
Seattle City Employees' Retirement System



Actuarial Valuation As of January 1, 2011

By

Nick J. Collier

Associate, Society of Actuaries
Enrolled Actuary
Member, American Academy of Actuaries

And

Jennifer D. Sorensen

Associate, Society of Actuaries
Member, American Academy of Actuaries



1301 Fifth Avenue
Suite 3800
Seattle, WA 98101-2605
USA

Tel +1 206 624 7940
Fax +1 206 623 3485

milliman.com

July 6, 2011

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, 2011. This report reflects the benefit provisions and contribution rates in effect as of January 1, 2011 (including the maximum increases in member rates that were negotiated in 2010). There are three changes since the prior valuation (January 1, 2010) that we consider material:

- 5-year asset smoothing was adopted, effective January 1, 2011 as though it had always been in place.
- New demographic assumptions were adopted with the recent (2011) investigation of experience study.
- Increases in the city contribution rate are reflected in this valuation. As defined in the Seattle Municipal Code, the city's contribution rate increased to 9.03% in 2011 and is scheduled to increase to 10.03% in 2012.

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

This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

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 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,

A handwritten signature in black ink that reads "Nick Collier".

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

NJC/nlo

Seattle City Employees' Retirement System Actuarial Valuation

Table of Contents

		Page
Section 1	Summary of the Findings	1
Table 1	Summary of Results.....	4
Graph 1	Historical Asset and Liability Comparison.....	5
Graph 2	Historical Funding Ratios	5
Section 2	Scope of the Report.....	7
Section 3	Assets	9
Table 2	Calculation of Actuarial Value of Assets at January 1, 2011	10
Table 3	Summary of Plan Net Assets (at Market Value)	11
Section 4	Actuarial Liabilities	13
Table 4	Actuarial Present Value of Future Benefits.....	14
Section 5	Employer Contributions	15
Table 5	Normal Cost Contribution Rates as Percentages of Salary	17
Table 6	Unfunded Actuarial Accrued Liability.....	18
Table 7	Contribution Rates as Percentages of Salary	19
Section 6	Actuarial Information for Accounting Purposes.....	21
Table 8	GASB Statement No. 27 Annual Pension Cost and Net Pension Obligation ..	22
Table 9	Schedule of Funding Progress	23
Table 10	Solvency Test (All dollar amounts in millions).....	24
Table 11	Schedule of Employer Contributions (All dollar amounts in millions)	25
Table 12	GASB Statement No. 27 Five-Year Trend Information	26
Table 13	GASB Statement No. 27 Annual Development of Pension Cost.....	27
Section 7	Actuarial Gains or Losses	29
Table 14	Analysis of Actuarial Gains or Losses	30
Section 8	Contribution Rate Projections and Increases	31
Table 15	Projected Total Contribution Rates.....	32

**Table of Contents
(continued)**

		Page
Appendix A	Actuarial Procedures and Assumptions	A-1
Table A-1	Summary of Valuation Assumptions as of January 1, 2011	A-5
Table A-2	Future Salaries.....	A-6
Table A-3	Retirement	A-7
Table A-4	Disablement.....	A-8
Table A-5	Mortality	A-9
Table A-6	Other Terminations of Employment Among Members Not Eligible to Retire	A-10
Table A-7	Probability of Refund.....	A-11
Appendix B	Provisions of Governing Law.....	B-1
Appendix C	Valuation Data	C-1
Table C-1	Summary of Membership Data.....	C-2
Table C-2	Members Receiving Service Retirement Benefits as of January 1, 2011.....	C-3
Table C-3	Members Receiving Disability Retirement Benefits as of January 1, 2011	C-4
Table C-4	Survivors Receiving Retirement Benefits as of January 1, 2011	C-5
Table C-5	Distribution of Employees and Salaries as of January 1, 2011	C-6
Appendix D	Glossary	D-1

Seattle City Employees' Retirement System Actuarial Valuation

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, 2011, **the currently scheduled contribution rates are not sufficient to adequately fund 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 cannot 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 current 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 a period 30 years or less. 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, 2012, the Total Contribution Rate would need to be increased from 18.06% of pay to 21.30% of pay. This figure takes into account the additional 1.00% member rate (currently set to take effect January, 2012) in the calculation of the Normal Cost Rate.

It should be noted that this 21.30% of pay is calculated based on the Actuarial Value of Assets (AVA); see Section 3 of this report for details. This AVA currently defers a large asset loss due to the asset smoothing method. This means that if no actuarial asset gains or losses occur in the future, the Total Contribution Rate needed would increase as the deferred asset losses are phased into the AVA.

Section 8 of this report provides details on potential contribution rate increase schedules, as well as an analysis of projected contribution rates.

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, 2010 actuarial valuation the Funding Ratio was 62.0%. Based on the January 1, 2011 valuation, the Funding Ratio is 74.3%. The increase in the Funding Ratio is due mainly to the adoption of the asset smoothing method (see Section 3 of this report for full discussion). A summary of the historical Funding Ratio and other measurements are shown on Graph 1 and 2.

Because SCERS has adopted asset smoothing (effective January 1, 2011) as though the smoothing had always been in place, it retroactively smoothes gains and losses that occurred within the previous five years. Therefore, a portion of the large 2008 asset loss is currently being deferred.

Additionally, new demographic assumptions were adopted by the Board based on the recent (2011) Investigation of Experience.

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

Sources of Change	Funding Ratio
January 1, 2010 Actuarial Valuation	62.0 %
Expected Valuation-to-Valuation Change	(0.6)%
Asset Gain/(Loss) on Market Value	3.0 %
Salary Less/(Greater) Than Expected	2.2 %
Assumption Changes (Demographic)	0.6 %
Asset Smoothing Adoption	7.5 %
Other	<u>(0.4)%</u>
Total Change	<u>12.3 %</u>
January 1, 2011 Actuarial Valuation	74.3 %

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, 2010 valuation, is shown in Table 1. Note that the valuation measures are now based on the Actuarial Value of Assets which smoothes asset gains and losses over a five-year period; however, we have also shown key measures using the Market Value of Assets (MVA).

Projected Contribution Rates

As outlined above (and discussed further in Section 3 of this report), the Total Contribution Rate needed calculated in this valuation is based on the Actuarial Value of Assets. This AVA is currently deferring a relatively large asset loss.

All other things being equal, if assets earned 7.75% on a market value basis and no other actuarial asset gains or losses occurred, the Total Contribution Rate needed would be projected to increase as the deferred asset losses are phased in over the coming years.

We have performed a five-year projection of the contribution rates if 7.75% were returned on the market value of assets in each future year. Additionally, we have performed a projection of the contribution rates at the 5th and 95th percentile expected returns (thereby yielding a 90% asset-return-based confidence interval for the specified rates). These projections are illustrated in the chart below.

