



## **Sonoma County Employees' Retirement Association (SCERA)**

**Actuarial Review of December 31, 2021  
Actuarial Valuation and January 1, 2018  
- December 31, 2020 Actuarial  
Experience Study**

**Produced by Cheiron**

**September 2023**

# TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
	Letter of Transmittal .....	i
Section I	Executive Summary .....	1
Section II	Summary of Review and Recommendations .....	3
	A. Valuation Results .....	3
	B. Census Data .....	11
	C. Plan Provisions.....	13
	D. Actuarial Assumptions.....	14
	E. Actuarial Methods.....	18
	F. Contents of the Report .....	20
 <u>Appendix</u>		
Appendix A	Glossary of Terms.....	21

***Via Electronic Mail***

September 8, 2023

Board of Retirement  
Sonoma County Employees' Retirement Association  
433 Aviation Blvd., Suite 100  
Santa Rosa, California 95403

Members of the Board,

Cheiron is pleased to present the results of our actuarial audit of the December 31, 2021 actuarial valuation of the Sonoma County Employees Retirement Association (SCERA, the System) and our peer review of the triennial Experience Study covering the period from January 1, 2018 through December 31, 2020, both performed by Segal Consulting (Segal). We would like to thank Segal for providing us with information and explanations that facilitated the actuarial audit process and ensured that our findings are accurate and benefit SCERA.

We direct your attention to the executive summary section of our report which highlights the key findings of our review. The balance of the report provides details in support of these findings along with supplemental data, background information, and discussion of the process used in the evaluation of the work performed by Segal.

In preparing our report, we relied on information (some oral and some written) supplied by SCERA and Segal. This information includes, but is not limited to, actuarial assumptions and methods adopted by SCERA, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness in accordance with Actuarial Standard of Practice No. 23. A detailed description of all information provided for this review is provided in the body of our report.

Cheiron utilizes ProVal actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have a basic understanding of ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this valuation.

We hereby certify that, to the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

Board of Retirement  
Sonoma County Employees' Retirement Association  
September 8, 2023  
Page ii

This report was prepared exclusively for the Sonoma County Employees Retirement Association for the purpose described herein. This report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

Sincerely,  
Cheiron



Graham A. Schmidt, ASA, EA, MAAA, FCA  
Consulting Actuary



Anne D. Harper, FSA, EA, MAAA  
Principal Consulting Actuary

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION I – EXECUTIVE SUMMARY**

**Key Findings and Recommendations**

The main findings of our review are as follows:

- As a result of our efforts, we are able to confirm that the liabilities and costs computed in the valuation as of December 31, 2021 are reasonably accurate and were computed in accordance with generally accepted actuarial principles.
- We have reviewed the economic and demographic assumptions recommended in the most recent Actuarial Experience Study presented by Segal. In general, we have found them to be reasonable and in accordance with generally accepted actuarial principles.
- We have one minor finding with respect to the calculation of benefits for active members who have reached their maximum expected retirement age as of the valuation date. However, this issue only affects a small number of individuals and has an immaterial impact on the overall liability and cost calculations. This issue is addressed in more detail in our discussion of the individual test life comparisons later in our report.

We have several comments with respect to the Actuarial Experience Study covering the period January 1, 2018 through December 31, 2020:

- Segal made several changes in their methodology as part of this Study - in particular the use of a benefit-weighted approach for analyzing mortality experience, the development of age and service-based retirement rates, and an adjustment to the Entry Age actuarial cost method - all of which we strongly support.
- As noted in our prior audit (performed in 2013), Segal's methodology for analyzing the investment return assumption differs from the practices of many other actuaries in their adjustments made for expected active investment management expenses. However, it is our understanding that Segal has changed their methodology to no longer apply those adjustments in recent experience studies they have performed for other 1937 Act system; we would support their application of the same methods for SCERA's upcoming experience study. It is also our understanding that Segal has modified their approach in other recent experience studies to analyze the investment return on a geometric basis, which we also support.
- We have several other minor comments related to the Experience Study, including the development of the assumptions related to reciprocity and the commencement ages for members retiring from deferred vested status with reciprocity.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION I – EXECUTIVE SUMMARY**

**Scope of Assignment**

Cheiron performed a complete independent replication of the SCERA December 31, 2021 actuarial valuation and reviewed the actuarial methods underlying that valuation. We reviewed the census data provided by SCERA staff and compared it to the information used by Segal in their valuation. We then performed a full parallel valuation, including the calculation of the projected benefits, accrued liability, and normal cost for all SCERA members, and compared the results to those shown in Segal's actuarial valuation report. We also reviewed a sample of detailed test lives provided by Segal, and compared to the results of our own calculations for these specific members.

