Seattle City Employees' Retirement System

Actuarial Valuation

As of January 1, 2010

By

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Retirement Board
Seattle City Employees' Retirement System
720 Third Avenue, Suite 1000
Seattle, WA 98104

Dear Members of the Board:

As requested, we have made an actuarial valuation of the Seattle City Employees' Retirement System (SCERS) as of January 1, 2010. This report reflects the benefit provisions and contribution rates in effect as of January 1, 2010 (including the maximum increases in member rates that were recently negotiated). There are three changes since the prior valuation (January 1, 2008) that we consider material:

- Significant investment losses that occurred in 2008 have decreased the market value of assets.
- New assumptions reflecting increased life expectancies were adopted with the recent (2009) study of mortality experience.
- It is our understanding that increases in contributions for most members will be capped at 10.03% of pay based on recent negotiations.

Actuarial Certification

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by SCERS staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

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

plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Retirement Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix A.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for SCERS. Actuarial computations under GASB Statement No. 25 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of SCERS' funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of the SCERS. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

a) SCERS may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.

b) SCERS may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

On the basis of the foregoing, I hereby certify that, to the best of our knowledge and belief, this report along with the information contained in the CAFR is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. I am a member of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

I would like to express appreciation to the system staff who gave substantial assistance in supplying the data on which this report is based.

Respectfully submitted,

Nick J. Collier, ASA, EA, MAAA
Principal and Consulting Actuary

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Section 1 Summary of the Findings

Contribution Sufficiency

Based on the actuarial valuation of the benefits in effect under the Seattle City Employees' Retirement System as of January 1, 2010, **the current contribution rate of 16.06% of members' salaries is not sufficient to maintain the current benefits**, assuming future experience follows the actuarial assumptions. This is mainly due to the recent large asset losses that were reflected in this valuation.

The current Retirement Board funding policy states that "if the Funding Ratio is less than 100% and a UAAL (Unfunded Actuarial Accrued Liability) occurs which can not be amortized over a period of less than 20 years by the combined total contribution rates, additional employer contributions may be considered." The practical goal of SCERS is to amortize the UAAL over a period of 30 years or less.

It should be noted that a 30-year amortization period is the longest acceptable period under GASB standards, and is often used by retirement systems as a benchmark for funding. We prefer an amortization period shorter than 30 years, as it provides stronger funding.

The contribution rates currently in effect are not projected to amortize the UAAL over any period. Additional contributions will be required if the System is to both fund ongoing benefits, and amortize the UAAL over a period of 30 years. If the necessary increase were implemented as of January 1, 2011, the Total Contribution Rate would need to be increased from 16.06% of pay to 25.03% of pay. Since this includes the 2.00% increase allowable on the member contribution rate, the effective employer contribution rate increase needed would be 6.97% of pay. See Section 8 of this report for a discussion of possible alternate contribution rate increase schedules.

The current contribution rates for the death benefit program are sufficient to finance the $2,000 death benefit.

Funding Progress

On the basis of the January 1, 2008 actuarial valuation the Funding Ratio was 92.4%. Based on the January 1, 2010 valuation, the Funding Ratio is 62.0%. The decrease in the Funding Ratio is due mainly to the reflection of large asset losses since the last valuation. Because SCERS uses Market Value of Assets to calculate its Funded Ratio, the full impact of the 2008 asset loss is reflected in the 2010 valuation. A summary of the historical Funding Ratio and other measurements are shown on Graph 1 and 2.

Most public retirement systems use asset smoothing to mitigate investment volatility by recognizing portions of investment gains and losses over a period of years. A 5–year period is the most common. After a significant asset loss, systems that use asset smoothing are likely to initially appear significantly better-funded than systems that do not. Due to SCERS' policy of immediately recognizing all asset gains and losses, comparisons of SCERS with other systems will likely show a lower Funding Ratio even if the systems are in similar financial health.

All assumptions for the January 1, 2010 actuarial valuation are the same as those used for the January 1, 2008 actuarial valuation, except for the new mortality assumptions that were adopted by the Board earlier this year.

Funding Progress (continued)

A summary of the changes in the Funding Ratio is shown below.

Sources of Change	Funding Ratio
January 1, 2008 Actuarial Valuation	**92.4 %**
Expected Valuation-to-Valuation Change	2.0 %
Asset Gain/(Loss)	(30.0)%
Salary Less/(Greater) Than Expected	(0.2)%
Assumption Change (Mortality)	(2.8)%
Other	0.6 %
Total Change	**(30.4)%**
January 1, 2010 Actuarial Valuation	**62.0 %**

Contingent COLA Benefits

The Seattle Municipal Code allows for an increase in the cost-of-living adjustment (COLA) available to current and future retired members. Currently, the Floor COLA is at the 65% level. The enhanced COLA benefit (70% Floor COLA) does not become effective until the System attains at least a 100% funding level.

Since it is unknown when this benefit will become effective, especially given the current funded status of the System, we have not included the valuation of these potential benefit changes in this valuation.

Summary Exhibit

A summary of the key results of this valuation, along with a comparison to the January 1, 2008 valuation is shown in Table 1.

Current Economic Environment

The last several years have been a time of great volatility in the financial and economic markets. The effect of widespread investment losses on public pension plans has been well-publicized, and systems which use Market Value of Assets rather than smoothing gains and losses, such as SCERS, may appear to have been even harder-hit since the recognition of the full impact of these losses is reflected immediately (unlike most other public retirement systems).

While it is important to be aware of current short-term financial and market trends, the actuarial assumptions take a long-term view of the economic and demographic patterns of the System.

We have included an additional section in this valuation report (Section 8) to discuss SCERS' actuarial assumptions in light of the current economic environment, SCERS' current funded status, and options for the phase-in of additional System contributions to pay off the UAAL over a period of 30 years.

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Table 1 Summary of Results

	Valuation January 1, 2010	Valuation January 1, 2008	Percentage Change
I. Total Membership			
A. Active Members	9,071	8,842	2.6%
B. Retired Members & Beneficiaries	5,304	5,201	2.0%
C. Vested Terminated Members	2,006	2,050	(2.1)%
D. Total	16,381	16,093	1.8%
II. Pay Rate as of January 1, 2010			
A. Annual Total ($millions)	$ 597.0	$ 529.1	12.8%
B. Annual Average	$ 65,810	$ 59,835	10.0%
III. Average Monthly Benefit Paid to Current Retirees and Beneficiaries			
A. Service Retirement	$ 1,862	$ 1,781	4.5%
B. Disability Retirement	1,071	1,090	(1.7)%
C. Surviving Spouse and Dependents	1,024	1,057	(3.1)%
D. Total	$ 1,712	$ 1,647	4.0%
IV. Actuarial Accrued Liability			
A. Active Members	$ 1,477.4	$ 1,209.7	22.1%
B. Retired Members	1,062.5	959.9	10.7%
C. Vested Terminated Members	113.9	125.0	(8.9)%
D. Total	$ 2,653.8	$ 2,294.6	15.7%
V. Assets			
A. Market Value of Fund ($millions)	$ 1,645.3	$ 2,119.4	(22.4)%
VI. Unfunded Actuarial Accrued Liability or Surplus Funding ($millions)	$ 1,008.5	$ 175.2	475.8%
VII. Amortization of UAAL			
A. Period Based on Current Contribution	does not amortize	16.2 years	
B. Additional Amount Needed for 30-Year Amortization (as a % of Payroll)	8.97% *	0.00%	
VIII. Funded Ratio	62.0%	92.4%	(32.9)%
IX. Normal Cost as a Percent of Salary	15.23%	13.32%	14.3%

** Total member plus employer contributions. Since member increases are capped at 2.00%, the City would need to make up the remaining 6.97% beginning January 1, 2011.*