The 90% confidence interval results are based on the 5th and 95th percentile compounded returns for 1, 2, 3, 4 and 5-year periods. Since actuarial assets are used, deferred gains or losses would continue to decrease or increase the total contribution rate needed after these dates.

Please see Section 8 of this report for a detailed discussion of the projected contribution rates, as well as an analysis of phased-in contribution rate increases.

Projected Total Contribution Rate Needed**		
Contribution Year"	Assuming 7.75% Future Returns	90% Confidence Interval
2012	21.30%	21.30% - 21.30%
2013	22.55%	21.89% - 23.08%
2014	23.70%	22.13% - 24.91%
2015	23.43%	20.71% - 25.41%
2016	23.29%	19.24% - 26.14%
2017	23.28%	17.72% - 27.03%

* Contribution year lags valuation year by 1. For example: Contribution Year 2012 is based on the 2011 valuation results, amortized over 30 years beginning in 2011, if the increase takes place in 2012.

** Assumes actual total contribution rate is 18.06% in 2011 and 20.06% in 2012 and later.

*** Compounded average return for period

	<u>Percentile</u>	
	<u>5th</u>	<u>95th</u>
1-Year Period	29.2%	-9.5%
2-Year Period	22.7%	-4.6%
3-Year Period	19.9%	-2.4%
4-Year Period	18.2%	-1.0%
5-Year Period	17.1%	-0.1%

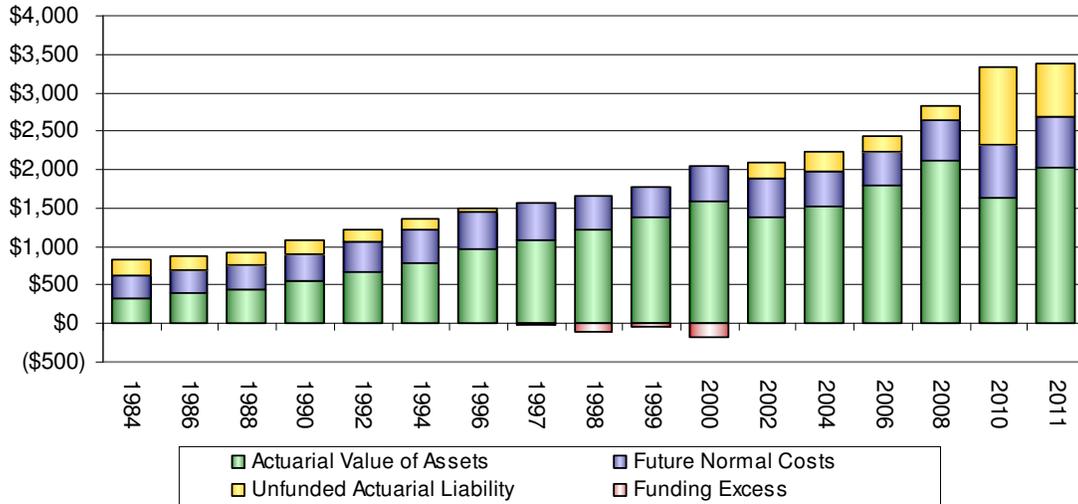
Seattle City Employees' Retirement System Actuarial Valuation

Table 1 Summary of Results

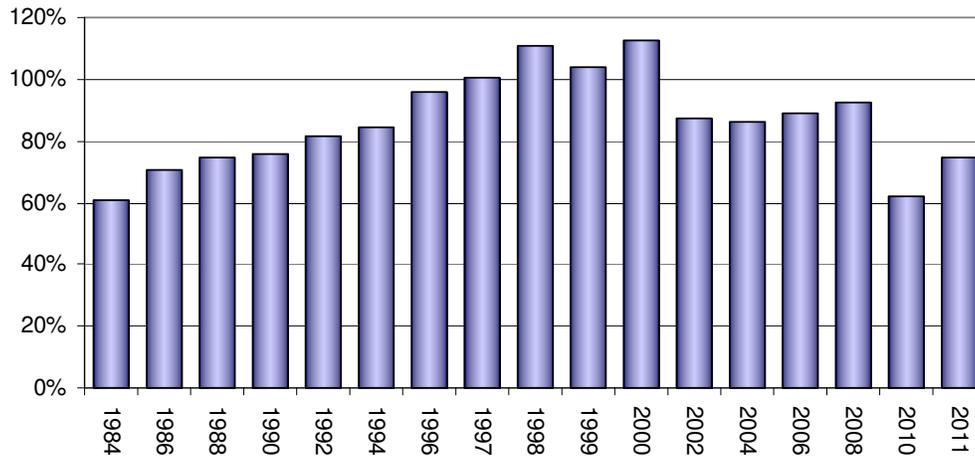
	Valuation January 1, 2011	Valuation January 1, 2010	Percentage Change
I. Total Membership			
A. Active Members	8,599	9,071	(5.2)%
B. Retired Members & Beneficiaries	5,428	5,304	2.3%
C. Vested Terminated Members	1,998	2,006	(0.4)%
D. Total	16,025	16,381	(2.2)%
II. Pay Rate as of January 1, 2011			
A. Annual Total (\$millions)	\$ 569.5	\$ 597.0	(4.6)%
B. Annual Average	\$ 66,225	\$ 65,810	0.6%
III. Average Monthly Benefit Paid to Current Retirees and Beneficiaries			
A. Service Retirement	\$ 1,977	\$ 1,862	6.1%
B. Disability Retirement	1,104	1,071	3.1%
C. Surviving Spouse and Dependents	1,081	1,024	5.6%
D. Total	\$ 1,826	\$ 1,712	6.6%
IV. Actuarial Accrued Liability			
A. Active Members	\$ 1,418.1	\$ 1,477.4	(4.0)%
B. Retired Members	1,169.0	1,062.5	10.0%
C. Vested Terminated Members	121.9	113.9	7.1%
D. Total	\$ 2,709.0	\$ 2,653.8	2.1%
V. Assets			
A. Actuarial Value of Assets (\$millions)*	\$ 2,013.7	\$ 1,645.3	22.4%
<i>*For years prior to 2011, all figures are shown using the Market Value of Assets.</i>			
VI. Unfunded Actuarial Accrued Liability or Surplus Funding (\$millions)	\$ 695.4	\$ 1,008.5	(31.0)%
VII. Amortization of UAAL			
A. Period Based on Current Contribution	does not amortize	does not amortize	
B. Total Contribution Rate Needed for 30-Year Amortization (as a % of Payroll)	21.30%	25.03%	(14.9)%
VIII. Funding Ratio	74.3%	62.0%	19.9%
IX. Normal Cost as a Percent of Salary	15.19%	15.23%	(0.3)%
Market Value of Assets (MVA) -- For Informational Purposes Only			
X. Assets Based on MVA			
A. Market Value of Assets (\$millions)	\$ 1,812.8	\$ 1,645.3	10.2%
XI. Amortization of UAAL Based on MVA			
A. Total Contribution Rate Needed for 30-Year Amortization (as a % of Payroll)	23.11%	25.03%	(7.7)%
XII. Funding Ratio Based on MVA	66.9%	62.0%	7.9%

Seattle City Employees' Retirement System Actuarial Valuation

Graph 1 Historical Asset and Liability Comparison



Graph 2 Historical Funding Ratios



Year	(in Millions)				Funding Ratio
	PVB	Assets	PVFNC	UAAL	
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%
2011	3,379.6	2,013.7	670.6	695.4	74.3%

This page intentionally left blank.



