYEES
25	83	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – CONTRIBUTORY MEMBERS, TEACHERS
26	84	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – CONTRIBUTORY MEMBERS, POLICE AND FIRE
27	85	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – HYBRID MEMBERS, ALL
28	86	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – HYBRID MEMBERS, GENERAL EMPLOYEES
29	87	DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE – HYBRID MEMBERS, TEACHERS
30	88	SUMMARY OF PENSION IN FORCE BY TYPE OF RETIREMENT
31	89	SUMMARY OF PENSION IN FORCE BY AGE AND TYPE – GENERAL EMPLOYEES
32	90	SUMMARY OF PENSION IN FORCE BY AGE AND TYPE – TEACHERS
33	91	SUMMARY OF PENSION IN FORCE BY AGE AND TYPE – POLICE AND FIRE
34	92	NONCONTRIBUTORY PENSIONS IN FORCE BY YEARS OF SERVICE
35	93	NONCONTRIBUTORY PENSIONS IN FORCE BY YEARS SINCE RETIREMENT
36-1	94	CONTRIBUTORY PENSIONS IN FORCE BY YEARS OF SERVICE
36-2	95	HYBRID PENSIONS IN FORCE BY YEARS OF SERVICE
37-1	96	CONTRIBUTORY PENSIONS IN FORCE BY YEARS SINCE RETIREMENT
37-2	97	HYBRID PENSIONS IN FORCE BY YEARS SINCE RETIREMENT
38,41	98/101	PENSIONS IN FORCE BY PAYMENT OPTION – GENERAL EMPLOYEES/NEW
39,42	99/102	PENSIONS IN FORCE BY PAYMENT OPTION – TEACHERS/NEW
40,43	100/103	PENSIONS IN FORCE BY PAYMENT OPTION – POLICE AND FIRE/NEW

**Distribution of Active Members by Age and by Years of Service - All Employees
As of 06/30/2013**

Attained Age	Years of Credited Service												Total
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.
Under 25	374 \$35,951	179 \$39,819	47 \$39,557	11 \$39,160	11 \$35,512	3 \$39,766	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	625 \$37,397
25-29	795 \$41,110	837 \$43,977	589 \$47,034	385 \$48,470	388 \$46,654	563 \$47,404	1 \$33,577	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3,558 \$45,160
30-34	636 \$42,715	652 \$46,867	506 \$48,288	397 \$51,485	566 \$48,930	2,764 \$51,123	371 \$50,588	1 \$52,286	0 \$0	0 \$0	0 \$0	0 \$0	5,893 \$49,282
35-39	656 \$43,718	594 \$49,683	429 \$49,860	327 \$50,956	507 \$51,569	2,635 \$51,874	2,180 \$57,973	247 \$58,951	9 \$47,561	0 \$0	0 \$0	0 \$0	7,584 \$52,802
40-44	376 \$42,731	386 \$50,477	310 \$45,433	228 \$51,149	372 \$50,964	2,145 \$52,449	2,285 \$57,367	1,952 \$65,180	544 \$63,960	3 \$50,150	0 \$0	0 \$0	8,601 \$56,507
45-49	255 \$45,090	293 \$51,149	259 \$50,593	174 \$51,957	326 \$47,388	1,823 \$50,238	1,616 \$54,278	1,494 \$62,088	2,435 \$66,762	482 \$71,497	2 \$56,200	0 \$0	9,159 \$58,224
50-54	267 \$44,827	270 \$51,045	195 \$51,425	172 \$52,047	325 \$45,157	1,643 \$48,694	1,467 \$50,284	1,231 \$58,320	2,165 \$64,510	1,840 \$68,789	383 \$66,331	3 \$48,307	9,961 \$57,901
55-59	222 \$45,906	228 \$53,139	186 \$55,421	153 \$49,858	257 \$50,552	1,395 \$48,821	1,336 \$50,157	1,123 \$57,155	1,849 \$60,589	1,611 \$67,590	1,131 \$71,794	259 \$65,526	9,750 \$58,628
60-64	136 \$47,973	145 \$53,364	125 \$52,649	123 \$52,500	172 \$50,701	1,088 \$50,674	1,023 \$50,398	829 \$56,071	1,335 \$61,066	985 \$67,570	675 \$73,384	750 \$75,717	7,386 \$60,059
65 & Over	58 \$53,313	40 \$72,724	53 \$50,894	52 \$55,174	81 \$56,841	569 \$50,885	587 \$50,373	434 \$57,523	572 \$61,979	379 \$66,005	248 \$78,707	636 \$86,454	3,709 \$63,260
Total	3,775 \$42,732	3,624 \$48,295	2,699 \$48,977	2,022 \$50,842	3,005 \$49,162	14,628 \$50,662	10,866 \$53,919	7,311 \$60,461	8,909 \$63,583	5,300 \$68,235	2,439 \$72,066	1,648 \$78,209	66,226 \$56,183

**Distribution of Active Members by Age and by Years of Service
Noncontributory Members, All
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.		
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	1 \$41,040	0 \$0	0 \$0	42 \$38,585	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	43 \$38,642
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	567 \$49,918	167 \$44,027	1 \$52,286	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	735 \$48,583
35-39	0 \$0	0 \$0	0 \$0	1 \$46,200	1 \$34,800	625 \$50,802	802 \$52,781	85 \$49,209	6 \$44,264	0 \$0	0 \$0	0 \$0	0 \$0	1,520 \$51,718
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	490 \$49,391	920 \$51,696	661 \$58,886	180 \$54,091	0 \$0	0 \$0	0 \$0	0 \$0	2,251 \$53,497
45-49	0 \$0	1 \$45,909	0 \$0	0 \$0	0 \$0	450 \$49,813	735 \$49,756	640 \$56,661	820 \$58,949	162 \$57,069	0 \$0	0 \$0	0 \$0	2,808 \$54,444
50-54	0 \$0	0 \$0	1 \$81,137	0 \$0	0 \$0	352 \$45,878	743 \$46,943	579 \$54,054	866 \$57,878	571 \$62,331	86 \$61,362	1 \$52,219	1 \$54,219	3,199 \$54,219
55-59	0 \$0	0 \$0	1 \$33,528	0 \$0	0 \$0	323 \$45,199	593 \$46,548	512 \$52,388	852 \$56,093	590 \$60,816	282 \$66,913	93 \$59,757	3,246 \$54,577	
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	234 \$45,429	466 \$46,014	397 \$53,753	619 \$57,051	403 \$63,293	199 \$72,195	235 \$74,148	2,553 \$57,198	
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	1 \$97,103	150 \$47,978	282 \$44,128	240 \$52,846	356 \$59,320	197 \$60,645	101 \$75,944	259 \$83,968	1,586 \$59,838	
Total	0 \$0	1 \$45,909	3 \$51,902	1 \$46,200	2 \$65,952	3,233 \$48,521	4,708 \$48,892	3,115 \$55,077	3,699 \$57,498	1,923 \$61,452	668 \$69,137	588 \$76,160	17,941 \$54,669	