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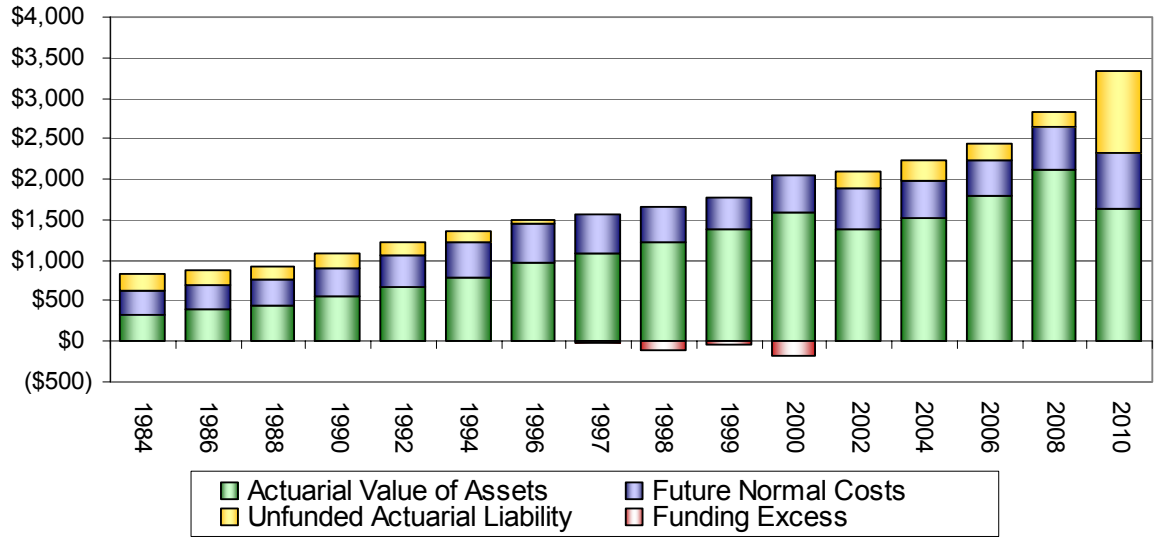
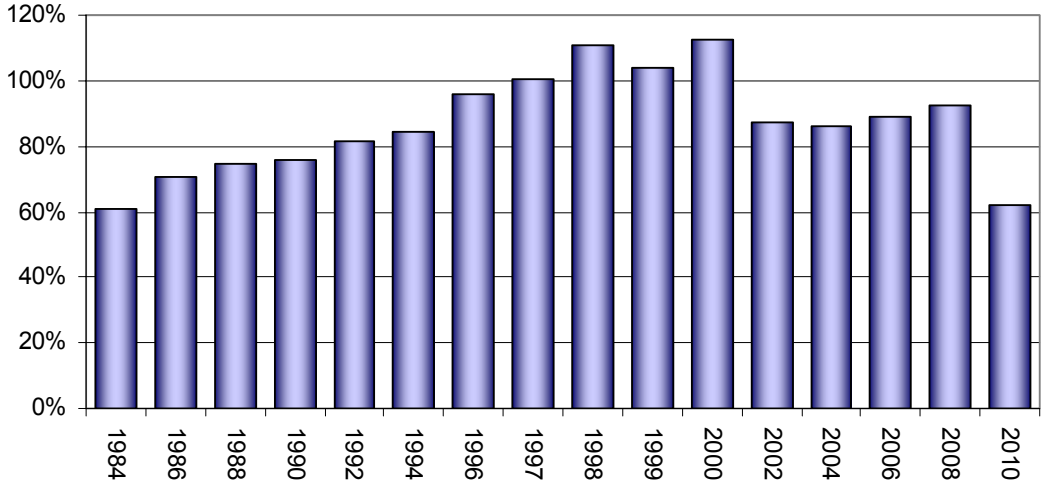
Graph 1 Historical Asset and Liability Comparison



Graph 2 Historical Funding Ratios



Year	(in Millions) PVB	Assets	PVFNC	UAAL	Funding Ratio
1992	1,221.2	660.0	410.7	150.5	81.4%
1994	1,358.9	781.8	432.7	144.4	84.4%
1996	1,492.0	980.2	472.3	39.5	96.1%
1998	1,539.3	1,224.6	433.5	(118.8)	110.7%
2000	1,872.4	1,582.7	469.3	(179.6)	112.8%
2002	2,088.7	1,383.7	507.3	197.7	87.5%
2004	2,229.8	1,527.5	450.9	251.4	85.9%
2006	2,448.5	1,791.8	431.0	225.8	88.8%
2008	2,825.8	2,119.4	531.2	175.2	92.4%
2010	3,328.7	1,645.3	674.9	1,008.5	62.0%

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Section 2 Scope of the Report

This report presents the actuarial valuation of the Seattle City Employees' Retirement System as of January 1, 2010.

A summary of the findings resulting from this valuation is presented in the previous section. Section 3 describes the assets of the System. A summary of the assets is set forth in Table 2. Sections 3, 4, and 5 describe how the obligations of the System are to be met under the actuarial cost method in use.

Section 6 discloses actuarial information based on the requirements of Statements No. 25 and 27 of the Governmental Accounting Standards Board. Section 7 sets forth estimated actuarial gains or losses from the various sources. Section 8 discusses the current status of the System's funding and assumptions in view of recent economic volatility.

Appendix A is a summary of the actuarial procedures and assumptions used to compute the liabilities and contributions shown in this report.

The current benefit structure, as determined by the provisions of the governing law on January 1, 2010, is summarized in Appendix B. Schedules of valuation data classifying the data used in the valuation by various categories of contributing members, former contributing members, and beneficiaries make up Appendix C.

Comparative statistics are presented on the System's membership and contribution rates. Appendix D is a glossary of actuarial terms used in this report.

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Section 3 Assets

In many respects, an actuarial valuation can be regarded as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is January 1, 2010. On that date, the assets available for the payment of benefits are appraised. These assets are compared with the actuarial liabilities, which are generally well in excess of the assets. The actuarial process thus leads to a method of determining what contributions by members and their employers are needed to strike a balance.

This section of the report deals with the asset determination. In the next section, the actuarial liabilities will be discussed. Section 5 will deal with the process for determining required contributions, based on the relationship between the assets and the actuarial liabilities.

Table 2 summarizes the financial resources of the System on January 1, 2010. Of the total assets, a minor portion is set aside for the payment of current liabilities and expenses. Table 2 shows the market value of assets at January 1, 2010 and January 1, 2008. The actuarial value of assets is equal to the market value.

Table 2 Summary of Assets

	January 1,2010		January 1,2008	
	Market Value	Distribution	Market Value	Distribution
Assets				
Cash and short-term investments	29,374,301	1.8%	81,770,726	3.9%
Securities lending collateral	36,491,886	2.2%	103,323,467	4.9%
Receivables				
Employee	745,865	0.0%	1,029,194	0.0%
Employer	2,576,119	0.2%	4,387,860	0.2%
Interest and Dividends	1,824,557	0.1%	2,615,783	0.1%
Total Receivables	5,146,541	0.3%	8,032,837	0.4%
Investments at fair value				
US Government obligations	178,650,109	10.9%	134,906,565	6.4%
Domestic corporate bonds	108,951,282	6.6%	102,791,739	4.9%
Domestic stocks	631,591,667	38.4%	763,843,752	36.0%
International stocks	305,943,218	18.6%	402,965,990	19.0%
Real estate	183,024,765	11.1%	286,646,176	13.5%
Alternative/Venture capital	159,010,143	9.7%	233,789,609	11.0%
Mezzanine debt	57,795,000	3.5%	114,462,620	5.4%
Total investments	1,624,966,184	98.8%	2,039,406,451	96.2%
Equiment	2,273	0.0%	2,963	0.0%
Total assets	1,695,981,185	103.1%	2,232,536,444	105.3%
Liabilities				
Pension & Other payables	10,245,892	-0.6%	9,814,866	-0.5%
Securities lending collateral	40,437,944	-2.5%	103,323,467	-4.9%
Total Liabilities	50,683,836	-3.1%	113,138,333	-5.3%
Market Value of Net Assets Held in Trust For Pension Benefits	**1,645,297,349**	**100.0%**	**2,119,398,111**	**100.0%**

Section 4 Actuarial Liabilities

In the previous section, an actuarial valuation was related to an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, January 1, 2010. In this section, the discussion will focus on the commitments of the System, which will be referred to as its actuarial liabilities.

Table 3 contains an analysis of the actuarial present value of all future benefits for contributing members, for former contributing members, and for beneficiaries. The analysis is given by type of benefit.

The actuarial liabilities summarized in Table 3 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes a measure of both benefits already earned and future benefits to be earned. Thus, for all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and, if an optional benefit is chosen, for the lives of their surviving beneficiaries.

Table 3 **Actuarial Present Value of Future Benefits**
(All dollar amounts in millions)

		January 1, 2010	January 1, 2008
A.	Active Members		
	Service Retirement	$ 2,010.3	$ 1,619.6
	Vested Retirement	58.4	47.1
	Disability Retirement	15.6	12.9
	Survivor Benefits	27.0	27.3
	Refund of Member Contributions	41.0	34.0
	Total	$ 2,152.3	$ 1,740.9
B.	Inactive Members and Annuitants		
	Service Retirement	$ 970.5	$ 864.0
	Disability Retirement	9.5	9.4
	Beneficiaries	82.5	86.5
	Inactive Members	113.9	125.0
	Total	$ 1,176.4	$ 1,084.9
C.	Grand Total	$ 3,328.7	$ 2,825.8

Section 5 Employer Contributions

Funding

As shown in Tables 2 and 3, the total actuarial liability exceeds the current assets. This is to be expected, because the System is anticipating future member and employer contributions. The actuarial valuation develops a contribution method to fund this shortfall.

The actuarial cost method utilized is the Entry Age Actuarial Cost Method. This cost method has two components:

1. A normal cost, and
2. An amortization of the unfunded actuarial accrued liability.

Most actuarial cost methods utilize a cost method with these two components. The vast majority of public pension plans utilize the entry age (EA) actuarial cost method, as does SCERS.