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Seattle City Employees' Retirement System Actuarial Valuation

Section 2 Scope of the Report



This report presents the actuarial valuation of the Seattle City Employees' Retirement System as of January 1, 2011.

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 shows projections of the System's funding under both optimistic and pessimistic scenarios.

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, 2011, 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.

This page intentionally left blank.



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Seattle City Employees' Retirement System Actuarial Valuation

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, 2011. 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 pay expected benefits.

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.

Beginning with the January 1, 2011 actuarial valuation, SCERS has adopted five-year asset smoothing. This smoothing process will recognize the asset gain or loss occurring in each year evenly over a five-year period, including all gains and losses occurring prior to the January 1, 2011 valuation date. (Note that, as the smoothing method was adopted for the January 1, 2011 valuation, no previous valuation results will be affected.)

Table 2 shows the calculation of the Actuarial Value of Assets as of January 1, 2011. Note that a large net loss is currently being deferred due to the 2008 market downturn. This means that, if the system earns 7.75% in the future, the AVA will experience actuarial losses over the next two years as the remaining portions of this loss are recognized. In both the Executive Summary and Section 8 of this report, we discuss projections of the required contribution rates resulting from this expected decrease in the AVA.

Table 3 summarizes the financial resources of the System on January 1, 2011 on a Market Value basis. Of the total assets, a minor portion is set aside for the payment of current liabilities and expenses. Table 3 shows the Market Value of Assets at January 1, 2011 and January 1, 2010. For years prior to 2011, the Actuarial Value of Assets is equal to the Market Value.

Seattle City Employees' Retirement System Actuarial Valuation

Table 2 Calculation of Actuarial Value of Assets at January 1, 2011
(All dollar amounts in millions)

Five-Year Asset Smoothing										
Year Ended	Market Value at Beginning of Year	Total Contributions	Benefit Payments Plus Admin. Expenses		Interest	Market Value of Assets		Asset Gain/(Loss)	Current Phase Out	Deferred Amount
						Expected*	Actual			
December 31, 2006						1,906.1	2,011.2	105.1	0%	-
December 31, 2007	2,011.2	80.8	111.7	154.7	2,135.0	2,119.4	(15.6)	20%	(3.1)	
December 31, 2008	2,119.4	91.9	115.0	163.4	2,259.7	1,477.4	(782.3)	40%	(312.9)	
December 31, 2009	1,477.4	93.0	120.3	113.5	1,563.6	1,645.3	81.7	60%	49.0	
December 31, 2010	1,645.3	90.6	131.7	125.9	1,730.1	1,812.8	82.7	80%	66.2	
Total Deferred at Jan. 1, 2011:										(200.9)
Market Value of Assets at Jan. 1, 2011:										1,812.8
Less Total Deferred at Jan. 1, 2011:										(200.9)
Actuarial Value of Assets at Jan. 1, 2011:										<u>2,013.7</u>

*Expected Market Value of Assets assumes 7.75% return, taking into account actual cashflows during year.

Seattle City Employees' Retirement System Actuarial Valuation

Table 3 Summary of Plan Net Assets (at Market Value)

	January 1, 2011		January 1, 2010	
	Market Value	Distribution	Market Value	Distribution
Assets				
Cash and short-term investments	16,066,155	0.9%	29,374,301	1.8%
Securities lending collateral	33,896,148	1.9%	36,491,886	2.2%
Receivables				
Employee	1,864,510	0.1%	1,989,617	0.1%
Employer	1,438,899	0.1%	1,332,367	0.1%
Interest and Dividends	1,746,071	0.1%	1,824,557	0.1%
Total Receivables	5,049,480	0.3%	5,146,541	0.3%
Investments at fair value				
US Government obligations	198,587,785	11.0%	178,650,109	10.9%
Domestic corporate bonds	81,250,709	4.5%	108,951,282	6.6%
Domestic stocks	757,207,813	41.8%	631,591,667	38.4%
International stocks	368,335,407	20.3%	305,943,218	18.6%
Real estate	186,161,603	10.3%	183,024,765	11.1%
Alternative/Venture capital	165,780,515	9.1%	159,010,143	9.7%
Mezzanine debt	49,094,294	2.7%	57,795,000	3.5%
Total investments	1,806,418,126	99.7%	1,624,966,184	98.8%
Equipment	-	0.0%	2,273	0.0%
Total assets	1,861,429,909	102.7%	1,695,981,185	103.1%
Liabilities				
Pension & Other payables	11,380,120	-0.6%	10,245,892	-0.6%
Securities lending collateral	37,295,301	-2.1%	40,437,944	-2.5%
Total Liabilities	48,675,421	-2.7%	50,683,836	-3.1%
Market Value of Net Assets Held in Trust For Pension Benefits				
	1,812,754,488	100.0%	1,645,297,349	100.0%

This page intentionally left blank.



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Seattle City Employees' Retirement System Actuarial Valuation

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, 2011. In this section, the discussion will focus on the commitments of the System, which will be referred to as its actuarial liabilities.

Table 4 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 4 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.

Seattle City Employees' Retirement System Actuarial Valuation

Table 4 Actuarial Present Value of Future Benefits
(All dollar amounts in millions)

	January 1, 2011	January 1, 2010
A. Active Members		
Service Retirement	\$ 1,959.5	\$ 2,010.3
Vested Retirement	58.1	58.4
Disability Retirement	12.0	15.6
Survivor Benefits	24.9	27.0
Refund of Member Contributions	34.2	41.0
Total	\$ 2,088.7	\$ 2,152.3
B. Inactive Members and Annuitants		
Service Retirement	\$ 1,076.4	\$ 970.5
Disability Retirement	9.8	9.5
Beneficiaries	82.8	82.5
Inactive Members	121.9	113.9
Total	\$ 1,290.9	\$ 1,176.4
C. Grand Total	\$ 3,379.6	\$ 3,328.7

Seattle City Employees' Retirement System Actuarial Valuation

Section 5 Employer Contributions



Funding

As shown in Tables 2 and 4, the total actuarial liability exceeds the current Actuarial Value of 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 5.

The Normal Cost Rate for the January 1, 2011 actuarial valuation is slightly lower than the rate as of the January 1, 2010 valuation. This is because of the new active demographic assumptions adopted with the 2011 Investigation of Experience, which went into effect for the January 1, 2011 valuation.