**Distribution of Active Members by Age and by Years of Service
Noncontributory Members, General Employees
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	1 \$41,040	0 \$0	0 \$0	42 \$38,585	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	43 \$38,642
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	300 \$47,054	131 \$41,045	1 \$52,286	0 \$0	0 \$0	0 \$0	0 \$0	432 \$45,244
35-39	0 \$0	0 \$0	0 \$0	1 \$46,200	1 \$34,800	385 \$48,947	439 \$50,732	59 \$44,946	6 \$44,264	0 \$0	0 \$0	0 \$0	891 \$49,511
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	363 \$46,678	646 \$49,370	340 \$55,808	156 \$52,178	0 \$0	0 \$0	0 \$0	1,505 \$50,466
45-49	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	346 \$45,722	589 \$46,967	442 \$53,293	560 \$55,685	136 \$55,494	0 \$0	0 \$0	2,073 \$51,023
50-54	0 \$0	0 \$0	1 \$81,137	0 \$0	0 \$0	286 \$43,356	609 \$43,631	459 \$49,900	688 \$54,871	410 \$59,581	77 \$59,711	1 \$52,219	2,531 \$50,883
55-59	0 \$0	0 \$0	1 \$33,528	0 \$0	0 \$0	263 \$43,204	486 \$43,069	413 \$49,131	699 \$52,227	473 \$57,797	223 \$64,265	83 \$56,770	2,641 \$51,309
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	188 \$41,817	378 \$42,467	303 \$48,687	486 \$52,073	294 \$57,008	149 \$68,906	180 \$69,919	1,978 \$52,369
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	124 \$45,150	230 \$40,204	197 \$48,746	273 \$52,217	148 \$53,956	69 \$67,423	142 \$73,509	1,183 \$52,223
Total	0 \$0	0 \$0	3 \$51,902	1 \$46,200	1 \$34,800	2,297 \$45,524	3,508 \$45,612	2,214 \$50,942	2,868 \$53,490	1,461 \$57,535	518 \$65,344	406 \$68,443	13,277 \$50,968

**Distribution of Active Members by Age and by Years of Service
Noncontributory Members, Teachers
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	267 \$53,137	36 \$54,876	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	303 \$53,344
35-39	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	240 \$53,778	363 \$55,259	26 \$58,884	0 \$0	0 \$0	0 \$0	0 \$0	629 \$54,844
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	127 \$57,144	274 \$57,179	321 \$62,147	24 \$66,528	0 \$0	0 \$0	0 \$0	746 \$59,611
45-49	0 \$0	1 \$45,909	0 \$0	0 \$0	0 \$0	104 \$63,423	146 \$61,007	198 \$64,181	260 \$65,980	26 \$65,308	0 \$0	0 \$0	735 \$64,095
50-54	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	66 \$56,803	134 \$61,994	120 \$69,944	178 \$69,499	161 \$69,335	9 \$75,484	0 \$0	668 \$66,860
55-59	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	60 \$53,944	107 \$62,352	99 \$65,974	153 \$73,753	117 \$73,019	59 \$76,921	10 \$84,546	605 \$68,845
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	46 \$60,193	88 \$61,252	94 \$70,080	133 \$75,238	109 \$80,246	50 \$81,996	55 \$87,986	575 \$73,807
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	1 \$97,103	26 \$61,468	52 \$61,481	43 \$71,630	83 \$82,681	49 \$80,847	32 \$94,318	117 \$96,661	403 \$82,193
Total	0 \$0	1 \$45,909	0 \$0	0 \$0	1 \$97,103	936 \$55,877	1,200 \$58,479	901 \$65,239	831 \$71,331	462 \$73,837	150 \$82,238	182 \$93,374	4,664 \$65,205

**Distribution of Active Members by Age and by Years of Service
Contributory Members, All
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	26 \$49,220	11 \$52,913	5 \$60,948	1 \$57,093	1 \$72,555	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	44 \$52,185
25-29	64 \$49,631	62 \$56,876	84 \$62,519	55 \$66,038	42 \$67,884	79 \$70,918	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	386 \$62,280
30-34	41 \$49,630	40 \$56,706	49 \$59,758	56 \$68,279	59 \$68,736	377 \$69,514	60 \$73,298	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	682 \$67,031
35-39	25 \$49,088	28 \$56,992	37 \$60,850	35 \$66,391	47 \$64,038	284 \$70,671	386 \$75,959	49 \$84,451	0 \$0	0 \$0	0 \$0	0 \$0	891 \$71,759
40-44	12 \$49,801	10 \$65,229	9 \$53,837	15 \$66,546	25 \$67,692	179 \$71,194	412 \$75,290	366 \$88,245	127 \$93,293	1 \$84,636	0 \$0	0 \$0	1,156 \$79,947
45-49	3 \$51,240	6 \$70,429	6 \$67,758	3 \$91,770	6 \$74,012	68 \$72,309	150 \$75,872	219 \$85,609	409 \$95,661	124 \$105,718	2 \$56,200	0 \$0	996 \$89,453
50-54	2 \$47,298	3 \$83,275	6 \$57,286	2 \$67,988	1 \$65,869	26 \$76,113	32 \$77,717	92 \$84,530	257 \$95,875	261 \$94,748	150 \$75,370	0 \$0	832 \$88,711
55-59	3 \$76,908	0 \$0	1 \$128,296	1 \$136,127	2 \$90,268	9 \$95,587	22 \$93,118	45 \$90,665	80 \$95,830	185 \$91,049	311 \$75,471	61 \$70,573	720 \$83,266
60-64	0 \$0	0 \$0	1 \$53,352	1 \$136,127	2 \$56,386	5 \$70,376	11 \$85,399	18 \$90,671	27 \$101,873	56 \$88,571	155 \$70,515	160 \$74,892	436 \$77,635
65 & Over	2 \$57,250	1 \$55,440	0 \$0	0 \$0	1 \$46,272	9 \$73,096	8 \$90,771	7 \$99,732	6 \$106,170	19 \$76,241	54 \$74,845	158 \$79,041	265 \$78,921
Total	178 \$50,051	161 \$58,090	198 \$61,376	169 \$68,156	186 \$67,370	1,036 \$70,840	1,081 \$76,151	796 \$87,149	906 \$95,659	646 \$94,699	672 \$74,198	379 \$75,927	6,408 \$78,968