The normal cost under EA is developed so that benefits are funded as a level percentage of payroll for each member from the member's membership date to the member's termination date. One key feature of this method is that costs tend to be stable from year-to-year because most members' entry age cost percentages do not change materially from year-to-year, and because the population does not change considerably from year-to-year. Normal costs by benefit type are shown in Table 4.

The Normal Cost Rate for the January 1, 2010 actuarial valuation is significantly higher than the rate as of the January 1, 2008 valuation. This is because: 1) The longer life expectancies increase the value of benefits, and 2) the higher member contribution rate of 10.03% increases the normal cost attributable to the minimum retirement benefit (2x match) and the refund of employee contributions.

When the present value of future normal costs is subtracted from the present value of total benefits, the result is the actuarial accrued liability. This can also be thought of as the present value of past normal costs, or the amount which would be in the fund if all prior assumptions had been exactly met. To the extent that this actuarial accrued liability exceeds plan assets, an unfunded actuarial accrued liability (UAAL) exists. This is currently the situation for the SCERS.

Actuarial Gains and Losses

Because a UAAL exists, the total System costs must reflect an amortization of this UAAL. In general, a UAAL exists when liabilities increase more than anticipated or assets increase less than anticipated.

Amortization of UAAL

When experience is different from actuarial expectation, an actuarial gain or loss occurs. Section 7 illustrates the historical actuarial gains and losses by source. Note that the large investment losses during 2008 resulted in an actuarial loss on assets of $765.5 million for the two-year period. Ongoing actuarial gains and losses decrease and increase the UAAL. Table 6 compares the 16.06% total contribution rate with the necessary funding components: normal cost and amortization of UAAL. The table shows that the total contribution rate exceeds the normal cost, with the remaining contribution going toward an amortization of the UAAL. The resulting amortization payment of 0.83% is not projected to amortize the UAAL over any period of time as of January 1, 2010. This means that if the contribution rate is not increased, and all actuarial assumptions are met, the UAAL is not projected to be paid off in the future.

The current Retirement Board funding policy states that "if the Funding Ratio is less than 100% and a UAAL occurs which can not be amortized over a period of less than 20 years by the combined total contribution rates, additional employer contributions may be considered." The contribution rates currently in effect do not amortize the UAAL over any period of time. In Section 8 of this report, we discuss optional increases to the contribution rate that would be projected to amortize the UAAL over a period of 30 years.

If SCERS were to immediately (i.e., as of the beginning of the next calendar year) increase the contribution rate to amortize the UAAL over 30 years from January 1, 2010, the Total Contribution Rate would increase from 16.06% of pay to 25.03% of pay. Since this includes the maximum 2.00% increase on the employee contribution rate, the additional employer contribution rate increase needed would be 6.97%. This change is assumed to be effective at January 1, 2011.

Table 4 Normal Cost Contribution Rates as Percentages of Salary

	January 1, 2010	January 1, 2008
Service Retirement	11.57 %	10.23 %
Vested Retirement	1.25	1.00
Disability Retirement	0.18	0.17
Survivor Benefits	0.21	0.21
Refund of Member Contributions	1.62	1.31
Administrative Expenses	0.40	0.40
Total	15.23 %	13.32 %

Table 5 Unfunded Actuarial Accrued Liability

(All dollar amounts in millions)

		January 1, 2010	January 1, 2008
A.	Actuarial present value of all future benefits for present and former members and their survivors (Table 3)	$ 3,328.7	$ 2,825.8
B.	Less actuarial present value of total future normal costs for present members	674.9	531.2
C.	Actuarial accrued liability [A - B]	$ 2,653.8	$ 2,294.6
D.	Less actuarial value of assets available for benefits (Table 2)	1,645.3	2,119.4
E.	Unfunded actuarial accrued liability (Funding Excess, if negative) [C - D]	$ 1,008.5	$ 175.2
F.	Funding Ratio [D ÷ C]	62.0%	92.4%

Table 6 Contribution Rates as Percentages of Salary

		January 1, 2010	January 1, 2008
A.	Employer contribution rate	8.03 %	8.03 %
B.	Member contribution rate	8.03	8.03
C.	Total contribution rate [1]	16.06 %	16.06 %
D.	Less total normal cost rate [2]	15.23	13.32
E.	Excess of contribution rate over normal cost rate	0.83 %	2.74 %
F.	Amortization period	does not amortize	16.2 years
G.	Allocation of employer contribution rate [3]		
	Normal cost	7.20 %	5.29 %
	Amortization payment	0.83	2.74
	Total employer contribution rate	8.03 %	8.03 %

[1] 16.06% is the current rate being contributed as of January 1, 2010. To maintain a 30-year amortization, the rate must be increased as discussed on page 1 of this report.

[2] Reflects anticipated increase in member rate to 10.03% of payroll.

[3] If member contributions are all allocated to paying normal cost.

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Section 6 Actuarial Information for Accounting Purposes

The Governmental Accounting Standards Board (GASB) has issued standards under Statements No. 25 and 27. Statement 25 is required reporting by the plan (the System) and Statement 27 is reporting by state and local governmental employers (the City).

Statement 25 included certain supplementary information:

1. A schedule of funding progress, and
2. A schedule of employer contributions.

The schedule of funding progress is shown in Table 8 and compares assets and liabilities over the years. In particular, it shows the funded ratio and Unfunded Actuarial Accrued Liability (UAAL). As shown by Table 8, the plan was fully funded or nearly fully funded from 1996 through 2000. Because of the poor investment returns of 2000 through 2003, as well as the extreme market downturn of 2008, the plan is not fully funded. In this case, “fully funded” means that assets exceed actuarial accrued liabilities, so that no positive UAAL exists. This can also be seen as a funded ratio in excess of 100%.

The schedule of employer contributions is shown in Table 10, and shows that the employer has consistently made contributions equal or greater to the ARC.

Table 7 develops the Annual Pension Cost (APC) and Net Pension Obligation (NPO). The NPO can be thought of as the accumulated value of APC in excess of employer contributions. Because contributions have exceeded the APC in prior years, a negative NPO has built up. The current Board policy is to set the Actuarial Required Contribution (ARC) equal to the fixed contribution rate, solving for the amortization period.

If the fixed rate is not sufficient to fund the UAAL over a period of 30 years or less, the ARC will be equal to the amount to fund the normal cost for the year plus a 30-year amortization payment of the UAAL. This is the minimum allowed for accounting purposes under current GASB parameters.

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Table 7 GASB Statement No. 27 Annual Pension Cost and Net Pension Obligation

For Fiscal Year Ending December 31, 2009
Based on January 1, 2008 Valuation

		Fiscal Year Ended December 31	
		2008	2009
1a	Total Normal Cost Rate	13.32%	13.32%
1b	Employee Contribution Rate	8.03%	8.03%
1c	Employer Normal Cost Rate (1a - 1b)	5.29%	5.29%
2a	Total Employer Contribution Rate	8.03%	8.03%
2b	Amortization Payment Rate (2a - 1c)	2.74%	2.74%
2c	Amortization Period	16.2	16.2
2d	GASB 27 Amortization Rate	2.74%	2.74%
3	Total Annual Required Contribution (ARC) Rate (1c + 2d)	8.03%	8.03%
4	Covered Employee Payroll**	572,366,625	580,948,555
5a	ARC (3 x 4)	45,961,040	46,650,169
5b	Interest on Net Pension Obligation (NPO)	(6,078,596)	(6,056,564)
5c	ARC Adjustment	6,362,880	6,339,817
5d	Annual Pension Cost (APC) (5a + 5b + 5c)	46,245,324	46,933,422
6	Employer Contribution	45,961,040	46,650,169
7a	Change in NPO (5d - 6)	284,284	283,253
7b	NPO at Beginning of Year	(78,433,500)	(78,149,216)
7c	NPO at End of Year (7a + 7b)	(78,149,216)	(77,865,963)

* *If the amortization period determined by the actual contribution rate exceeds the maximum amortization period required by GASB Statement No. 27, the ARC is determined using an amortization of the UAAL over 30 years.*

** *Covered payroll includes compensation paid to all active employees on which contributions were made in the year preceding the valuation date.*

Table 8 Schedule of Funding Progress

(All dollar amounts in millions)

Actuarial Valuation Date January 1	Actuarial Value of Assets	Actuarial Accrued Liabilities (AAL)	Unfunded Actuarial Accrued Liabilities (UAAL)	Funded Ratio	Covered Payroll[1]	UAAL as a Percentage of Covered Payroll
1984	$ 329.8	$ 544.0	$ 214.2	60.6%	$ 159.4	134.4%
1986	395.7	561.3	165.6	70.5	182.0	91.0
1988	445.4	595.3	149.9	74.8	199.0	75.3
1990	558.8	737.9	179.1	75.7	212.3	84.4
1992	660.0	810.5	150.5	81.4	239.4	62.9
1994	781.8	926.2	144.4	84.4	291.8	49.5
1996	980.2	1,019.7	39.5	96.1	310.6	12.7
1997	1,094.8	1,087.3	(7.5)	100.7	316.9	(2.4)
1998 [2]	1,224.6	1,266.7	42.1	96.7	341.5	12.3
1999	1,375.0	1,326.6	(48.4)	103.6	370.4	(13.1)
2000	1,582.7	1,403.1	(179.6)	112.8	383.6	(46.5)
2002	1,383.7	1,581.4	197.7	87.5	405.1	48.8
2004	1,527.5	1,778.9	251.4	85.9	424.7	59.2
2006	1,791.8	2,017.5	225.8	88.8	447.0	50.5
2008	2,119.4	2,294.6	175.2	92.4	501.9	34.9
2010	1,645.3	2,653.8	1,008.5	62.0	580.9	173.6