Additionally, Cheiron performed a review of the assumptions used by Segal in the December 31, 2021 valuation, as reflected in the actuarial experience study covering the period from January 1, 2018 through December 31, 2020. This review did not constitute a full replication of the experience study; it was focused on a review of the recommendations and communications from Segal, based on the information provided within the study.

This audit provides SCERA confirmation that:

- The results reported by Segal can be relied upon,
- Segal's actuarial valuation report, assumptions, and methods comply with Actuarial Standards of Practice (ASOPs),
- The communication of the actuarial valuation results is complete and reasonable, and
- The Board and Segal have considered recommendations and communications that may improve the valuation and experience study.

**Valuation Procedures**

Overall, we find that the December 31, 2021 actuarial valuation procedures applied in the reporting of the funded status and the determination of the funding requirements based on the current funding policies and adopted assumptions are technically reasonable and conform to the ASOPs. This is based on our review of: the valuation report, the census data used in the valuation and our parallel valuation using the information described above.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Valuation Results**

Our independent replication of the December 31, 2021 actuarial valuation found no material difference in calculations of plan liabilities, Actuarial Value of Assets, and overall contribution rates from the amounts calculated by Segal based on the adopted assumptions and methods. For the scope of this audit, materiality means the results in the aggregate were within industry standards of plus or minus 5%. Consequently, we conclude that the valuation prepared by Segal for SCERA as of December 31, 2021 is reasonable and can be relied on by the Board for its intended purpose. Our replication of the measures of plan liabilities and funded status is summarized in Table II-1 below.

<b>Table II-1</b>			
<b>Replication of Liabilities and Funded Status</b>			
	<b>Segal</b>	<b>Cheiron</b>	<b>Variance</b>
<b>Present Value of Future Benefits</b>	\$ 4,069,053	\$ 4,062,100	-0.2%
<b>Actuarial Accrued Liability (AAL)</b>			
Active Members	\$ 1,185,662	\$ 1,175,401	-0.9%
Vested Terminated Members	130,186	133,995	2.9%
Retirees and Beneficiaries	<u>2,144,203</u>	<u>2,144,292</u>	0.0%
<b>Total AAL</b>	<b>\$ 3,460,051</b>	<b>\$ 3,453,688</b>	<b>-0.2%</b>
<b>Actuarial Value of Assets</b>	\$ 3,215,505	\$ 3,215,540	0.0%
<b>Unfunded Actuarial Accrued Liability (UAAL)</b>	\$ 244,546	\$ 238,147	-2.6%
<b>Funded Ratio</b>	92.9%	93.1%	0.2%
<b>Present Value of Future Salary</b>	3,323,342	3,318,878	-0.1%

We note that all results are well within 5% of Segal's calculation. The relative differences between the UAAL amounts (2.6%) are larger than the differences between the liability amounts (0.2%), but this is to be expected because the differences in the unfunded liability amounts are leveraged by the assets. Imagine a plan which is measured as 100% funded (assets exactly equal to actuarial liabilities) by the Plan's actuary. If the auditing actuary were to determine an actuarial liability 0.1% greater than the Plan's actuary, the differences would clearly be minor, but the *relative* size of the unfunded liability measures would be infinitely different, as the Plan's actuary's estimate of the UAL would be \$0, while auditing actuary's estimate would be a positive number.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

Our replication of the employer contribution rate for SCERA in aggregate is shown below in Table II-2. We note that all results are well within the 5% threshold.