**Distribution of Active Members by Age and by Years of Service
Contributory Members, General Employees
As of 06/30/2013**

Attained Age	Years of Credited Service												Total
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	2 \$47,136	0 \$0	0 \$0	1 \$47,746	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3 \$47,340
30-34	1 \$30,412	0 \$0	1 \$52,446	1 \$72,156	0 \$0	6 \$45,854	1 \$52,258	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	10 \$48,240
35-39	6 \$47,136	0 \$0	5 \$46,273	0 \$0	2 \$46,273	5 \$55,302	10 \$51,010	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	28 \$49,762
40-44	3 \$48,399	1 \$128,296	0 \$0	0 \$0	2 \$89,032	10 \$87,004	22 \$60,353	7 \$87,564	2 \$59,588	0 \$0	0 \$0	0 \$0	47 \$71,946
45-49	0 \$0	1 \$128,296	1 \$66,500	1 \$128,296	0 \$0	5 \$66,732	10 \$50,709	10 \$84,918	19 \$72,402	6 \$62,652	1 \$35,064	0 \$0	54 \$70,364
50-54	1 \$46,272	1 \$128,296	1 \$56,781	0 \$0	0 \$0	6 \$76,857	4 \$77,956	6 \$59,655	16 \$82,188	53 \$64,578	100 \$61,707	0 \$0	188 \$65,269
55-59	2 \$91,200	0 \$0	1 \$128,296	1 \$136,127	2 \$90,268	4 \$117,599	10 \$105,809	9 \$100,986	12 \$101,030	65 \$75,124	190 \$62,554	40 \$57,168	336 \$69,441
60-64	0 \$0	0 \$0	0 \$0	1 \$136,127	2 \$56,386	4 \$69,744	5 \$81,111	13 \$94,716	9 \$120,220	32 \$79,228	106 \$65,516	101 \$65,466	273 \$70,838
65 & Over	2 \$57,250	1 \$55,440	0 \$0	0 \$0	1 \$46,272	9 \$73,096	8 \$90,771	7 \$99,732	4 \$69,920	10 \$67,407	38 \$68,566	92 \$70,534	172 \$71,784
Total	17 \$52,698	4 \$110,082	9 \$59,487	5 \$104,090	9 \$67,799	49 \$73,953	70 \$69,984	52 \$89,584	62 \$86,836	166 \$71,632	435 \$63,543	233 \$66,043	1,111 \$68,845

**Distribution of Active Members by Age and by Years of Service
Contributory Members, Teachers
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.		
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
35-39	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$59,772	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$59,772
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$51,426	1 \$78,569	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$64,998
45-49	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$68,178	1 \$54,180	0 \$0	0 \$0	0 \$0	0 \$0	2 \$61,179
50-54	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$52,986	2 \$123,510	16 \$73,731	14 \$71,937	0 \$0	34 \$74,700	
55-59	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$149,532	1 \$94,884	17 \$73,126	68 \$75,812	13 \$82,100	101 \$77,818	
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$89,640	8 \$78,231	42 \$77,353	53 \$88,397	104 \$83,167	
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$249,996	5 \$81,385	15 \$89,281	61 \$88,525	82 \$90,197	
Total	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$51,426	1 \$78,569	6 \$88,831	6 \$122,620	46 \$75,122	139 \$77,341	127 \$87,814	326 \$82,077	

**Distribution of Active Members by Age and by Years of Service
Contributory Members, Police and Firefighters
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	26 \$49,220	11 \$52,913	5 \$60,948	1 \$57,093	1 \$72,555	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	44 \$52,185
25-29	62 \$49,711	62 \$56,876	84 \$62,519	54 \$66,377	42 \$67,884	79 \$70,918	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	383 \$62,397
30-34	40 \$50,110	40 \$56,706	48 \$59,910	55 \$68,209	59 \$68,736	371 \$69,897	59 \$73,655	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	672 \$67,311
35-39	19 \$49,705	28 \$56,992	32 \$63,128	35 \$66,391	45 \$64,828	279 \$70,946	376 \$76,623	48 \$84,965	0 \$0	0 \$0	0 \$0	0 \$0	862 \$72,487
40-44	9 \$50,268	9 \$58,222	9 \$53,837	15 \$66,546	23 \$65,836	168 \$70,371	389 \$76,126	359 \$88,258	125 \$93,832	1 \$84,636	0 \$0	0 \$0	1,107 \$80,314
45-49	3 \$51,240	5 \$58,856	5 \$68,009	2 \$73,507	6 \$74,012	63 \$72,752	140 \$77,669	208 \$85,726	389 \$96,904	118 \$107,908	1 \$77,336	0 \$0	940 \$90,610
50-54	1 \$48,324	2 \$60,764	5 \$57,387	2 \$67,988	1 \$65,869	20 \$75,890	28 \$77,683	84 \$87,058	239 \$96,560	192 \$104,828	36 \$114,656	0 \$0	610 \$96,716
55-59	1 \$48,324	0 \$0	0 \$0	0 \$0	0 \$0	5 \$77,978	12 \$82,541	34 \$84,470	67 \$94,913	103 \$104,057	53 \$121,342	8 \$118,864	283 \$101,625
60-64	0 \$0	0 \$0	1 \$53,352	0 \$0	0 \$0	1 \$72,906	6 \$88,973	5 \$80,153	17 \$92,879	16 \$112,425	7 \$105,191	6 \$114,268	59 \$99,331
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$107,346	4 \$91,895	1 \$96,911	5 \$119,877	11 \$106,474
Total	161 \$49,772	157 \$56,765	189 \$61,466	164 \$67,060	177 \$67,348	986 \$70,705	1,010 \$76,576	738 \$86,964	838 \$96,119	434 \$105,597	98 \$117,034	19 \$117,679	4,971 \$81,026