[1] *Covered Payroll includes compensation paid to all active employees on which contributions are calculated. Covered Payroll differs from the Active Member Valuation Payroll shown in Table 1, which is an annualized compensation of only those members who were active on the actuarial valuation date.*

[2] *Reflects increased COLA benefits adopted by the City Council after the valuation was completed.*

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Table 9 Solvency Test

(All dollar amounts in millions)

Actuarial Valuation Date January 1	Actuarial Value of Valuation Assets	Actuarial Accrued Liabilities for (A) Active Member Contributions	(B) Inactives, Retirees and Beneficiaries	(C) Active Members (Employer Financed Portion)	(D) Total	Portion of Actuarial Accrued Liabilities Covered by Assets (A)	(B)	(C)	(D)
1984	$ 329.8	$ 90.1	$ 243.0	$ 210.9	$ 544.0	100.0%	98.6%	0.0%	60.6%
1986	395.7	110.7	263.1	187.5	561.3	100.0	100.0	11.7	70.5
1988	445.4	136.0	303.6	155.7	595.3	100.0	100.0	3.7	74.8
1990	558.8	164.0	332.8	241.1	737.9	100.0	100.0	25.7	75.7
1992	660.0	202.6	357.9	250.0	810.5	100.0	100.0	39.8	81.4
1994	781.8	248.4	383.1	294.7	926.2	100.0	100.0	51.0	84.4
1996	980.2	294.1	409.3	316.3	1,019.7	100.0	100.0	87.5	96.1
1997	1,094.8	313.1	449.8	324.4	1,087.3	100.0	100.0	100.0	100.7
1998 [1]	1,224.6	337.3	551.8	377.6	1,266.7	100.0	100.0	88.9	96.7
1999	1,375.0	358.4	577.6	390.6	1,326.6	100.0	100.0	100.0	103.6
2000	1,582.7	385.2	599.4	418.5	1,403.1	100.0	100.0	100.0	112.8
2002	1,383.7	434.3	675.6	471.5	1,581.4	100.0	100.0	58.1	87.5
2004	1,527.5	482.5	758.9	537.5	1,778.9	100.0	100.0	53.2	85.9
2006	1,791.8	539.7	902.2	575.6	2,017.5	100.0	100.0	60.8	88.8
2008	2,119.4	590.1	1,084.9	619.6	2,294.6	100.0	100.0	71.7	92.4
2010	1,645.3	684.7	1,176.4	792.7	2,653.8	100.0	81.7	0.0	62.0

[1] *Reflects increased COLA benefits adopted by the City Council after the valuation was completed.*

Table 10 Schedule of Employer Contributions

(All dollar amounts in millions)

Fiscal Year Ending December 31	Covered Employee Payroll[1]	Actual Employer Contributions[2]	Actual Employer Contribution %[3]	Annual Required Contribution (ARC) %[4]	Percentage of ARC Contributed
1989	$ 212.3	$ 25.1	8.91%	8.91%	$ 159.4
1990	243.2	21.8	8.91	8.91	100.0
1991	239.4	21.5	8.91	8.91	100.0
1992	280.4	25.1	8.91	8.91	100.0
1993	291.8	26.1	8.91	8.91	100.0
1994	298.0	26.7	8.91	8.91	100.0
1995	310.6	27.8	8.91	8.91	100.0
1996	316.9	28.4	8.91	8.91	100.0
1997	316.3	28.3	8.91	8.91	100.0
1998 [4]	341.5	30.6	8.91	8.91	100.0
1999	370.4	29.7	8.03	4.50	178.0
2000	383.6	30.8	8.03	4.50	178.0
2001	405.1	32.7	8.03	3.04	264.0
2002	454.5	36.6	8.03	3.04	264.0
2003	424.7	34.2	8.03	8.03	100.0
2004	456.8	36.7	8.03	8.03	100.0
2005	447.0	35.9	8.03	8.03	100.0
2006	472.5	37.9	8.03	8.03	100.0
2007	501.9	40.3	8.03	8.03	100.0
2008	572.4	46.0	8.03	8.03	100.0
2009	580.9	46.7	8.03	8.03	100.0

[1] *Computed as the dollar amount of the actual employer contribution made as a percentage of payroll divided by the contribution rate, expressed as a percentage of payroll.*

[2] *The actual and required employer contributions are expressed as a percentage of payroll, after first recognizing the $12 per employee assessment made the death benefits. This assessment per employee is included in the actual employer contributions reported and has been previously recognized by the actuary in determining the ARC.*

[3] *The City makes employer contributions as a percentage of actual payroll as set in the City Ordinance. Thus, as long as the percentage equals the percentage required by the most recent actuarial valuation, the dollar amount of the Annual Required Contributions (ARC) is equal to the actual dollar amount of the employer contributions. The City Ordinance does not permit a reduction in the employer contribution rate less than the employee contribution rate. Thus, the City's contributions exceeded the ARC for 1999 through 2001 and resulted in a negative NPO amount.*

[4] *ARC reflects the increased COLA benefits adopted in 1998.*

Table 11 GASB Statement No. 27 Five-Year Trend Information

Fiscal Year Ending	Annual Pension Cost (APC)	Contribution as a Percentage of APC	Net Pension Obligation (NPO)
December 31, 2005	34,094,865	105%	(78,064,047)
December 31, 2006	37,754,849	100%	(78,248,556)
December 31, 2007	40,114,562	100%	(78,433,500)
December 31, 2008	46,245,324	99%	(78,149,216)
December 31, 2009	46,933,422	99%	(77,865,963)

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Table 12 GASB Statement No. 27 Annual Development of Pension Cost

Fiscal Year Ending	ARC at EOY	Interest on NPO	ARC Adjustment	Annual Pension Cost (APC)	Total Employer Contributions	Change in NPO	NPO Balance	Gain/Loss	Amort. Factor	Amort. Of Gain/Loss	Ending Balance
December 31, 2005	35,897,345	(5,910,271)	4,107,791	34,094,865	35,897,345	(1,802,480)	(78,064,047)	-	18.49780	(4,107,791)	(78,064,047)
December 31, 2006	37,939,358	(6,049,964)	5,865,455	37,754,849	37,939,358	(184,509)	(78,248,556)	-	13.30912	(5,865,455)	(78,248,556)
December 31, 2007	40,299,506	(6,064,263)	5,879,319	40,114,562	40,299,506	(184,944)	(78,433,500)	-	13.30912	(5,879,319)	(78,433,500)
December 31, 2008	45,961,040	(6,078,596)	6,362,880	46,245,324	45,961,040	284,284	(78,149,216)	-	12.32673	(6,362,880)	(78,149,216)
December 31, 2009	46,650,169	(6,056,564)	6,339,817	46,933,422	46,650,169	283,253	(77,865,963)	-	12.32673	(6,339,817)	(77,865,963)

Amortization Period: Open 30 years, unless fixed rate amortizes in less than 30 years.
Amortization Method: Level Percentage of Projected Payroll.

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Section 7 Actuarial Gains or Losses

An analysis of actuarial gains or losses was performed in conjunction with the January 1, 2006, January 1, 2008 and January 1, 2010 actuarial valuations.

The results of our analysis of the financial experience of the System in the three most recent actuarial valuations are presented in Table 13. Each gain or loss shown represents our estimate of how much the given type of experience caused the UAAL to change in the two-year period since the previous actuarial valuation.

Gains and losses due to demographic sources are approximate. Demographic experience is analyzed in greater detail in our periodic assumption studies.

Table 13 Analysis of Actuarial Gains or Losses

(All dollar amounts in millions)*

	Gain (Loss) for Period		
	2008-2009	2006-2007	2004-2005
Investment Income. Investment income was greater (less) than expected.	$(765.5)	$ 93.7	$ 54.5
Pay Increases. Pay increases were less (greater) than expected.	(6.4)	(15.2)	23.0
Age and Service Retirements. Members retired at older (younger) ages or with less (greater) final average pay than expected.	2.1	2.8	(6.2)
Disability Retirements. Disability claims were less (greater) than expected.	(0.3)	(0.4)	(0.3)
Death-in-Service Benefits. Survivor claims were less (greater) than expected.	0.0	0.0	0.9
Withdrawal from Employment. More (less) reserves were released by withdrawals than expected.	34.8	7.4	(8.1)
Death after Retirement. Retirees died younger (lived longer) than expected.	(3.9)	(12.8)	(8.3)
Total Gain or (Loss) during Period from Financial Experience.	$(739.2)	$75.6	$ 55.5
Nonrecurring Items:			
Changes in actuarial assumptions and plan amendments caused a gain (loss).	(119.1)	(43.6)	(17.9)
Change in actuarial asset valuation method caused a gain (loss).	N/A	N/A	N/A
Composite Gain (Loss) during Period.	$(858.3)	$32.0	$ 37.6

* *Effects related to losses are shown in parentheses. Numerical results are expressed as a decrease (increase) in the UAAL.*

Section 8 Current Economic Environment

The last several years have been a time of great volatility in the financial and economic markets. The effect of widespread investment losses on public pension plans has been well-publicized, and systems which use Market Value of Assets rather than smoothing gains and losses, such as SCERS, may appear to have been even harder-hit since the recognition of the full impact of these losses is reflected immediately.