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.

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.

Actuarial Gains and Losses

When experience is different from actuarial expectation, an actuarial gain or loss occurs. Section 7 illustrates the historical actuarial gains and losses by source. Ongoing actuarial gains and losses decrease and increase the UAAL.

Amortization of UAAL

Table 7 compares the current 18.06% 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 2.87% is not projected to amortize the UAAL over any period of time as of January 1, 2011. 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. Note that the total contribution rate is scheduled to increase to 20.06% in 2012; however, this is still not sufficient to fund the UAAL over a 30-year period.

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, 2011, the Total Contribution Rate would increase from 18.06% of pay to 21.30% of pay. Because this figure is based on an Actuarial Value of Assets which is currently deferring a large loss, this 21.30% would be projected to increase over the next two years if no other actuarial asset gains or losses were to occur.

In Section 8 of this report, we have included a five-year projection of the total contribution rate needed, including optimistic and pessimistic investment return scenarios.

**Seattle City Employees' Retirement System
Actuarial Valuation**

Table 5 Normal Cost Contribution Rates as Percentages of Salary*

	<u>January 1, 2011</u>	<u>January 1, 2010</u>
Service Retirement	11.80 %	11.57 %
Vested Retirement	1.31	1.25
Disability Retirement	0.14	0.18
Survivor Benefits	0.20	0.21
Refund of Member Contributions	1.34	1.62
Administrative Expenses	<u>0.40</u>	<u>0.40</u>
Total	15.19 %	15.23 %

* *The normal cost rate calculations reflect the expected increase in member contribution rates to 10.03%, currently scheduled to go into effect on January 1, 2012*

**Seattle City Employees' Retirement System
Actuarial Valuation**

Table 6 **Unfunded Actuarial Accrued Liability**
(All dollar amounts in millions)

	<u>January 1, 2011</u>	<u>January 1, 2010</u>
A. Actuarial present value of all future benefits for present and former members and their survivors (Table 3)	\$ 3,379.6	\$ 3,328.7
B. Less actuarial present value of total future normal costs for present members	<u>670.6</u>	<u>674.9</u>
C. Actuarial accrued liability [A - B]	\$ 2,709.0	\$ 2,653.8
D. Less actuarial value of assets available for benefits (Table 2)	<u>2,013.7</u>	<u>1,645.3</u>
E. Unfunded actuarial accrued liability (Funding Excess, if negative) [C - D]	\$ 695.4	\$ 1,008.5
F. Funding Ratio [D ÷ C]	74.3%	62.0%

**Seattle City Employees' Retirement System
Actuarial Valuation**

Table 7 Contribution Rates as Percentages of Salary

	<u>January 1, 2011</u>	<u>January 1, 2010</u>
A. Employer contribution rate	9.03 %	8.03 %
B. Member contribution rate	<u>9.03</u>	<u>8.03</u>
C. Total contribution rate ⁽¹⁾	18.06 %	16.06 %
D. Less total normal cost rate ⁽²⁾	<u>15.19</u>	<u>15.23</u>
E. Excess of contribution rate over normal cost rate	2.87 %	0.83 %
F. Amortization period	does not amortize	does not amortize
G. Allocation of employer contribution rate ⁽³⁾		
Normal cost	6.16 %	7.20 %
Amortization payment	<u>2.87</u>	<u>0.83</u>
Total employer contribution rate	9.03 %	8.03 %

⁽¹⁾ 18.06% is the current rate being contributed as of January, 2011. 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.

This page intentionally left blank.



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Seattle City Employees' Retirement System Actuarial Valuation

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 includes 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 9 and compares assets and liabilities over the years. In particular, it shows the funded ratio and UAAL. As shown by Table 9, the plan was fully funded or nearly fully funded from 1996 through 2000. 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%. 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.

The schedule of employer contributions is shown in Table 11 and shows that, except for the most recent year (ending December 31, 2010), the employer has consistently made contributions equal to or greater than the ARC.

Table 8 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.

Despite the large increase in the ARC, which was not fully funded by SCERS, the NPO remains negative due to the large negative balance previously accumulated through past contributions in excess of the ARC.

Seattle City Employees' Retirement System Actuarial Valuation

**Table 8 GASB Statement No. 27 Annual Pension Cost
and Net Pension Obligation**

For Fiscal Year Ending December 31, 2010
Based on January 1, 2010 Valuation

	Fiscal Year Ended December 31	
	2009	2010
1a Total Normal Cost Rate	13.32%	15.23%
1b Employee Contribution Rate	<u>8.03%</u>	<u>8.03%</u>
1c Employer Normal Cost Rate (1a - 1b)	5.29%	7.20%
2a Total Employer Contribution Rate	8.03%	8.03%
2b Amortization Payment Rate (2a - 1c)	2.74%	0.83%
2c Amortization Period	16.2	does not amortize
2d GASB 27 Amortization Rate	2.74%	9.80%
3 Total Annual Required Contribution (ARC) Rate (1c + 2d)*	8.03%	17.00%
4 Covered Employee Payroll**	580,948,555	563,197,846
5a ARC (3 x 4)	46,650,169	95,743,634
5b Interest on Net Pension Obligation (NPO)	(6,056,564)	(6,034,612)
5c ARC Adjustment	<u>6,339,817</u>	<u>4,214,432</u>
5d Annual Pension Cost (APC) (5a + 5b + 5c)	46,933,422	93,923,454
6 Employer Contribution	46,650,169	45,224,787
7a Change in NPO (5d - 6)	283,253	48,698,667
7b NPO at Beginning of Year	<u>(78,149,216)</u>	<u>(77,865,963)</u>
7c NPO at End of Year (7a + 7b)	(77,865,963)	(29,167,296)

* 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.

Seattle City Employees' Retirement System Actuarial Valuation

Table 9 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
2011	2,013.7	2,709.0	695.4	74.3	563.2	123.5

⁽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.

Seattle City Employees' Retirement System Actuarial Valuation

Table 10 Solvency Test
(All dollar amounts in millions)

Actuarial Valuation Date January 1	Actuarial Value of Valuation Assets	Actuarial Accrued Liabilities for				Portion of Actuarial Accrued Liabilities Covered by Assets			
		(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)
		Active Member Contributions	Inactives, Retirees and Beneficiaries	Active Members (Employer Financed Portion)	Total				
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
2011	2,013.7	683.7	1,290.9	734.4	2,709.0	100.0	100.0	5.3	74.3

⁽¹⁾ Reflects increased COLA benefits adopted by the City Council after the valuation was completed.

Seattle City Employees' Retirement System Actuarial Valuation

Table 11 **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
2010	563.2	45.2	8.03	17.00	47.2

⁽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 for 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.