**Distribution of Active Members by Age and by Years of Service
Hybrid Plan Members, All
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	348 \$34,959	168 \$38,961	42 \$37,010	10 \$37,367	10 \$31,808	3 \$39,766	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	581 \$36,277
25-29	731 \$40,364	775 \$42,945	504 \$44,465	330 \$45,542	346 \$44,077	442 \$44,039	1 \$33,577	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3,129 \$43,137
30-34	595 \$42,238	612 \$46,224	457 \$47,059	341 \$48,727	507 \$46,625	1,820 \$47,688	144 \$48,734	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	4,476 \$46,692
35-39	631 \$43,505	566 \$49,321	392 \$48,823	291 \$49,116	459 \$50,328	1,726 \$49,169	992 \$55,172	113 \$55,220	3 \$54,154	0 \$0	0 \$0	0 \$0	5,173 \$49,855
40-44	364 \$42,498	376 \$50,084	301 \$45,182	213 \$50,064	347 \$49,759	1,476 \$51,190	953 \$55,093	925 \$60,552	237 \$55,736	2 \$32,907	0 \$0	0 \$0	5,194 \$52,595
45-49	252 \$45,016	286 \$50,763	253 \$50,186	171 \$51,258	320 \$46,889	1,305 \$49,234	731 \$54,394	635 \$59,445	1,206 \$62,274	196 \$61,772	0 \$0	0 \$0	5,355 \$54,398
50-54	265 \$44,808	267 \$50,683	188 \$51,079	170 \$51,859	324 \$45,093	1,265 \$48,914	692 \$52,603	560 \$58,425	1,042 \$62,286	1,008 \$65,726	147 \$60,014	2 \$46,352	5,930 \$55,565
55-59	219 \$45,481	228 \$53,139	184 \$55,144	152 \$49,290	255 \$50,241	1,063 \$49,525	721 \$51,815	566 \$58,803	917 \$61,693	836 \$67,180	538 \$72,227	105 \$67,705	5,784 \$57,834
60-64	136 \$47,973	145 \$53,364	124 \$52,643	122 \$51,815	170 \$50,634	849 \$52,004	546 \$53,434	414 \$56,789	689 \$63,074	526 \$68,611	321 \$75,506	355 \$77,127	4,397 \$59,978
65 & Over	56 \$53,172	39 \$73,167	53 \$50,894	52 \$55,174	79 \$56,465	410 \$51,461	297 \$55,214	187 \$61,946	210 \$65,225	163 \$71,290	93 \$83,950	219 \$94,742	1,858 \$63,947
Total	3,597 \$42,370	3,462 \$47,840	2,498 \$47,991	1,852 \$49,265	2,817 \$47,948	10,359 \$49,312	5,077 \$53,847	3,400 \$59,145	4,304 \$62,059	2,731 \$66,751	1,099 \$72,543	681 \$81,249	41,877 \$53,346

**Distribution of Active Members by Age and by Years of Service
Hybrid Plan Members, General Employees
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	170 \$30,075	96 \$35,175	39 \$36,243	10 \$37,367	10 \$31,808	3 \$39,766	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	328 \$32,665
25-29	449 \$37,805	459 \$41,847	267 \$43,456	173 \$44,701	189 \$41,143	311 \$42,092	1 \$33,577	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1,849 \$41,329
30-34	396 \$40,395	423 \$44,725	293 \$46,209	196 \$48,663	324 \$45,161	1,066 \$45,539	94 \$45,643	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2,792 \$44,935
35-39	411 \$41,020	408 \$47,685	291 \$48,382	189 \$47,925	325 \$48,994	1,192 \$47,254	514 \$52,719	67 \$51,400	2 \$48,576	0 \$0	0 \$0	0 \$0	3,399 \$47,761
40-44	246 \$38,690	280 \$46,538	224 \$43,033	139 \$47,948	258 \$46,456	1,114 \$48,825	651 \$52,443	425 \$57,330	179 \$52,603	2 \$32,907	0 \$0	0 \$0	3,518 \$49,237
45-49	189 \$43,192	217 \$49,024	201 \$49,848	128 \$49,801	258 \$44,943	1,045 \$46,847	547 \$50,993	426 \$56,829	745 \$59,197	157 \$59,227	0 \$0	0 \$0	3,913 \$51,431
50-54	211 \$42,240	214 \$50,417	142 \$48,366	123 \$50,568	262 \$42,929	1,025 \$46,019	548 \$49,165	424 \$54,475	768 \$59,699	649 \$61,956	128 \$58,465	2 \$46,352	4,496 \$52,242
55-59	175 \$44,663	190 \$53,314	163 \$55,100	111 \$47,027	211 \$48,681	888 \$46,456	573 \$47,663	414 \$54,763	706 \$57,667	606 \$64,267	391 \$68,905	87 \$64,984	4,515 \$54,465
60-64	104 \$46,463	117 \$52,988	98 \$53,514	81 \$49,933	148 \$50,762	711 \$49,788	429 \$50,773	288 \$51,719	457 \$56,348	347 \$62,608	227 \$71,114	265 \$73,077	3,272 \$55,897
65 & Over	37 \$51,175	34 \$77,181	44 \$49,795	40 \$58,074	63 \$53,617	346 \$48,977	231 \$51,063	120 \$56,235	150 \$60,396	114 \$66,081	58 \$72,563	111 \$81,302	1,348 \$57,660
Total	2,388 \$40,234	2,438 \$46,912	1,762 \$47,434	1,190 \$48,361	2,048 \$46,211	7,701 \$47,032	3,588 \$50,526	2,164 \$55,190	3,007 \$58,193	1,875 \$62,815	804 \$68,130	465 \$73,411	29,430 \$50,656