While it is important to be aware of current short-term financial and market trends, the actuarial assumptions take a long-term view of the economic and demographic patterns of the System.

Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance for actuaries on selecting economic assumptions for measuring obligations under defined benefit plans. Because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience.

Investment Return and Price Inflation Assumptions

The investment return assumption is one of the primary determinants in the calculation of the expected cost of the System's benefits, as it is used to discount future benefit payments to reflect the time value of money. This assumption has a direct impact on the calculation of liabilities, normal costs, member contribution rates, and the factors for optional forms of benefits. The current investment return assumption for SCERS is 7.75%.

Price inflation (hereafter referred to as "inflation") is an economic assumption closely tied to the investment return assumption. The inflation assumption has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment return, general wage increases and the payroll increase assumption. It also has a direct impact on the valuation results as it is used to determine the expected floor COLA payment. The current price inflation assumption for SCERS is 3.50% per year.

Investment Return and Price Inflation Assumptions (continued)

The economic and active demographic assumptions will be studied in detail in 2011. To illustrate the possible impact of alternative economic scenarios, we have performed a sensitivity analysis of the results of the January 1, 2010 actuarial valuation.

Table 14 below shows the results of 1) lowering the investment return assumption to 7.0%, and 2) lowering the investment return assumption to 7.0%, while also lowering the inflation (CPI) assumption to 3.0%. Note the only direct impact inflation has on SCERS' funding is on the Floor COLA, but it can also have an indirect impact if it effects the wage increase or the investment return. In the second scenario, the reduction of 0.5% in the inflation assumption is assumed to result in a 0.5% reduction to the Wage Growth assumption.

The choice of 7.0% for this analysis does not mean we are advocating a change to this investment return assumption. Table 14 is shown only to illustrate the sensitivity of the valuation results to a lower investment return assumption.

As can be seen in the table, there is a significant impact on the expected contributions needed if the expected investment return is lowered. Lowering the expected increase in wages has a much smaller impact.

Table 14 Interest Sensitivity of January 1, 2010 Valuation Results

	Valuation 2010	Alt Scenario #1	Alt Scenario #2
Interest Return	**7.75%**	**7.00%**	**7.00%**
CPI	**3.50%**	**3.50%**	**3.00%**
Wage Inflation	**4.00%**	**4.00%**	**3.50%**
Normal Cost as a Percent of Salary	15.23%	17.79%	17.33%
Total Contribution Rate *	25.03%	29.00%	28.75%
Funded Ratio	62.0%	56.8%	57.8%

** Rate needed to fund the UAAL over 30 years, assuming full increase takes effect on January 1, 2011.*

Contribution Increases

As discussed in this report, the current contribution rate is not sufficient to amortize the UAAL over any projected period of time. If the entire contribution rate increase needed to amortize the UAAL over 30 years were to be implemented on January 1, 2011, an 8.97% increase would be required (resulting in a Total Contribution Rate of 25.03%). This increase reflects both employer and member contributions. Since the member increases are capped at 2.00%, the employer increase required would be 6.97% of pay. The current funded status of the System is 62.0%.

Many other public retirement systems are facing similar drops in their Funding Ratio and rising required contribution rates as the large investment losses are recognized in actuarial valuations. Due to serious budget constraints, not all are able to immediately implement necessary contribution rate increases. SCERS has asked us to provide a schedule of step increases that would ultimately lead to a projected 30 year amortization of the UAAL. Using an approach with graduated increases results in a slightly higher ultimate Total Contribution Rate due to the deferral of the increases.

The following tables shows scheduled employer contribution rate increases of 2.0% per year (with an additional 2.0% member contribution beginning in the first year), the following schedule of total contribution rates would be required to achieve a 30-year amortization of the UAAL as of the valuation date:

Effective Date of Contribution Rate		Total Contribution Rate	Total Increase	Employer Increase
January 1, 2010		16.06%	0.00%	0.00%
January 1, 2011		20.06%	4.00% *	2.00%
January 1, 2012		22.06%	6.00%	4.00%
January 1, 2013		24.06%	8.00%	6.00%
January 1, 2014	**	25.59%	9.53%	7.53%

** 2011 increase includes 2.00% employer increase and a 2.00% member increase.*

*** Total Contribution Rate remains at 25.59% until January 1, 2040.*

Demographic Factors

There may be some short-term fluctuations in demographic experience due to the current economic environment; however, we do not foresee the impact on SCERS' funding to be significant unless there are dramatic changes. The impact on two of the key demographic assumptions would likely be as follows:

- **Termination**: If actual termination rates are lower than assumed, it would be expected that the contribution rate needed would rise and the Funding Ratio would decline (all other things being equal).
- **Retirement**: If actual retirement rates are lower than assumed, it would be expected that the contribution rate needed would rise and the Funding Ratio would decline (all other things being equal).

Appendix A Actuarial Procedures and Assumptions

This section of the report describes the actuarial procedures and assumptions used in this valuation. The assumptions used in this valuation were adopted by the SCERS Board at their May, 2008 meeting, with the exception of the mortality assumptions, which were adopted by the SCERS Board at their January, 2010 meeting.

The actuarial assumptions used in the valuation are intended to estimate the future experience of the members of the System and of the System itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of the System's benefits. Table A-1 summarizes the actuarial assumptions.

Table A-2 presents expected annual salary increases for various years of service. Tables A-3 through A-6 show rates of decrement for service retirement, disablement, mortality, and other terminations of employment. Table A-7 shows probabilities of vesting upon termination.

Actuarial Cost Method

The actuarial valuation was prepared using the entry age actuarial cost method. Under this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets, and (b) the actuarial present value of future normal costs is called the unfunded actuarial accrued liability or UAAL. The UAAL is amortized as a level percentage of the projected salaries of present and future members of the System.

Records and Data	The data used in the valuation consist of financial information; records of age, sex, service, salary, and contribution rates and account balances of contributing members; and records of age, sex, and amount of benefit for retired members and beneficiaries. All of the data were supplied by the System and are accepted for valuation purposes without audit.
Replacement of Terminated Members	The ages at entry and distribution by sex of future members are assumed to average the same as those of the present members they replace. If the number of active members should increase, it is further assumed that the average entry age of the larger group will be the same, from an actuarial standpoint, as that of the present group. Under these assumptions, the normal cost rates for active members will not vary with the termination of present members.
Employer Contributions	At the time of this valuation, the total employer contribution rate for normal costs and amortization of the UAAL was 8.03% of members' salaries.
Administrative Expense	The annual contribution assumed to be necessary to meet general administrative expenses of the system, excluding investment expenses, is 0.40% of members' salaries. This figure is included in the calculation of the normal cost rate.
Valuation of Assets	All assets are valued at market as of the valuation date, January 1, 2010.
Investment Earnings	The annual rate of investment earnings of the assets of the System is assumed to be 7.75%. This rate is compounded annually and is net of investment expenses.
Postretirement Benefit Increases	Postretirement benefit increases include: ■ Automatic 1.5% Annual COLA – This benefit applies to all members. ■ 65% Restoration of Purchasing Power (ROPP) – The member's benefit is the greater of 65% of the annual initial benefit adjusted for CPI or their applicable benefit. This minimum benefit is available to all retirees and beneficiaries. The financial impact of the ROPP benefit is valued assuming an annual price inflation rate of 3.5%.