**Seattle City Employees' Retirement System
Actuarial Valuation**

Table 12 GASB Statement No. 27 Five-Year Trend Information

<u>Fiscal Year Ending</u>	<u>Annual Pension Cost (APC)</u>	<u>Contribution as a Percentage of APC</u>	<u>Net Pension Obligation (NPO)</u>
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)
December 31, 2010	93,923,454	48%	(29,167,296)

Seattle City Employees' Retirement System Actuarial Valuation

Table 13 GASB Statement No. 27 Annual Development of Pension Cost

<u>Fiscal Year Ending</u>	<u>ARC at EOY</u>	<u>Interest on NPO</u>	<u>ARC Adjustment</u>	<u>Annual Pension Cost (APC)</u>	<u>Total Employer Contributions</u>	<u>Change in NPO</u>	<u>NPO Balance</u>	<u>Gain/Loss</u>	<u>Amort. Factor</u>	<u>Amort. Of Gain/Loss</u>	<u>Ending Balance</u>
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)
December 31, 2010	95,743,634	(6,034,612)	4,214,432	93,923,454	45,224,787	48,698,667	(29,167,296)	50,518,847	18.47603	(4,214,432)	(29,167,296)

Amortization Period: Open 30 years, unless fixed rate amortizes in less than 30 years.

Amortization Method: Level Percentage of Projected Payroll.

This page intentionally left blank.



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Seattle City Employees' Retirement System Actuarial Valuation

Section 7 Actuarial Gains or Losses



An analysis of actuarial gains or losses was performed in conjunction with the January 1, 2008, January 1, 2010 and January 1, 2011 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 14. Each gain or loss shown represents our estimate of how much the given type of experience caused the UAAL to change in the 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.

Seattle City Employees' Retirement System Actuarial Valuation

Table 14 Analysis of Actuarial Gains or Losses

(All dollar amounts in millions)*

	Gain (Loss) for Period		
	2010	2008-2009	2006-2007
Investment Income. Investment income on MVA was greater (less) than expected.	\$82.7	\$(765.5)	\$ 93.7
Pay Increases. Pay increases were less (greater) than expected.	96.0	(6.4)	(15.2)
Age and Service Retirements. Members retired at older (younger) ages or with less (greater) final average pay than expected.	0.7	2.1	2.8
Disability Retirements. Disability claims were less (greater) than expected.	(0.2)	(0.3)	(0.4)
Death-in-Service Benefits. Survivor claims were less (greater) than expected.	0.0	0.0	0.0
Withdrawal from Employment. More (less) reserves were released by withdrawals than expected.	(8.5)	34.8	7.4
Death after Retirement. Retirees died younger (lived longer) than expected.	<u>(3.7)</u>	<u>(3.9)</u>	<u>(12.8)</u>
Total Gain or (Loss) during Period from Financial Experience.	\$167.0	\$(739.2)	\$75.6
Nonrecurring Items:			
Changes in actuarial assumptions and plan amendments caused a gain (loss).	23.8	(119.1)	(43.6)
Change in actuarial asset valuation method caused a gain (loss).	<u>200.9</u>	<u>N/A</u>	<u>N/A</u>
Composite Gain (Loss) during Period.	\$391.7	\$(858.3)	\$32.0

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

Seattle City Employees' Retirement System Actuarial Valuation

Section 8 Contribution Rate Projections and Increases



This section of the January 1, 2011 actuarial valuation is devoted to a detailed discussion of the contribution rates needed, and projected to be needed, in order to effectively fund the System.

The goals of this section are twofold:

1. As mentioned throughout this report, the adoption of an asset smoothing method means that the AVA does not equal the MVA for the January 1, 2011 valuation. The current AVA is deferring a relatively large loss based on the 2008 market downturn. As a result, if no actuarial asset gains or losses were to occur over the next several years (i.e., the market return equals 7.75%), the Funding Ratio would be projected to decrease as the remaining deferred losses are fully phased in.
2. Currently, SCERS plans 1.00% increases in both the employer and the member contribution rates (from 9.03% to 10.03%) to take effect January 2012. The actual contribution rate needed will vary in the future. We have shown projections to roughly quantify the potential impact of good and bad experience.

Projection of Total Contribution Rate Needed

We have performed a five-year projection of the Total Contribution Rate needed under three different scenarios:

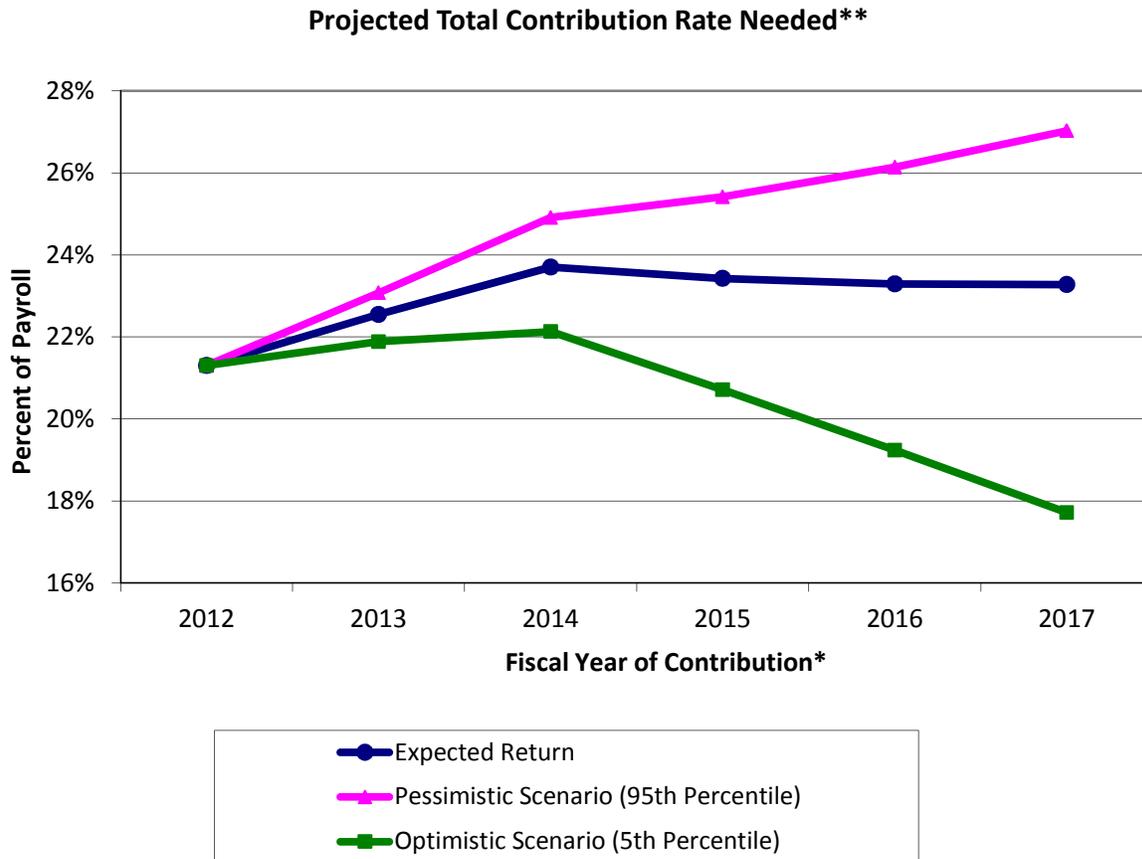
1. Assuming that the investment return assumption is met in each future year.
2. Assuming that the assets return at the 5th percentile.
3. Assuming that the assets return at the 95th percentile.