**Distribution of Active Members by Age and by Years of Service
Hybrid Plan Members, Teachers
As of 06/30/2013**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.		
Under 25	178 \$39,625	72 \$44,010	3 \$46,984	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	253 \$40,960
25-29	282 \$44,440	316 \$44,540	237 \$45,601	157 \$46,468	157 \$47,608	131 \$48,661	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1,280 \$45,749
30-34	199 \$45,906	189 \$49,578	164 \$48,576	145 \$48,815	183 \$49,218	754 \$50,727	50 \$54,546	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1,684 \$49,604
35-39	220 \$48,148	158 \$53,546	101 \$50,095	102 \$51,323	134 \$53,565	534 \$53,443	478 \$57,809	46 \$60,784	1 \$65,311	0 \$0	0 \$0	0 \$0	0 \$0	1,774 \$53,866
40-44	118 \$50,436	96 \$60,428	77 \$51,434	74 \$54,040	89 \$59,332	362 \$58,470	302 \$60,806	500 \$63,291	58 \$65,406	0 \$0	0 \$0	0 \$0	0 \$0	1,676 \$59,643
45-49	63 \$50,491	69 \$56,229	52 \$51,496	43 \$55,596	62 \$54,987	260 \$58,829	184 \$64,504	209 \$64,778	461 \$67,247	39 \$72,019	0 \$0	0 \$0	0 \$0	1,442 \$62,449
50-54	54 \$54,845	53 \$51,755	46 \$59,455	47 \$55,237	62 \$54,236	240 \$61,278	144 \$65,683	136 \$70,741	274 \$69,535	359 \$72,542	19 \$70,447	0 \$0	0 \$0	1,434 \$65,982
55-59	44 \$48,733	38 \$52,266	21 \$55,487	41 \$55,417	44 \$57,723	175 \$65,103	148 \$67,889	152 \$69,807	211 \$75,162	230 \$74,856	147 \$81,065	18 \$80,853	18 \$80,853	1,269 \$69,824
60-64	32 \$52,882	28 \$54,935	26 \$49,363	41 \$55,531	22 \$49,778	138 \$63,422	117 \$63,193	126 \$68,379	232 \$76,325	179 \$80,248	94 \$86,111	90 \$89,052	90 \$89,052	1,125 \$71,847
65 & Over	19 \$57,061	5 \$45,873	9 \$56,265	12 \$45,507	16 \$67,681	64 \$64,889	66 \$69,741	67 \$72,174	60 \$77,297	49 \$83,410	35 \$102,821	108 \$108,556	108 \$108,556	510 \$80,565
Total	1,209 \$46,590	1,024 \$50,050	736 \$49,324	662 \$50,890	769 \$52,574	2,658 \$55,917	1,489 \$61,850	1,236 \$66,070	1,297 \$71,023	856 \$75,373	295 \$84,570	216 \$98,121	216 \$98,121	12,447 \$59,706

Summary of Pensions in Force by Type of Retirement

Employee Group	Contributory		Noncontributory		Hybrid	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
All Employees	22,158	\$ 2,414	12,479	\$ 1,562	4,104	\$ 2,092
	<u>Service</u>		<u>Service</u>		<u>Service</u>	
Total	21,622	\$ 2,444	11,644	\$ 1,617	3,912	\$ 2,135
General Employees - male	5,106	2,202	3,875	1,547	1,154	2,247
General Employees - female	7,165	1,610	4,363	1,197	1,632	1,807
Teachers - male	1,636	3,033	1,146	2,367	341	2,835
Teachers - female	4,550	2,807	2,260	2,167	785	2,346
Police and Firefighters	3,165	3,894	-	-	-	-
	<u>Ordinary Disability</u>		<u>Ordinary Disability</u>		<u>Ordinary Disability</u>	
Total	228	\$ 883	682	\$ 839	167	\$ 1,226
General Employees - male	82	866	328	838	85	1,204
General Employees - female	76	674	273	727	51	1,102
Teachers - male	8	1,384	31	1,319	8	1,241
Teachers - female	28	1,140	50	1,161	23	1,574
Police and Firefighters	34	1,065	-	-	-	-
	<u>Accidental Disability</u>		<u>Accidental Disability</u>		<u>Accidental Disability</u>	
Total	308	\$ 1,456	153	\$ 649	25	\$ 1,224
General Employees - male	115	1,363	90	682	14	1,198
General Employees - female	70	1,239	57	581	8	1,101
Teachers - male	1	1,108	2	796	-	-
Teachers - female	4	2,574	4	793	3	1,671
Police and Firefighters	118	1,641	-	-	-	-

Summary of Pensions in Force by Age and Type**General Employees**

Age	Type of Pension			
	Total	Service	Ordinary Disability	Accidental Disability
Total	24,544	23,295	895	354
	Contributory			
Total	12,614	12,271	158	185
30-39	-	-	-	-
40-44	3	3	-	-
45-49	5	5	-	-
50-54	47	35	4	8
55-59	411	382	13	16
60-64	964	924	25	15
65-69	1,547	1,505	19	23
70-74	1,667	1,613	23	31
75-79	2,178	2,132	22	24
80-84	2,501	2,455	21	25
85-89	2,085	2,035	19	31
90-94	953	935	9	9
95-99	236	230	3	3
100 & over	17	17	-	-
	Noncontributory			
Total	8,986	8,238	601	147
30-39	-	-	-	-
40-44	5	-	4	1
45-49	16	1	12	3
50-54	66	3	49	14
55-59	367	242	98	27
60-64	1,289	1,077	189	23
65-69	2,887	2,710	149	28
70-74	2,329	2,225	71	33
75-79	1,259	1,226	25	8
80-84	566	555	3	8
85-89	175	173	1	1
90-94	25	24	-	1
95-99	2	2	-	-
100 & over	-	-	-	-
	Hybrid			
Total	2,944	2,786	136	22
30-39	1	-	-	1
40-44	1	-	-	1
45-49	8	-	7	1
50-54	17	2	13	2
55-59	320	282	32	6
60-64	1,132	1,075	54	3
65-69	1,122	1,089	26	7
70-74	264	260	3	1
75-79	60	59	1	-
80-84	15	15	-	-
85-89	4	4	-	-
90-94	-	-	-	-
95-99	-	-	-	-
100 & over	-	-	-	-