Postretirement Benefit Increases (continued)	Additional contingent COLA increases that were adopted in 2001, but will not be effective until the System reaches at least a 100% Funding Ratio, are not included in the valuation results.
Future Salaries	Table A-2 illustrates the rates of future salary increases assumed for the purpose of the valuation. In addition to increases in salary due to promotions and longevity, this scale includes an assumed 4.0% per annum rate of increase in the general wage level of the membership.
Service Retirement	Table A-3 shows the annual assumed rates of retirement among members eligible for service retirement or reduced retirement. Separate rates are also used during the first year a member is eligible for service retirement.
Disablement	The rates of disablement used in this valuation are illustrated in Table A-4. It is assumed that one-third of all disabilities are duty related and two-thirds occur while off duty.
Mortality	The mortality rates used in this valuation are illustrated in Table A-5. A written description of each table used is included in Table A-1.
Other Terminations of Employment	The rates of assumed future withdrawal from active service for reasons other than death, disability or retirement are shown for representative ages in Table A-6. Note that this assumption only applies to members who terminate and are not yet eligible for retirement.
Probability of Refund	Terminating members may forfeit a vested right to a deferred benefit if they elect a refund of their accumulated contributions. Table A-7 gives the assumed probability, at selected ages, that a terminating member will elect to receive a refund of his accumulated contributions instead of a deferred benefit. If a member terminates with more than 20 years of service, there is assumed to be a 20% probability that the member will elect a refund. Note that the probability of refund assumption only applies to members who terminate with a vested benefit and are not yet eligible for retirement.
Interest on Member Contributions	Interest on member contributions is assumed to accrue at a rate of 5.75% per annum, compounded annually.

Portability	The cost of portability with other public retirement systems is not included in this valuation.
Probability of Marriage	We assumed 60% of the active members are married or have a registered domestic partner.
Commencement for Terminated Vested Members	Vested members who terminate but elect to leave their contributions in the System are assumed to commence receiving benefits at age 62.

Table A-1 Summary of Valuation Assumptions as of January 1, 2010

I.	Economic assumptions	
	A. Price inflation	3.50%
	B. General wage increases	4.00
	C. Investment return	7.75
	D. Increase in membership	0.00
	E. Interest on member accounts	5.75
II.	Demographic assumptions	
	A. Salary increases due to promotion and longevity	Table A-2
	B. Retirement	Table A-3
	C. Disablement	Table A-4
	D. Mortality* among contributing members Men RP 2000 Employees Table for Males, with ages set back one year. Women RP 2000 Employees Table for Females, with ages set back one year.	Table A-5
	E. Mortality* among service retired members and beneficiaries Men RP2000 Combined Healthy Males, with ages set back one year. Women RP2000 Combined Healthy Females, with ages set back one year.	Table A-5
	F. Mortality* among disabled members Men RP2000 Disabled Males, with ages set back four years. Women RP2000 Disabled Females, with ages set back four years.	Table A-5
	G. Other terminations of employment	Table A-6
	H. Probabilities of vesting on termination	Table A-7

** All mortality tables are generational using Projection Scale AA*

Table A-2 Future Salaries

Years of Service	Annual Rate of Increase: Promotion and Longevity	Annual Rate of Increase: Total
0 to 1	5.75%	9.98%
1 to 2	4.75	8.94
2 to 3	3.75	7.90
3 to 4	2.75	6.86
4 to 5	2.25	6.34
9 to 10	1.00	5.04
14 to 15	0.50	4.52
19 to 20	0.29	4.30
24 to 25	0.25	4.26
29 to 30	0.25	4.26
35 or more	0.25	4.26

Table A-3 Retirement

	Annual Probability					
	Men			Women		
		Eligible for Full Benefits			Eligible for Full Benefits	
Age	Eligible for Reduced Benefits	Less than 30 years of service	30 years or more of service	Eligible for Reduced Benefits	Less than 30 years of service	30 years or more of service
Less than 50			8.0%			10.0%
50			10.0			12.0
51		10.0%	10.0		10.0%	12.0
52	6.0%	12.0	12.0	5.0%	12.0	12.0
53	6.0	10.0	12.0	5.0	12.0	12.0
54	6.0	10.0	12.0	5.0	12.0	15.0
55	6.0	12.0	15.0	5.0	12.0	20.0
56	6.0	10.0	12.0	5.0	12.0	15.0
57	6.0	10.0	12.0	5.0	12.0	15.0
58	6.0	10.0	15.0	6.0	15.0	15.0
59	7.0	12.0	15.0	8.0	15.0	15.0
60	10.0	18.0	20.0	10.0	18.0	20.0
61	15.0	18.0	20.0	14.0	18.0	20.0
62	18.0	35.0	35.0	24.0	35.0	35.0
63	15.0	25.0	25.0	15.0	25.0	25.0
64	15.0	25.0	25.0	15.0	25.0	25.0
65		50.0	50.0		50.0	50.0
66		30.0	30.0		30.0	30.0
67		30.0	30.0		30.0	30.0
68		30.0	30.0		30.0	30.0
69		30.0	30.0		30.0	30.0
70		*	*		*	*

* *Immediate retirement is assumed for every person age 70 or over.*

Table A-4 Disablement*

Age	Annual Rates	
	Men	Women
20	.00%	.00%
25	.00	.00
30	.05	.05
35	.05	.05
40	.07	.07
45	.07	.07
50	.10	.10
55	.10	.10
60	.10	.10
65	.00	.00

**It is assumed that one-third of all disabilities are duty related and two-thirds are non-duty related.*

Table A-5 Mortality

	Annual Probability*					
	Contributing Members		Members Retired for Service and Beneficiaries of Members		Disabled Members	
Age	Men	Women	Men	Women	Men	Women
22	0.04 %	0.02 %	0.04 %	0.02 %	2.26 %	0.74 %
27	0.04	0.02	0.04	0.02	2.26	0.74
32	0.05	0.03	0.05	0.03	2.26	0.74
37	0.08	0.05	0.08	0.05	2.26	0.74
42	0.11	0.08	0.11	0.08	2.26	0.74
47	0.16	0.12	0.16	0.12	2.26	0.74
52	0.23	0.18	0.24	0.19	2.64	0.98
57	0.33	0.28	0.42	0.31	3.29	1.45
62	0.54	0.43	0.77	0.58	3.93	1.97
67	0.81	0.62	1.44	1.10	4.66	2.53
72	N/A	N/A	2.46	1.86	5.69	3.32
77	N/A	N/A	4.22	3.10	7.33	4.58
82	N/A	N/A	7.20	5.08	9.76	6.35
87	N/A	N/A	12.28	8.64	12.83	8.78
92	N/A	N/A	19.98	14.46	16.22	12.25

**The mortality rates shown above are generationally projected on an individual basis using Projection Scale AA for the valuation.*

Table A-6 Other Terminations of Employment Among Members Not Eligible to Retire

Years of Service	Annual Rates for Men	Annual Rates for Women
0 to 1	11.0%	13.0%
1 to 2	10.0	11.5
2 to 3	9.0	10.3
3 to 4	8.0	9.0
4 to 5	7.0	8.0
5 to 6	6.0	7.0
6 to 7	5.3	6.3
7 to 8	4.6	5.7
8 to 9	4.0	5.1
9 to 10	3.5	4.5
10 to 11	3.1	4.0
11 to 12	2.8	3.5
12 to 13	2.5	3.0
13 to 14	2.3	2.6
14 to 15	2.0	2.3
15 to 16	1.8	2.0
16 to 17	1.6	1.8
17 to 18	1.4	1.5
18 to 19	1.3	1.3
19 to 20	1.1	1.1
20 to 21	1.0	1.0
21 to 22	0.9	0.9
22 to 23	0.9	0.9
23 to 24	0.8	0.8
24 to 25	0.8	0.8
25 to 26	0.7	0.7
26 to 27	0.7	0.7
27 to 28	0.6	0.6
28 to 29	0.6	0.6
29 to 30	0.5	0.5
30 and up	0.5	0.5

Table A-7 Probability of Refund

Age	Probabilities of Refund upon Termination*
25	85.0%
30	75.0
35	65.0
40	55.0
45	45.0
50	40.0
55	35.0
60	30.0

**If service is 20 or more years at termination, probability of refund is equal to 20%.*

Appendix B Provisions of Governing Law

All actuarial calculations are based upon our understanding of the provisions governing the Seattle City Employees' Retirement System, Chapter 4.36 of the Seattle City Code. The benefit and contribution provisions are summarized briefly below, along with corresponding references to the City code. This summary encompasses the major provisions of the System; it does not attempt to cover all of the detailed provisions.

Effective Date

The effective date of the retirement system was July 1, 1929. (Section 4.36.080)

Members' Contribution Rate

The members' contribution rate is currently 8.03% of salary. Certain members who were contributing at a lower rate on June 23, 1972 continue to contribute at a lower rate. (Section 4.36.110A)

Note: For purposes of the valuation, rates are assumed to increase by 2.00% in the future to reflect recent negotiated changes and the current funded situation.

City Contribution Rate

The City contribution rate is the amount that is actuarially determined to be necessary to fund that portion of the retirement allowances not covered by the members' contributions. This amount shall be at least the members' contribution rate and is currently 8.03%. (Sections 4.36.110C and 4.36.170)

Final Compensation

Final compensation is based on highest average compensation (excluding overtime) during any consecutive 24 months. (Sections 4.36.040C and 4.36.050B)

Service Retirement

Eligibility	30 years of service;
	Age 52 and 20 years of service;
	Age 57 and 10 years of service; or
	Age 62 and 5 years of service.
Normal Form	Straight life benefit.
Optional Forms	Actuarial equivalent according to the mortality and interest basis adopted by the Retirement Board for such purposes.