The result is effectively a 90% confidence interval (based on asset returns) of the projected contribution rates in these years.

Table 15 provides the results of these projections.

Seattle City Employees' Retirement System Actuarial Valuation

Table 15 Projected Total Contribution Rates



Projected Total Contribution Rate Needed**

Contribution Year*	Investment Return		
	5th Percentile	Assumption	95th Percentile
2012	21.30%	21.30%	21.30%
2013	23.08%	22.55%	21.89%
2014	24.91%	23.70%	22.13%
2015	25.41%	23.43%	20.71%
2016	26.14%	23.29%	19.24%
2017	27.03%	23.28%	17.72%

* Contribution year lags calculation year by 1. For example: Contribution Year 2012 is based on the 2011 valuation results, amortized over 30 years beginning in 2011, if the increase takes place in 2012.

** Assumes actual total contribution rate is 18.06% in 2011 and 20.06% in 2012 and later.

Contribution Increases

As discussed in this report, the current contribution rate is not sufficient to amortize the UAAL over a 30-year period. If the entire contribution rate increase needed to amortize the UAAL over 30 years from the valuation date were to be implemented on January 1, 2012, a Total Contribution Rate of 21.30% would be needed.

This represents a needed increase of 3.24% of pay, in addition to the current 18.06% of pay being contributed (by the employer and members combined). Since the member increases are capped at an additional 1.00% of payroll in 2012 and later (an ultimate 10.03% contribution rate), the employer increase needed would be 2.24% of pay greater than the current city rate of 9.03%. Note that due to the future recognition of deferred asset losses, this amount is expected to increase in the next valuation.

Seattle City Employees' Retirement System Actuarial Valuation

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 June, 2011 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	For 2011, the total employer contribution rate for normal costs and amortization of the UAAL was 9.03% of members' salaries. This rate is scheduled to increase to 10.03% in January, 2012.
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	The assets are valued using a five-year smoothing method based on the difference between the expected market value and the actual market value of the assets in each year. The expected market value is the prior year's market value increased with the net increase in the cash flow, all increased with interest during the past fiscal year at the expected investment return rate assumption.
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: <ul style="list-style-type: none">■ 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	<p>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.</p> <p>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.</p> <p>Note that the probability of refund assumption only applies to members who terminate with a vested benefit and are not yet eligible for retirement.</p>
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.

Seattle City Employees' Retirement System Actuarial Valuation

Table A-1 Summary of Valuation Assumptions as of January 1, 2011

I. Economic assumptions		
A. Price inflation		3.50%
B. General wage increases		4.00
C. Investment return		7.75
D. Increase in membership		1.00
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		Table A-5
Men	RP 2000 Employees Table for Males, with ages set back three years.	
Women	RP 2000 Employees Table for Females, with ages set back three years.	
E. Mortality* among service retired members and beneficiaries		Table A-5
Men	RP2000 Combined Healthy Males, with ages set back one year.	
Women	RP2000 Combined Healthy Females, with ages set back one year.	
F. Mortality* among disabled members		Table A-5
Men	RP2000 Disabled Males, with ages set back four years.	
Women	RP2000 Disabled Females, with ages set back four years.	
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

Seattle City Employees' Retirement System Actuarial Valuation

Table A-2 Future Salaries

Annual Rate of Increase		
Years of Service	Promotion and Longevity	Total
0 to 1	4.50%	8.68%
1 to 2	3.50	7.64
2 to 3	2.75	6.86
3 to 4	2.00	6.08
4 to 5	1.50	5.56
9 to 10	0.80	4.83
14 to 15	0.45	4.47
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

Seattle City Employees' Retirement System Actuarial Valuation

Table A-3 Retirement

Age	Annual Probability					
	Men			Women		
	Eligible for Full Benefits			Eligible for Full Benefits		
	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	0.0%	10.0%	8.0%	0.0%	10.0%	10.0%
50	6.0	10.0	10.0	5.0	10.0	12.0
51	6.0	10.0	10.0	5.0	10.0	12.0
52	6.0	12.0	12.0	5.0	10.0	12.0
53	5.0	9.0	12.0	4.0	10.0	12.0
54	5.0	8.0	12.0	5.0	10.0	13.0
55	6.0	10.0	12.0	5.0	10.0	15.0
56	6.0	8.0	12.0	5.0	10.0	13.0
57	6.0	8.0	12.0	5.0	13.0	15.0
58	6.0	8.0	12.0	5.0	13.0	13.0
59	6.0	10.0	15.0	8.0	13.0	14.0
60	7.0	10.0	15.0	8.0	15.0	17.0
61	9.0	16.0	15.0	13.0	15.0	16.0
62	16.0	27.0	30.0	18.0	21.0	28.0
63	12.0	18.0	22.0	13.0	17.0	22.0
64	12.0	18.0	22.0	13.0	17.0	22.0
65		40.0	32.0		35.0	30.0
66		37.0	32.0		40.0	33.0
67		32.0	32.0		35.0	33.0
68		28.0	26.0		30.0	30.0
69		28.0	26.0		30.0	30.0
70		*	*		*	*

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

Seattle City Employees' Retirement System Actuarial Valuation

Table A-4 Disablement*

Age	Annual Rates	
	Men	Women
20	.00%	.00%
25	.00	.00
30	.04	.04
35	.04	.04
40	.05	.05
45	.05	.05
50	.08	.08
55	.08	.08
60	.08	.08
65	.00	.00

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

Seattle City Employees' Retirement System Actuarial Valuation

Table A-5 Mortality

Age	Annual Probability*					
	Contributing Members		Members Retired for Service and Beneficiaries of Members		Disabled Members	
	Men	Women	Men	Women	Men	Women
22	0.03 %	0.02 %	0.04 %	0.02 %	2.26 %	0.74 %
27	0.04	0.02	0.04	0.02	2.26	0.74
32	0.04	0.02	0.05	0.03	2.26	0.74
37	0.07	0.04	0.08	0.05	2.26	0.74
42	0.10	0.06	0.11	0.08	2.26	0.74
47	0.14	0.10	0.16	0.12	2.26	0.74
52	0.20	0.16	0.24	0.19	2.64	0.98
57	0.28	0.23	0.42	0.31	3.29	1.45
62	0.44	0.36	0.77	0.58	3.93	1.97
67	0.70	0.54	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.