Summary of Pensions in Force by Age and Type

Teachers

Age	Type of Pension			
	Total	Service	Ordinary Disability	Accidental Disability
Total	10,880	10,718	148	14
	Contributory			
Total	6,227	6,186	36	5
30-39	-	-	-	-
40-44	-	-	-	-
45-49	-	-	-	-
50-54	-	-	-	-
55-59	86	83	3	-
60-64	401	397	4	-
65-69	1,170	1,163	7	-
70-74	1,147	1,140	6	1
75-79	1,296	1,292	4	-
80-84	1,200	1,194	3	3
85-89	599	592	6	1
90-94	231	228	3	-
95-99	78	78	-	-
100 & over	19	19	-	-
	Noncontributory			
Total	3,493	3,406	81	6
30-39	-	-	-	-
40-44	1	-	1	-
45-49	1	-	1	-
50-54	7	-	6	1
55-59	49	33	14	2
60-64	438	414	24	-
65-69	1,361	1,337	22	2
70-74	1,024	1,013	11	-
75-79	391	389	2	-
80-84	165	164	-	1
85-89	47	47	-	-
90-94	9	9	-	-
95-99	-	-	-	-
100 & over	-	-	-	-
	Hybrid			
Total	1,160	1,126	31	3
30-39	-	-	-	-
40-44	-	-	-	-
45-49	1	-	1	-
50-54	2	-	2	-
55-59	74	65	8	1
60-64	462	444	17	1
65-69	471	467	3	1
70-74	112	112	-	-
75-79	29	29	-	-
80-84	6	6	-	-
85-89	3	3	-	-
90-94	-	-	-	-
95-99	-	-	-	-
100 & over	-	-	-	-

Summary of Pensions in Force by Age and Type**Police and Firefighters**

Age	Type of Pension			
	Total	Service	Ordinary Disability	Accidental Disability
Total	3,317	3,165	34	118
30-39	-	-	-	-
40-44	4	-	2	2
45-49	45	39	4	2
50-54	232	221	5	6
55-59	476	460	2	14
60-64	773	741	8	24
65-69	766	735	3	28
70-74	503	477	4	22
75-79	275	262	2	11
80-84	126	120	-	6
85-89	71	71	-	-
90-94	38	32	4	2
95-99	8	7	-	1
100 & over	-	-	-	-

Noncontributory Service Pensions in Force**by Years of Service**

Years of Service	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	11,644	\$ 1,613	8,238	\$ 1,358	3,406	\$ 2,231
Less than 5	23	407	18	382	5	498
5-9	95	338	80	295	15	567
10-14	2,405	544	2,023	515	382	696
15-19	1,636	874	1,320	824	316	1,083
20-24	1,639	1,129	1,254	1,048	385	1,394
25-29	1,226	1,718	869	1,543	357	2,143
30-34	2,798	2,377	1,566	2,168	1,232	2,643
35 and over	1,822	2,985	1,108	2,713	714	3,409

Noncontributory Service Pensions in Force
by Years Since Retirement

Years Since Retirement	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	11,644	\$ 1,617	8,238	\$ 1,362	3,406	\$ 2,234
Less than 5	3,431	1,524	2,610	1,338	821	2,114
5-9	3,877	1,605	2,726	1,359	1,151	2,188
10-14	2,727	1,694	1,833	1,366	894	2,365
15-19	1,338	1,748	903	1,457	435	2,353
20-24	252	1,580	155	1,234	97	2,133
25 and over	19	1,028	11	714	8	1,458

Contributory Service Pensions in Force

by Years of Service

Years of Service	Total		General Employees		Teachers		Police and Firefighters	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	21,622	\$ 2,444	12,271	\$ 1,856	6,186	\$ 2,867	3,165	\$ 3,894
Less than 5	52	663	38	458	12	1,104	2	1,902
5-9	791	362	637	381	149	274	5	479
10-14	1,505	670	1,262	660	202	654	41	1,051
15-19	1,925	1,104	1,564	1,052	307	1,254	54	1,747
20-24	2,621	1,594	1,941	1,428	544	1,912	136	2,674
25-29	6,496	2,659	2,932	2,049	1,670	2,625	1,894	3,634
30-34	5,905	3,276	2,482	2,713	2,488	3,291	935	4,729
35 and over	2,327	3,691	1,415	3,197	814	4,365	98	5,234

Hybrid Service Pensions in Force

by Years of Service

Years of Service	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	3,912	\$ 2,135	2,786	\$ 1,989	1,126	\$ 2,494
Less than 5	29	325	24	331	5	298
5-9	381	557	311	547	70	603
10-14	393	810	294	788	99	874
15-19	457	1,229	313	1,150	144	1,400
20-24	646	1,547	444	1,423	202	1,819
25-29	412	2,194	288	2,039	124	2,553
30-34	841	3,001	603	2,918	238	3,211
35 and over	753	3,748	509	3,525	244	4,214

Contributory Service Pensions in Force

by Years Since Retirement

Years Since Retirement	Total		General Employees		Teachers		Police and Firefighters	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	21,622	\$ 2,444	12,271	\$ 1,856	6,186	\$ 2,867	3,165	\$ 3,894
Less than 5	2,091	3,761	1,064	2,825	356	4,099	671	5,066
5-9	2,823	3,179	1,415	2,419	833	3,676	575	4,327
10-14	3,440	2,803	1,719	2,166	1,035	3,259	686	3,710
15-19	4,206	2,595	2,313	2,055	1,302	3,086	591	3,625
20-24	3,871	2,030	2,280	1,580	1,272	2,570	319	3,094
25-29	3,133	1,620	2,027	1,346	915	2,020	191	2,616
30-34	1,528	1,288	1,114	1,126	344	1,616	70	2,243
35 and over	530	1,027	339	849	129	1,173	62	1,696