Service Retirement (continued)

Amount of Allowance The total monthly allowance is generally 2% times final compensation times total years of creditable service.

However, if the member does not qualify in one of the following ways, the 2% factor is reduced by 0.1% for each year that retirement precedes the earliest date the member would be:

(a) any age with 30 years of service;

(b) age 51-59, providing the member's age and years of service total 80 or more;

(c) age 60 or older with 20 years of service; or

(d) age 65 or older with 5 years of service.

The reduction is somewhat less than 0.1% for members with less than 20 years of service.

For those hired on or after January 1, 1988, creditable service excludes the first six months of service.

Maximum Allowance The formula-based retirement allowance (as described above) of any member shall be limited to 60% of final compensation, except where the minimum allowance described below applies.

Minimum Allowance A monthly benefit based on twice the actuarial value of accumulated member contributions. This is not subject to the 60% of final compensation maximum.

(Sections 4.36.200, 4.36.210 and 4.36.260)

Note: Effective January 1, 2011, the conversion of the contributions to an annuity benefit in the minimum allowance reflects option factors that use the new mortality rates.

Disability Retirement	*Eligibility*	Ten years of service credited within the 15 years preceding disability retirement. If disablement occurs in the course of City employment, there is no service requirement.
	Normal Form	Modified cash refund annuity. An optional survivor's benefit is available if the spouse is the beneficiary.
	Amount of Allowance	The total monthly disability allowance is the greater of: (a) 1.5% times final compensation times completed years of creditable service; and (b) 1.5% times final compensation times total years of creditable service that could have been earned to age 62, but not to exceed one-third of final compensation.
	Maximum Allowance	The maximum disability allowance is 60% of final compensation.
	Minimum Allowance	The minimum disability allowance is $140 per month.
	(Sections 4.36.220 and 4.36.230)	
Death Benefits	*Retired Members*	Death benefits to retired members are payable according to the form of retirement allowance elected.
	Active Members	(a) Payment to the beneficiary of accumulated contributions, including interest; or (b) If the member had completed 10 years of service at the time of death, a surviving spouse or a registered domestic partner may elect to receive, in place of (a) above, either: (1) a monthly allowance for life equal to the benefit the spouse would have received had the member just retired with a 100% contingent annuitant option in force; or (2) a cash payment of no more than one-half of the member's accumulated contributions, along with a correspondingly reduced retirement allowance.
	(Section 4.36.270)	

Withdrawal Benefits	*Form*	Payment of accumulated contributions, with interest.
	(Section 4.36.190)	
Vested Withdrawal Benefits	*Eligibility*	Five years of service.
	Amount of Allowance	Same as service retirement benefit.
	Benefits Commence	Age 52, if 20 or more years of service; Age 57, if 10 - 19 years of service; or Age 62, otherwise.
	(Section 4.36.200)	
Postretirement Benefit Increases	*Provisions*	Effective January 1, 2007, the City Council adopted a 65% Restoration of Purchasing Power benefit and an automatic 1.5% annual COLA to all members. If the System reaches a 100% Funding Ratio, the restoration amount increases to 70%.
	(Sections 4.36.155 and 4.36.215)	
Death Benefit System	*Eligibility*	Mandatory for all active members; optional for retired members.
	Benefits	$2,000 upon the death of an active member or a participating retired member.
	Assessment	Members pay an assessment of $12 per year; the City pays a matching amount. If these assessments are not adequate, additional amounts may be transferred from the interest earnings in the retirement fund.
	(Sections 4.36.320 and 4.36.330)	
Additional Contributions	*Provisions*	Members may voluntarily make contributions in excess of the regular 8.03% rate; these are make-up contributions that apply only in specific situations.
	Retirement Benefit	A monthly annuity which is the actuarial equivalent of accumulated additional contributions with interest.
	Other Benefits	Accumulated additional contributions, with interest, generally become payable upon termination other than retirement.
	(Sections 4.36.030 and 4.36.210)	

Appendix C Valuation Data

This valuation is based upon the membership of the system as of January 1, 2010. Membership data were supplied by the System and accepted for valuation purposes without audit. However, extensive tests were performed to ensure that the data are sufficiently accurate for valuation purposes.

The data for all contributing members, former contributing members, and their survivors are summarized in Table C-1.

Tables C-2 through C-4 present distributions of members receiving service retirement benefits, members receiving disability retirement benefits, and survivors receiving benefits. Shown in the tables are the numbers of persons receiving benefits, the total annual benefits received (including payments for the annual bonus), and the average annual benefit per recipient.

Table C-5 contains summaries of the data for contributing members. Values shown in the tables are the numbers of members and their total and average annual salaries.

The valuation also includes liabilities attributable to members who have terminated employment but have neither retired nor withdrawn their contributions.

Seattle City Employees' Retirement System
Actuarial Valuation

Table C-1 Summary of Membership Data

	Contributing Members			Annuitants		
	Number	Annual Salaries ($1,000)	Average Annual Salaries	Number	Annual Benefits ($1,000)	Average Annual Benefits
January 1, 2010	9,071	$ 596,892	$ 65,802	5,304	$ 108,886	$ 20,529
January 1, 2008	8,842	529,062	59,835	5,201	102,772	19,760
January 1, 2006	8,521	468,096	54,934	5,011	83,988	16,761
January 1, 2004	8,382	441,562	52,680	4,876	74,341	15,246
January 1, 2002	8,758	418,908	47,831	4,733	61,801	13,058
January 1, 2000	8,669	382,620	44,137	4,681	55,542	11,865
January 1, 1999	7,779	333,984	42,934	4,644	52,482	11,301
January 1, 1998	7,926	329,028	41,512	4,649	50,394	10,840
January 1, 1996	8,078	314,448	38,926	4,619	44,271	9,585

Seattle City Employees' Retirement System
Actuarial Valuation

Inactive Lives

Table C-2 Members Receiving Service Retirement Benefits as of January 1, 2010

	<50	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Totals
Number of Persons											
Male	0	25	156	453	592	446	317	298	255	143	2,685
Female	0	20	165	357	312	228	152	146	150	131	1,661
Total	0	45	321	810	904	674	469	444	405	274	4,346
Annual Benefits in Thousands											
Male	$ 0	$ 919	$ 5,159	$ 13,373	$ 15,108	$ 10,137	$ 7,034	$ 6,387	$ 4,551	$ 2,479	$ 65,147
Female	0	614	4,786	9,046	6,114	4,116	2,563	2,021	1,473	1,247	31,980
Total	0	1,533	9,945	22,419	21,222	14,253	9,597	8,408	6,024	3,726	97,127
Average Annual Benefits											
Male	$ 0	$ 36,760	$ 33,071	$ 29,521	$ 25,520	$ 22,729	$ 22,189	$ 21,433	$ 17,847	$ 17,336	$ 24,263
Female	0	30,700	29,006	25,339	19,596	18,053	16,862	13,842	9,820	9,519	19,253
Total	0	34,067	30,981	27,678	23,476	21,147	20,463	18,937	14,874	13,599	22,349

Seattle City Employees' Retirement System
Actuarial Valuation

Inactive Lives

Table C-3 Members Receiving Disability Retirement Benefits as of January 1, 2010

	<50	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Totals
Number of Persons											
Male	1	2	4	7	3	4	5	2	4	3	35
Female	3	9	7	4	4	3	1	0	1	0	32
Total	4	11	11	11	7	7	6	2	5	3	67
Annual Benefits in Thousands											
Male	$ 16	$ 25	$ 65	$ 95	$ 30	$ 47	$ 60	$ 15	$ 42	$ 29	$ 424
Female	37	145	90	63	38	30	11	0	10	0	424
Total	53	170	155	158	68	77	71	15	52	29	848
Average Annual Benefits											
Male	$ 16,000	$ 12,500	$ 16,250	$ 13,571	$ 10,000	$ 11,750	$ 12,000	$ 7,500	$ 10,500	$ 9,667	$ 12,114
Female	12,333	16,111	12,857	15,750	9,500	10,000	11,000	0	10,000	0	13,250
Total	13,250	15,455	14,091	14,364	9,714	11,000	11,833	7,500	10,400	9,667	12,657

Seattle City Employees' Retirement System
Actuarial Valuation

Inactive Lives

Table C-4 Survivors Receiving Retirement Benefits as of January 1, 2010*

	<50	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Totals
Number of Persons											
Male	0	2	8	4	8	3	4	7	4	3	43
Female	8	10	26	46	42	55	81	135	186	171	760
Total	8	12	34	50	50	58	85	142	190	174	803
Annual Benefits in Thousands											
Male	$ 0	$ 18	$ 79	$ 35	$ 103	$ 24	$ 29	$ 59	$ 21	$ 11	$ 379
Female	73	146	358	702	617	814	1,088	1,668	2,179	1,610	9,255
Total	73	164	437	737	720	838	1,117	1,727	2,200	1,621	9,634
Average Annual Benefits											
Male	$ 0	$ 9,000	$ 9,875	$ 8,750	$ 12,875	$ 8,000	$ 7,250	$ 8,429	$ 5,250	$ 3,667	$ 8,814
Female	9,125	14,600	13,769	15,261	14,690	14,800	13,432	12,356	11,715	9,415	12,178
Total	9,125	13,667	12,853	14,740	14,400	14,448	13,141	12,162	11,579	9,316	11,998