Seattle City Employees' Retirement System Actuarial 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	7.0%	8.5%
1 to 2	6.5	8.3
2 to 3	6.3	8.0
3 to 4	6.0	7.8
4 to 5	5.5	7.5
5 to 6	5.0	7.0
6 to 7	4.5	6.3
7 to 8	4.0	5.7
8 to 9	3.6	5.1
9 to 10	3.2	4.5
10 to 11	2.8	4.0
11 to 12	2.5	3.5
12 to 13	2.3	3.2
13 to 14	2.0	2.9
14 to 15	1.8	2.6
15 to 16	1.6	2.3
16 to 17	1.4	2.0
17 to 18	1.2	1.7
18 to 19	1.1	1.4
19 to 20	1.0	1.2
20 to 21	0.9	1.1
21 to 22	0.8	1.0
22 to 23	0.8	0.9
23 to 24	0.7	0.8
24 to 25	0.7	0.8
25 to 26	0.6	0.7
26 to 27	0.6	0.7
27 to 28	0.5	0.6
28 to 29	0.5	0.6
29 to 30	0.4	0.5
30 and up	0.5	0.5

Seattle City Employees' Retirement System Actuarial Valuation

Table A-7 Probability of Refund

Age	Probabilities of Refund upon Termination*
25	70.0%
30	65.0
35	55.0
40	48.0
45	43.0
50	38.0
55	36.0
60	40.0

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

Seattle City Employees' Retirement System Actuarial Valuation

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 9.03% of salary as of January, 2011. 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 2011 valuation, rates are assumed to increase to 10.03% in January, 2012 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 9.03% in 2011 and scheduled to increase to 10.03% in 2012.
(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 five 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 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)

Seattle City Employees' Retirement System Actuarial Valuation

Appendix C Valuation Data



This valuation is based upon the membership of the system as of January 1, 2011. 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, 2011	8,599	\$ 569,472	\$ 66,225	5,428	\$ 118,920	\$ 21,909
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



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. C-2

**Seattle City Employees' Retirement System
Actuarial Valuation**

Inactive Lives

Table C-2 Members Receiving Service Retirement Benefits as of January 1, 2011

	<u><50</u>	<u>50-54</u>	<u>55-59</u>	<u>60-64</u>	<u>65-69</u>	<u>70-74</u>	<u>75-79</u>	<u>80-84</u>	<u>85-89</u>	<u>90+</u>	<u>Totals</u>
Number of Persons											
Male	1	19	144	481	649	456	340	275	240	140	2,745
Female	0	18	146	390	406	229	169	137	142	128	1,765
Total	1	37	290	871	1,055	685	509	412	382	268	4,510
Annual Benefits in Thousands											
Male \$	45	\$ 827	\$ 4,939	\$ 15,010	\$ 17,666	\$ 11,542	\$ 7,575	\$ 6,170	\$ 4,558	\$ 2,526	\$ 70,858
Female	0	580	4,462	10,413	8,628	4,311	2,934	2,000	1,559	1,242	36,129
Total	45	1,407	9,401	25,423	26,294	15,853	10,509	8,170	6,117	3,768	106,987
Average Annual Benefits											
Male \$	0	\$ 43,526	\$ 34,299	\$ 31,206	\$ 27,220	\$ 25,311	\$ 22,279	\$ 22,436	\$ 18,992	\$ 18,043	\$ 25,813
Female	0	32,222	30,562	26,700	21,251	18,825	17,361	14,599	10,979	9,703	20,470
Total	0	38,027	32,417	29,188	24,923	23,143	20,646	19,830	16,013	14,060	23,722



**Seattle City Employees' Retirement System
Actuarial Valuation**

Inactive Lives

Table C-3 Members Receiving Disability Retirement Benefits as of January 1, 2011

	<u><50</u>	<u>50-54</u>	<u>55-59</u>	<u>60-64</u>	<u>65-69</u>	<u>70-74</u>	<u>75-79</u>	<u>80-84</u>	<u>85-89</u>	<u>90+</u>	<u>Totals</u>
Number of Persons											
Male	0	3	4	4	5	4	6	2	3	4	35
Female	3	8	8	4	3	4	1	0	1	0	32
Total	3	11	12	8	8	8	7	2	4	4	67
Annual Benefits in Thousands											
Male \$	0 \$	42 \$	66 \$	55 \$	60 \$	51 \$	69 \$	15 \$	33 \$	39 \$	430
Female	52	147	104	64	32	38	11	0	10	0	458
Total	52	189	170	119	92	89	80	15	43	39	888
Average Annual Benefits											
Male \$	\$ 17,333	\$ 14,000	\$ 16,500	\$ 13,750	\$ 12,000	\$ 12,750	\$ 11,500	\$ 7,500	\$ 11,000	\$ 9,750	\$ 12,286
Female	17,333	18,375	13,000	16,000	10,667	9,500	11,000	0	10,000	0	14,313
Total	17,333	17,182	14,167	14,875	11,500	11,125	11,429	7,500	10,750	9,750	13,254



Seattle City Employees' Retirement System Actuarial Valuation

Inactive Lives

Table C-4 Survivors Receiving Retirement Benefits as of January 1, 2011*

	<u><50</u>	<u>50-54</u>	<u>55-59</u>	<u>60-64</u>	<u>65-69</u>	<u>70-74</u>	<u>75-79</u>	<u>80-84</u>	<u>85-89</u>	<u>90+</u>	<u>Totals</u>
Number of Persons											
Male	0	3	6	5	6	6	4	5	2	5	42
Female	11	8	21	41	50	53	71	118	175	177	725
Total	11	11	27	46	56	59	75	123	177	182	767
Annual Benefits in Thousands											
Male \$	0 \$	46 \$	78 \$	32 \$	81 \$	57 \$	30 \$	42 \$	9 \$	23 \$	398
Female	129	111	315	660	802	734	1,083	1,571	2,256	1,782	9,443
Total	129	157	393	692	883	791	1,113	1,613	2,265	1,805	9,841
Average Annual Benefits											
Male \$	0 \$	15,333 \$	13,000 \$	6,400 \$	13,500 \$	9,500 \$	7,500 \$	8,400 \$	4,500 \$	4,600 \$	9,476
Female	11,727	13,875	15,000	16,098	16,040	13,849	15,254	13,314	12,891	10,068	13,025
Total	11,727	14,273	14,556	15,043	15,768	13,407	14,840	13,114	12,797	9,918	12,831

* In addition, 25 male survivors are receiving \$268,375 and 59 female survivors are receiving \$935,962 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, 2011