Hybrid Service Pensions in Force

by Years Since Retirement

Years Since Retirement	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	3,912	\$ 2,135	2,786	\$ 1,989	1,126	\$ 2,494
Less than 5	3,220	2,175	2,323	2,032	897	2,545
5-9	692	1,947	463	1,775	229	2,297

Pensions in Force by Payment Option

General Employees

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	24,544	\$ 1,656	23,295	\$ 1,697	895	\$ 842	354	\$ 1,027	-	\$ -
Contributory										
Total	12,614	\$ 1,835	12,271	\$ 1,856	158	\$ 773	185	\$ 1,316	-	\$ -
Maximum	1,582	1,857	1,546	1,876	20	1,114	16	990	-	-
Option 1	821	1,284	775	1,305	27	827	19	1,085	-	-
Option 2	686	2,193	658	2,227	11	1,226	17	1,507	-	-
Option 3	351	2,801	341	2,844	7	874	3	2,388	-	-
Option 4	5,247	2,088	5,117	2,112	49	735	81	1,402	-	-
Option 5	3,927	1,454	3,834	1,467	44	500	49	1,238	-	-
Noncontributory										
Total	8,986	\$ 1,311	8,238	\$ 1,362	601	\$ 787	147	\$ 643	-	\$ -
Maximum	4,881	1,321	4,574	1,358	231	802	76	663	-	-
Option A	1,733	1,397	1,615	1,436	94	932	24	628	-	-
Option B	1,859	1,188	1,578	1,274	240	720	41	635	-	-
Option C	513	1,375	471	1,432	36	766	6	504	-	-
Hybrid										
Total	2,944	\$ 1,945	2,786	\$ 1,989	136	\$ 1,166	22	\$ 1,163	-	\$ -
Maximum	1,126	1,841	1,086	1,864	33	1,211	7	1,184	-	-
Option 1	217	1,808	207	1,833	8	1,335	2	1,181	-	-
Option 2	671	1,864	602	1,949	59	1,111	10	1,177	-	-
Option 3	446	2,410	430	2,457	13	1,164	3	1,053	-	-
Option 4	325	2,137	311	2,173	14	1,333	-	-	-	-
Option 5	159	1,520	150	1,554	9	950	-	-	-	-

Pensions in Force by Payment Option

Teachers

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	10,880	\$ 2,607	10,718	\$ 2,627	148	\$ 1,271	14	\$ 1,513	-	\$ -
	Contributory									
Total	6,227	\$ 2,857	6,186	\$ 2,867	36	\$ 1,195	5	\$ 2,281	-	\$ -
Maximum	886	3,176	878	3,192	8	1,456	-	-	-	-
Option 1	305	2,259	301	2,278	3	959	1	398	-	-
Option 2	223	2,954	223	2,954	-	-	-	-	-	-
Option 3	156	3,764	153	3,800	2	2,344	1	1,108	-	-
Option 4	2,387	3,202	2,373	3,212	12	1,279	2	2,714	-	-
Option 5	2,270	2,378	2,258	2,385	11	768	1	4,469	-	-
	Noncontributory									
Total	3,493	\$ 2,208	3,406	\$ 2,234	81	\$ 1,222	6	\$ 794	-	\$ -
Maximum	2,262	2,275	2,210	2,300	48	1,264	4	830	-	-
Option A	572	2,269	565	2,282	6	1,295	1	1,073	-	-
Option B	470	1,862	445	1,905	24	1,135	1	375	-	-
Option C	189	2,083	186	2,099	3	1,092	-	-	-	-
	Hybrid									
Total	1,160	\$ 2,465	1,126	\$ 2,494	31	\$ 1,488	3	\$ 1,671	-	\$ -
Maximum	492	2,381	482	2,399	10	1,509	-	-	-	-
Option 1	70	2,281	66	2,314	4	1,741	-	-	-	-
Option 2	242	2,295	233	2,325	6	1,434	3	1,671	-	-
Option 3	186	2,816	181	2,856	5	1,374	-	-	-	-
Option 4	91	2,807	87	2,877	4	1,294	-	-	-	-
Option 5	79	2,454	77	2,473	2	1,716	-	-	-	-

Pensions in Force by Payment Option

Police and Firefighters

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	3,317	\$ 3,785	3,165	\$ 3,894	34	\$ 1,065	118	\$ 1,641	-	\$ -
Maximum	95	3,501	76	3,938	-	-	19	1,755	-	-
Option 1	33	3,810	26	4,093	1	2,282	6	2,837	-	-
Option 2	115	3,778	102	4,042	8	1,496	5	2,049	-	-
Option 3	35	4,152	31	4,463	2	1,204	2	2,283	-	-
Option 4	1,945	4,188	1,899	4,253	14	1,087	32	1,651	-	-
Option 5	1,094	3,081	1,031	3,192	9	481	54	1,400	-	-