<b>Table II-2 Replication of Contribution Rates</b>			
	Segal	Cheiron	Variance
<b>Total Normal Cost</b>	21.17%	21.13%	-0.04%
<b>Member Contributions*</b>	<u>8.91%</u>	<u>9.04%</u>	0.14%
<b>Employer Normal Cost</b>	12.26%	12.09%	-0.17%
<b>Amortization Payment of UAAL**</b>	<u>6.43%</u>	<u>6.21%</u>	-0.22%
<b>Employer Contribution Rate</b>	18.69%	18.30%	-0.39%

\* Excluding expected employee supplemental contributions

\*\* Less expected employee supplemental contributions to reduce the employer's UAAL

Our replication of the liabilities by employer and tier is shown below in Table II-3.

<b>Table II-3 Actuarial Accrued Liability by Rate Group (\$ in millions)</b>					
		Segal	Cheiron	Ratio	
<b>General Members</b>					
County	Plan A	\$ 2,300.6	\$ 2,299.1	99.9%	
Courts	Plan A	87.9	87.5	99.5%	
SVFD	Plan A	1.1	1.0	98.7%	
County	Plan B	131.1	128.9	98.3%	
Courts	Plan B	3.9	3.9	99.8%	
SVFD	Plan B	0.1	0.1	91.9%	
<b>Safety Members</b>					
County	Plan A	\$ 867.2	\$ 866.0	99.9%	
SVFD	Plan A	35.0	35.1	100.2%	
County	Plan B	31.3	30.2	96.7%	
SVFD	Plan B	2.0	1.9	94.9%	
<b>Combined</b>		\$ 3,460.1	\$ 3,453.7	99.8%	



**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

Although the differences are outside the 5% threshold for the Sonoma Valley Fire District PEPRA members, these differences only reflect the liabilities for a handful of members and are largely due to minor differences in how Cheiron and Segal's valuation programs apply rounding to elements such as age and service, as verified in our individual test life reviews. We are not concerned with these differences, and as shown in the tables which follow, our calculation of the contribution rates for these groups are still within the desired tolerance levels.

Our replication of the General employer contribution rates by employer and tier is shown below in Tables II-4A and 4B. All results are within the 5% threshold and the net employer contribution rates are all within 2%.

<b>Table II-4A</b>									
<b>General Legacy Plans</b>									
<b>Replication of Contribution Rates</b>									
	<b>COUNTY</b>			<b>COURT</b>			<b>SVFD</b>		
	Segal	Cheiron	Variance	Segal	Cheiron	Variance	Segal	Cheiron	Variance
<b>Total Normal Cost</b>	22.67%	22.54%	99%	23.33%	22.89%	98%	25.54%	25.38%	99%
<b>Member Contributions<sup>(1)</sup></b>	<u>9.50%</u>	<u>9.42%</u>	99%	<u>9.67%</u>	<u>9.49%</u>	98%	<u>11.76%</u>	<u>11.77%</u>	100%
<b>Employer Normal Cost</b>	13.17%	13.12%	100%	13.66%	13.40%	98%	13.78%	13.61%	99%
<b>Amortization Payment of UAAL<sup>(2)</sup></b>	<u>5.06%</u>	<u>4.93%</u>	97%	<u>19.99%</u>	<u>19.83%</u>	99%	<u>4.18%</u>	<u>3.97%</u>	95%
<b>Employer Contribution Rate</b>	18.23%	18.06%	99%	33.65%	33.22%	99%	17.96%	17.59%	98%

<b>Table II-4B</b>									
<b>General CalPEPRA Plans</b>									
<b>Replication of Contribution Rates</b>									
	<b>COUNTY</b>			<b>COURT</b>			<b>SVFD</b>		
	Segal	Cheiron	Variance	Segal	Cheiron	Variance	Segal	Cheiron	Variance
<b>Total Normal Cost</b>	15.36%	15.24%	99%	15.36%	15.24%	99%	15.36%	15.24%	99%
<b>Member Contributions<sup>(1)</sup></b>	<u>7.68%</u>	<u>7.62%</u>	99%	<u>7.68%</u>	<u>7.62%</u>	99%	<u>7.68%</u>	<u>7.62%</u>	99%
<b>Employer Normal Cost</b>	7.68%	7.62%	99%	7.68%	7.62%	99%	7.68%	7.62%	99%
<b>Amortization Payment of UAAL<sup>(2)</sup></b>	<u>5.06%</u>	<u>4.93%</u>	97%	<u>19.99%</u>	<u>19.83%</u>	99%	<u>4.18%</u>	<u>3.97%</u>	95%
<b>Employer Contribution Rate</b>	12.74%	12.55%	99%	27.67%	27.45%	99%	11.86%	11.59%	98%

<sup>(1)</sup> Excluding expected employee supplemental contributions

<sup>(2)</sup> Less expected employee supplemental contributions to reduce the employer's UAAL

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

Our replication of the Safety employer contribution rates by employer and tier is shown below in Tables II-4C and 4D.