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		3	6	3	11	6	10	4	8	2	1		54
1		12	26	21	23	26	24	18	13	10	2	1	176
2	1	12	33	44	38	43	30	31	28	10	2		272
3-4	1	21	84	121	106	97	96	73	58	37	10	2	706
5-9		4	39	121	159	161	125	146	119	66	20	5	965
10-14			3	37	87	162	169	173	152	90	31	11	915
15-19					10	76	95	106	90	52	21	3	453
20-24						22	90	130	138	89	22	9	500
25-29							18	80	101	76	20	3	298
30-34							3	48	99	66	20	4	240
35-39									24	48	6	3	81
40+										12	12	5	29
Totals	2	52	191	347	434	593	660	809	830	558	167	46	4,689

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	\$	\$ 9	\$ 22	\$ 17	\$ 47	\$ 41	\$ 65	\$ 12	\$ 36	\$ 12	\$ 1		\$ 262
1		24	98	93	133	149	118	99	70	43	22	2	851
2	1	44	147	236	215	212	180	171	151	39	5		1,401
3-4	1	76	359	626	596	550	551	451	329	210	56	8	3,813
5-9		9	174	609	845	941	696	824	656	369	108	17	5,248
10-14			11	174	513	944	1,004	1,035	846	544	189	65	5,325
15-19					54	468	591	628	546	329	125	22	2,763
20-24						137	586	820	835	562	137	53	3,130
25-29							103	546	672	492	129	19	1,961
30-34							22	313	675	459	119	23	1,611
35-39									157	322	35	16	530
40+										86	73	28	187
Totals	2	162	811	1,755	2,403	3,442	3,916	4,899	4,973	3,467	999	253	27,082



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. C-6

**Seattle City Employees' Retirement System
Actuarial Valuation**

Active Lives

Table C-5 Distribution of Employees and Salaries as of January 1, 2011

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	\$	\$ 3,000	\$ 3,667	\$ 5,667	\$ 4,273	\$ 6,833	\$ 6,500	\$ 3,000	\$ 4,500	\$ 6,000	\$ 1,000	\$	\$ 4,852
1		2,000	3,769	4,429	5,783	5,731	4,917	5,500	5,385	4,300	11,000	2,000	4,835
2	1,000	3,667	4,455	5,364	5,658	4,930	6,000	5,516	5,393	3,900	2,500		5,151
3-4	1,000	3,619	4,274	5,174	5,623	5,670	5,740	6,178	5,672	5,676	5,600	4,000	5,401
5-9		2,250	4,462	5,033	5,314	5,845	5,568	5,644	5,513	5,591	5,400	3,400	5,438
10-14			3,667	4,703	5,897	5,827	5,941	5,983	5,566	6,044	6,097	5,909	5,820
15-19					5,400	6,158	6,221	5,925	6,067	6,327	5,952	7,333	6,099
20-24						6,227	6,511	6,308	6,051	6,315	6,227	5,889	6,260
25-29							5,722	6,825	6,653	6,474	6,450	6,333	6,581
30-34							7,333	6,521	6,818	6,955	5,950	5,750	6,713
35-39									6,542	6,708	5,833	5,333	6,543
40+										7,167	6,083	5,600	6,448
Totals	1,000	3,115	4,246	5,058	5,537	5,804	5,933	6,056	5,992	6,213	5,982	5,500	5,776



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to C-7 benefit and assumes no duty or liability to other parties who receive this work.

**Table C-5
(continued)**

**Seattle City Employees' Retirement System
Actuarial Valuation**

Active Lives

Table C-5 Distribution of Employees and Salaries as of January 1, 2011

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		7	6	8	8	7	5	6	5	1		1	54
1	2	8	26	19	18	20	7	11	8	6	1	1	127
2	2	8	28	40	30	24	23	20	23	12			210
3-4	2	8	70	111	77	73	76	64	52	22	4	1	560
5-9		2	40	103	125	122	119	104	72	49	18	7	761
10-14			2	33	91	121	135	131	101	59	25	7	705
15-19				1	14	75	83	79	74	57	10	7	400
20-24						22	115	123	133	121	20	2	536
25-29							20	99	85	63	10	1	278
30-34							3	43	77	63	10	3	199
35-39								2	31	30	5	3	71
40+										4	5		9
Totals	6	33	172	315	363	464	586	682	661	487	108	33	3,910

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	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
0		12	23	33	39	28	29	40	20	2		1	227
1	3	14	98	73	66	115	41	63	41	28	1	1	544
2	4	16	109	193	146	120	104	98	131	41			962
3-4	3	21	270	514	394	349	391	348	302	107	17	10	2,726
5-9		4	144	460	672	671	634	560	402	248	67	14	3,876
10-14			8	128	468	665	736	759	541	283	101	9	3,698
15-19				6	71	360	462	446	425	293	40	25	2,128
20-24						105	627	695	769	712	111	11	3,030
25-29							120	604	500	363	57	4	1,648
30-34							19	256	422	356	51	17	1,121
35-39								14	154	160	31	11	370
40+										22	22		44
Totals	10	67	652	1,407	1,856	2,413	3,163	3,883	3,707	2,615	498	103	20,374



This work product was prepared solely for SCERS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. C-8

**Seattle City Employees' Retirement System
Actuarial Valuation**

Active Lives

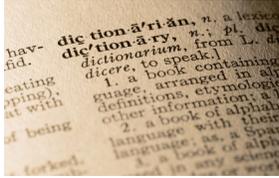
Table C-5 Distribution of Employees and Salaries as of January 1, 2011

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	\$ 1,714	\$ 3,833	\$ 4,125	\$ 4,875	\$ 4,000	\$ 5,800	\$ 6,667	\$ 4,000	\$ 2,000	\$ 1,000	\$ 1,000	\$ 4,204	
1	1,500	1,750	3,769	3,842	3,667	5,750	5,857	5,727	5,125	4,667	1,000	1,000	4,283
2	2,000	2,000	3,893	4,825	4,867	5,000	4,522	4,900	5,696	3,417			4,581
3-4	1,500	2,625	3,857	4,631	5,117	4,781	5,145	5,438	5,808	4,864	4,250	10,000	4,868
5-9		2,000	3,600	4,466	5,376	5,500	5,328	5,385	5,583	5,061	3,722	2,000	5,093
10-14			4,000	3,879	5,143	5,496	5,452	5,794	5,356	4,797	4,040	1,286	5,245
15-19				6,000	5,071	4,800	5,566	5,646	5,743	5,140	4,000	3,571	5,320
20-24						4,773	5,452	5,650	5,782	5,884	5,550	5,500	5,653
25-29							6,000	6,101	5,882	5,762	5,700	4,000	5,928
30-34							6,333	5,953	5,481	5,651	5,100	5,667	5,633
35-39								7,000	4,968	5,333	6,200	3,667	5,211
40+										5,500	4,400		4,889
Totals	1,667	2,030	3,791	4,467	5,113	5,200	5,398	5,694	5,608	5,370	4,611	3,121	5,211

Seattle City Employees' Retirement System Special Actuarial Valuation

Appendix D Glossary



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.