Pensions in Force by Payment Option

General Employees - New Retirees

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	1,335	\$ 1,573	1,263	\$ 1,602	67	\$ 1,042	5	\$ 1,448	-	\$ -
Contributory										
Total	166	\$ 2,577	166	\$ 2,577	-	\$ -	-	\$ -	-	\$ -
Maximum	38	2,367	38	2,367	-	-	-	-	-	-
Option 1	12	2,911	12	2,911	-	-	-	-	-	-
Option 2	16	2,909	16	2,909	-	-	-	-	-	-
Option 3	11	2,392	11	2,392	-	-	-	-	-	-
Option 4	83	2,613	83	2,613	-	-	-	-	-	-
Option 5	6	2,181	6	2,181	-	-	-	-	-	-
Noncontributory										
Total	583	\$ 1,167	540	\$ 1,182	39	\$ 922	4	\$ 1,468	-	\$ -
Maximum	282	1,138	267	1,157	12	640	3	1,482	-	-
Option A	115	1,209	110	1,212	5	1,147	-	-	-	-
Option B	152	1,228	132	1,261	19	991	1	1,426	-	-
Option C	34	982	31	957	3	1,244	-	-	-	-
Hybrid										
Total	586	\$ 1,693	557	\$ 1,718	28	\$ 1,208	1	\$ 1,368	-	\$ -
Maximum	217	1,686	209	1,701	8	1,305	-	-	-	-
Option 1	42	1,604	40	1,637	2	948	-	-	-	-
Option 2	139	1,604	127	1,651	11	1,082	1	1,368	-	-
Option 3	76	1,989	74	2,022	2	768	-	-	-	-
Option 4	81	1,792	77	1,789	4	1,848	-	-	-	-
Option 5	31	1,279	30	1,299	1	658	-	-	-	-

Pensions in Force by Payment Option

Teachers - New Retirees

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	472	\$ 2,204	462	\$ 2,217	10	\$ 1,571	-	\$ -	-	\$ -
Contributory										
Total	53	\$ 3,853	53	\$ 3,853	-	-	-	\$ -	-	\$ -
Maximum	6	3,189	6	3,189	-	-	-	-	-	-
Option 1	2	3,611	2	3,611	-	-	-	-	-	-
Option 2	3	4,439	3	4,439	-	-	-	-	-	-
Option 3	4	3,822	4	3,822	-	-	-	-	-	-
Option 4	33	3,988	33	3,988	-	-	-	-	-	-
Option 5	5	3,533	5	3,533	-	-	-	-	-	-
Noncontributory										
Total	190	\$ 1,759	188	\$ 1,760	2	\$ 1,656	-	\$ -	-	\$ -
Maximum	111	1,822	110	1,815	1	2,498	-	-	-	-
Option A	41	1,863	41	1,863	-	-	-	-	-	-
Option B	28	1,397	28	1,397	-	-	-	-	-	-
Option C	10	1,647	9	1,740	1	814	-	-	-	-
Hybrid										
Total	229	\$ 2,191	221	\$ 2,214	8	\$ 1,549	-	\$ -	-	\$ -
Maximum	85	2,148	84	2,161	1	1,037	-	-	-	-
Option 1	14	1,641	11	1,599	3	1,796	-	-	-	-
Option 2	44	1,838	43	1,837	1	1,888	-	-	-	-
Option 3	47	2,572	45	2,631	2	1,250	-	-	-	-
Option 4	22	2,781	21	2,838	1	1,581	-	-	-	-
Option 5	17	1,951	17	1,951	-	-	-	-	-	-

Pensions in Force by Payment Option

Police and Firefighters - New Retirees

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	144	\$ 4,852	143	\$ 4,877	1	\$ 1,261	-	\$ -	-	\$ -
Maximum	9	4,641	9	4,641	-	-	-	-	-	-
Option 1	3	5,032	3	5,032	-	-	-	-	-	-
Option 2	10	4,453	10	4,453	-	-	-	-	-	-
Option 3	3	5,729	3	5,729	-	-	-	-	-	-
Option 4	104	5,074	103	5,111	1	1,261	-	-	-	-
Option 5	15	3,489	15	3,489	-	-	-	-	-	-

SECTION N

DEFINITION OF ACTUARIAL TERMS

Definition of Actuarial Terms

1. *Actuarial Accrued Liability* – for benefits payable in the future to present members, it will equal the present value of benefits payable in the future to them less the present value of future normal costs.
2. *Actuarial Assumptions* – assumptions as to future experience under the ERS. Current actuarial assumptions are detailed in Table 21 of the current annual valuation report. Assumptions include future fund earnings rate, rates of future salary increases, and rates of death (both before and after retirement), disability, retirement, and withdrawal.
3. *Actuarial Gain or Actuarial Loss* - a measure of the difference between actual experience and assumed experience of the ERS. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, actuarial liabilities emerge which may be the same as forecasted, or they may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the ERS's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
4. *Actuarial Liabilities* - the actuarially determined present value of future benefits to be provided by the ERS. There are separate actuarially determined present values for retired members and non-retired members (either active or inactive). When applied to active members, it takes into account benefits which will be earned through future service and future salary increases.
5. *Actuarial Value of Present Assets* - the value of present ERS assets for valuation purposes. This value is calculated under a four-year phase-in of the excess (shortfall) between expected and actual income return.
6. *Actuarially Determined* - values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
7. *Decrements* - those types of activities by members of the ERS which cause them no longer to be members, i.e., death, retirement, disability, and withdrawal. It is a general term referring to any or all of these membership-terminating events.

8. *Defined Benefits* - in a retirement plan, benefits which are defined by a specific formula applied to specific member compensation and/or specific years of service. The amount of the benefit is not a function of contributions or actual earnings on those contributions.
9. *Defined Contributions* - in a retirement plan, periodic contributions to the plan which are defined as a specific percent of compensation.
10. *Experience Study* - a periodic review and analysis of the actual experience of the ERS which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
11. *Funding Period* - the number of years in the future that will be required to fund (i.e., pay off or eliminate) the unfunded actuarial accrued liability, based on the actuarial assumptions and assuming no future actuarial gains or losses.
12. *Future Benefits* - benefits specified in the law which will become payable at some time in the future when the member satisfies the requirement to receive such benefits.
13. *Future Contributions* - contributions to be made by the member or the employers in the future.
14. *Normal Cost* - the actuarial cost to fund the benefits provided by the ERS were the funding to begin at date of hire.
15. *Present Value* - the actuarially determined lump sum value as of the valuation date of a series of payments to be made in the future, where the lump sum value is equal to the sum of the discounted value of each future payment. The discounted value of each payment is the product of (a) the amount of the payment, (b) the probability that the payment will be made (based on the current actuarial assumptions as to future experience), and (c) the time value of money (based on the current assumed interest rate).
16. *Unfunded Actuarial Accrued Liability* - that portion of the actuarial accrued liability (including the present value of benefits presently being paid to retired members) that exceeds the value of current assets.