<b>Table II-4C</b>						
<b>Safety Legacy Plans</b>						
<b>Replication of Contribution Rates</b>						
	<b>COUNTY</b>			<b>SVFD</b>		
	Segal	Cheiron	Variance	Segal	Cheiron	Variance
<b>Total Normal Cost</b>	32.57%	32.28%	99%	40.32%	39.58%	98%
<b>Member Contributions<sup>(1)</sup></b>	<u>9.79%</u>	<u>9.87%</u>	101%	<u>10.03%</u>	<u>10.20%</u>	102%
<b>Employer Normal Cost</b>	22.78%	22.41%	98%	30.29%	29.37%	97%
<b>Amortization Payment of UAAL<sup>(2)</sup></b>	<u>9.66%</u>	<u>9.05%</u>	94%	<u>8.13%</u>	<u>8.13%</u>	100%
<b>Employer Contribution Rate</b>	32.44%	31.46%	97%	38.42%	37.50%	98%

<b>Table II-4D</b>						
<b>Safety CalPEPRA Plans</b>						
<b>Replication of Contribution Rates</b>						
	<b>COUNTY</b>			<b>SVFD</b>		
	Segal	Cheiron	Variance	Segal	Cheiron	Variance
<b>Total Normal Cost</b>	26.54%	26.51%	100%	28.00%	26.96%	96%
<b>Member Contributions<sup>(1)</sup></b>	<u>13.27%</u>	<u>13.26%</u>	100%	<u>14.00%</u>	<u>13.48%</u>	96%
<b>Employer Normal Cost</b>	13.27%	13.26%	100%	14.00%	13.48%	96%
<b>Amortization Payment of UAAL<sup>(2)</sup></b>	<u>9.66%</u>	<u>9.05%</u>	94%	<u>8.13%</u>	<u>8.13%</u>	100%
<b>Employer Contribution Rate</b>	22.93%	22.31%	97%	22.13%	21.61%	98%

<sup>(1)</sup> Excluding expected employee supplemental contributions

<sup>(2)</sup> Less expected employee supplemental contributions to reduce the employer's UAAL

All results are within the 5% threshold, except for the County UAAL rates, and the net employer contribution rates are all within 3%. As noted earlier, it is not unusual for there to be larger relative differences in the UAAL and therefore the UAAL amortization rates, due to the leveraging of the assets, particularly for plans such as SCERA that are approaching full funding. As can be seen in the calculations above, these differences do not result in material differences in the County employer contribution rates.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Employee Contribution Rates**

As part of the audit, we replicated the calculations of the individual employee contribution rates based on the applicable provisions of the County Employees Retirement Law (the CERL) and the additional cost-sharing provisions as described in the valuation report. For the Non-PEPRA Legacy tiers, we understand the entry-age based employee contribution rates (excluding the cost-sharing amounts) to be made up of the following components:

- For General Plan A members, a rate providing for an annuity equal to 1/100th of One Year Final Average Compensation at a retirement age of 55, and
- For Safety Plan A members, a rate providing for an annuity equal to 1/100th of One Year Final Average Compensation at a retirement age of 50.

Non-PEPRA Safety members with 30 or more years of service are exempt from paying member contributions. Contributions for Plan A members are integrated with Social Security – by reducing the contribution rates by 1/3 for the first \$350 of monthly compensation – for the groups participating in Social Security (i.e., the County and Courts).