* *In addition, 27 male survivors are receiving $303,548 and 61 female survivors are receiving $973,889 in Option B or Option C benefits for a certain period only.*

Seattle City Employees' Retirement System
Actuarial Valuation

Active Lives

Table C-5 Distribution of Employees and Salaries as of January 1, 2010

Number of Employees - By Age Group - Males

Nearest Year of Service	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Totals
0	1	6	13	11	8	13	15	10	5	4			86
1	1	16	44	46	46	41	30	35	29	10	3	1	302
2	1	22	57	78	64	61	57	42	30	15	5		432
3-4	1	19	68	93	97	69	79	62	47	30	8	2	575
5-9		6	43	112	136	157	154	156	110	62	20	6	962
10-14			2	30	87	158	146	171	112	84	28	10	828
15-19					17	85	110	138	112	53	27	7	549
20-24						15	87	111	140	80	22	6	461
25-29							24	84	107	75	14	1	305
30-34							7	43	97	76	18	4	245
35-39								3	22	53	16	3	97
40+										14	18	13	45
Totals	4	69	227	370	455	599	709	855	811	556	179	53	4,887

Monthly Salaries in Thousands - By Age Group - Males

Nearest Year of Service	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Totals
0	$ 1	$ 18	$ 52	$ 53	$ 45	$ 71	$ 71	$ 35	$ 19	$ 18	$	$	$ 383
1	1	53	182	238	247	201	173	186	151	49	19	2	1,502
2	1	70	229	397	341	336	286	253	189	97	35		2,234
3-4	1	64	281	478	547	381	445	323	261	148	38	9	2,976
5-9		11	182	564	735	900	884	909	631	367	107	13	5,303
10-14			7	140	511	900	873	964	651	507	159	45	4,757
15-19					93	515	692	824	687	328	160	32	3,331
20-24						96	559	697	884	514	132	42	2,924
25-29							149	589	702	500	104	7	2,051
30-34							50	269	644	496	104	23	1,586
35-39								17	148	356	105	16	642
40+										103	109	73	285
Totals	4	216	933	1,870	2,519	3,400	4,182	5,066	4,967	3,483	1,072	262	27,974

Seattle City Employees' Retirement System
Actuarial Valuation

Active Lives

Table C-5 Distribution of Employees and Salaries as of January 1, 2010

Average Monthly Salaries - By Age Group - Males

Nearest Year of Service	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Totals
0	$ 1,000	$ 3,000	$ 4,000	$ 4,818	$ 5,625	$ 5,462	$ 4,733	$ 3,500	$ 3,800	$ 4,500	$	$	$ 4,453
1	1,000	3,313	4,136	5,174	5,370	4,902	5,767	5,314	5,207	4,900	6,333	2,000	4,974
2	1,000	3,182	4,018	5,090	5,328	5,508	5,018	6,024	6,300	6,467	7,000		5,171
3-4	1,000	3,368	4,132	5,140	5,639	5,522	5,633	5,210	5,553	4,933	4,750	4,500	5,176
5-9		1,833	4,233	5,036	5,404	5,732	5,740	5,827	5,736	5,919	5,350	2,167	5,512
10-14			3,500	4,667	5,874	5,696	5,979	5,637	5,813	6,036	5,679	4,500	5,745
15-19					5,471	6,059	6,291	5,971	6,134	6,189	5,926	4,571	6,067
20-24						6,400	6,425	6,279	6,314	6,425	6,000	7,000	6,343
25-29							6,208	7,012	6,561	6,667	7,429	7,000	6,725
30-34							7,143	6,256	6,639	6,526	5,778	5,750	6,473
35-39								5,667	6,727	6,717	6,563	5,333	6,619
40+										7,357	6,056	5,615	6,333
Totals	1,000	3,130	4,110	5,054	5,536	5,676	5,898	5,925	6,125	6,264	5,989	4,943	5,724

Seattle City Employees' Retirement System
Actuarial Valuation

Active Lives

Table C-5 Distribution of Employees and Salaries as of January 1, 2010

Number of Employees - By Age Group - Females

Nearest Year of Service	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Totals
0		2	14	10	14	5	5	4	6	1	1		62
1	2	10	39	44	33	27	26	25	23	9			238
2		13	61	57	38	43	43	36	23	11	3	2	330
3-4		13	76	86	81	67	68	51	45	24	5		516
5-9		5	32	111	112	127	126	119	73	60	16	8	789
10-14			1	21	91	112	117	116	89	50	18	7	622
15-19				3	26	78	106	96	93	78	20	12	512
20-24						22	114	136	137	102	14	1	526
25-29							29	100	98	58	19	2	306
30-34							2	44	87	51	14	7	205
35-39								1	24	30	11		66
40+										4	7	1	12
Totals	2	43	223	332	395	481	636	728	698	478	128	40	4,184

Monthly Salaries in Thousands - By Age Group - Females

Nearest Year of Service	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Totals
0	$	$ 7	$ 46	$ 33	$ 66	$ 16	$ 18	$ 28	$ 28	$ 4	$ 1	$	$ 247
1	2	19	152	211	158	127	117	116	110	26			1,038
2		30	245	253	195	201	209	221	122	51	9	11	1,547
3-4		29	299	403	419	322	339	261	262	111	24		2,469
5-9		8	122	519	621	717	695	697	382	311	51	13	4,136
10-14			3	81	469	600	633	658	472	247	69	13	3,245
15-19				14	119	389	602	534	525	416	92	47	2,738
20-24						110	611	785	769	623	73	4	2,975
25-29							178	623	566	355	106	9	1,837
30-34							11	238	466	308	71	31	1,125
35-39								5	118	172	56		351
40+										19	36	4	59
Totals	2	93	867	1,514	2,047	2,482	3,413	4,166	3,820	2,643	588	132	21,767

Seattle City Employees' Retirement System
Actuarial Valuation

Active Lives

Table C-5 Distribution of Employees and Salaries as of January 1, 2010

Average Monthly Salaries - By Age Group - Females

Nearest Year of Service	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Totals
0	$	$ 3,500	$ 3,286	$ 3,300	$ 4,714	$ 3,200	$ 3,600	$ 7,000	$ 4,667	$ 4,000	$ 1,000	$	$ 3,984
1	1,000	1,900	3,897	4,795	4,788	4,704	4,500	4,640	4,783	2,889			4,361
2		2,308	4,016	4,439	5,132	4,674	4,860	6,139	5,304	4,636	3,000	5,500	4,688
3-4		2,231	3,934	4,686	5,173	4,806	4,985	5,118	5,822	4,625	4,800		4,785
5-9		1,600	3,813	4,676	5,545	5,646	5,516	5,857	5,233	5,183	3,188	1,625	5,242
10-14			3,000	3,857	5,154	5,357	5,410	5,672	5,303	4,940	3,833	1,857	5,217
15-19				4,667	4,577	4,987	5,679	5,563	5,645	5,333	4,600	3,917	5,348
20-24						5,000	5,360	5,772	5,613	6,108	5,214	4,000	5,656
25-29							6,138	6,230	5,776	6,121	5,579	4,500	6,003
30-34							5,500	5,409	5,356	6,039	5,071	4,429	5,488
35-39								5,000	4,917	5,733	5,091		5,318
40+										4,750	5,143	4,000	4,917
Totals	1,000	2,163	3,888	4,560	5,182	5,160	5,366	5,723	5,473	5,529	4,594	3,300	5,202

Appendix D Glossary


dic·tion·ā'ri·ăn, n. a
dic'tion·ā·ry, n.; pl. dic
dictionarium, from L. di
dicere, to speak.]
1. a book containing
guage, arranged in alp
definitions, etymologie
other information; a l
2. a book of alphab
language with their
language; as, a Spa
3. a book of alphu
in any scient

The following definitions are largely excerpts from a list adopted in 1981 by the major actuarial organizations in the United States. In some cases the definitions have been modified for specific applicability to the Seattle City Employees' Retirement System. Defined terms are capitalized throughout this Appendix.

Accrued Benefit

The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.

Actuarial Accrued Liability

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement, and retirement; changes in compensation, rates of investment earnings, and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.

Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Accrued Liability.

Actuarial Gain (Loss)

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

Actuarial Present Value

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.

Actuarial Valuation

The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.

Actuarially Equivalent	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
Amortization Payment	That portion of the pension plan contribution that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability or (UAAL).
Entry Age Actuarial Cost Method	A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.
Normal Cost	That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.
Projected Benefits	Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.
Surplus Funding	The excess of the Actuarial Value of Assets over the Actuarial Accrued Liability.
Unaccrued Benefit	The excess of an individual's Projected Benefits over the Accrued Benefits as of a specified date.
Unfunded Actuarial Accrued Liability	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.