Our calculated member contribution rates were will within 5% of Segal's at all entry ages. The following table includes a comparison of our calculated rates to Segal's at various entry ages.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

<b>Table II-5</b>				
<b>Legacy (Plan A) Member Contribution Rate Comparison<sup>1</sup></b>				
	<b>Entry Age</b>	<b>Segal</b>	<b>Cheiron</b>	<b>Ratio</b>
<b>General Members</b>				
County <sup>2</sup>	25	8.13%	8.14%	100.1%
	35	9.79%	9.79%	100.0%
	45	11.75%	11.75%	100.0%
Courts <sup>2</sup>	25	8.39%	8.40%	100.1%
	35	10.09%	10.11%	100.2%
	45	12.09%	12.13%	100.3%
SVFD	25	8.29%	8.30%	100.1%
	35	9.97%	9.98%	100.1%
	45	11.96%	11.99%	100.2%
<b>Safety Members</b>				
County <sup>2</sup>	25	9.74%	9.74%	100.0%
	35	11.43%	11.43%	100.0%
	45	13.50%	13.50%	100.0%
SVFD	25	9.98%	9.98%	100.0%
	35	11.70%	11.72%	100.2%
	45	13.76%	13.84%	100.6%

<sup>(1)</sup> Excluding expected employee supplemental contributions

<sup>(2)</sup> Rates are 2/3 of the above rates for the first \$350 of monthly compensation

The total member rates computed for the PEPRA Tiers (General and Safety Plan B) are designed to provide for 50% of the total normal cost rate within each Rate Group. We checked that the total member rates determined by Segal meet this requirement, as verified in our calculations of the Normal Cost calculations shown in Tables II-4B and II-4D above.

There are additional UAAL cost sharing contributions of 3.03% pay for County and Court General members, and 3.00% for County Safety members. We verified that the employer UAAL amortization rates appropriately reflect these offsets.

### **Individual Sample Lives**

We requested, and Segal provided, detailed information on the valuation results for 5 individual retired members, 2 terminated vested members, and 5 active members. These test cases were selected to cover as many of the different plan provisions and assumption groups as possible and were also selected to cover participants who exhibited characteristics that we have found can sometimes result in calculation differences between valuation systems.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

For the retired and deferred members, our analysis focuses on a single measure: the present value of future benefits. For the active test cases, our analysis focuses on a comparison of four different measures that are used in the valuation:

- Present value of future benefits (PVB),
- Actuarial accrued liability (AAL),
- Normal cost rate, as a percentage of pay, and
- The projected pay for the following year.

The present value of future benefits tests the application of the plan provisions and assumptions to the census data used to project future benefits. The actuarial accrued liability and normal cost are measures that attribute portions of the present value of future benefits to prior and current periods of service. If the present value of future benefits matches, any differences in the actuarial accrued liability and normal cost are indications that the Entry Age Actuarial Cost Method is being applied differently, thereby allocating costs to different years of service.

Table II-6 contains the comparison of our results. We have the following comments regarding these results:

- The PVB difference for the first calculation (Sample Life #1) appears to be driven by the fact that Segal is including a full year of assumed pay increases when calculating the projected benefit for a member who is above the maximum assumed retirement age (70 for General, 65 for Safety) as of the valuation date, even though the member is assumed to retire immediately. We believe this represents an inconsistency in calculating the PVB for this member. However, as there are very few such members (24 General members and 9 Safety members as of the December 31, 2021 valuation) and the relative difference in the liability for these members is still modest, we believe the issue to be immaterial to the overall results.
- The AAL comparison for two of the three PEPRAs members (Sample Lives #3 & #4) is outside the 5% threshold, but the PVB is within the 5% margin. As noted above, these differences can occur when the actuarial software allocates the costs to different years of service. In both of these cases, Segal's software calculates the "Entry Age" differently by one year from our software, due to differences in rounding methodologies, which results in them allocating one additional year of the liability to prior service. Both techniques are reasonable.

Also, the AAL variance for these two members is significant since they both have less than three years of service. So, an additional year of service results in an AAL approximately 25% to 33% higher. However, as these members continue to accrue service, the percentage differences of the AAL calculation between the two valuation systems will decline. Therefore, we are not concerned with these differences.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

<b>Table II-6 Sample Life Comparison</b>					
			<b>Segal</b>	<b>Cheiron</b>	<b>Difference</b>
<b>1</b>	<b>Active, General, Non-PEPRA</b>	Present Value of Future Benefits <sup>(1)</sup>	\$ 644,027	\$ 622,224	-3.4%
		Actuarial Accrued Liability (AAL)	644,027	622,224	-3.4%
		Normal Cost	-	-	N/A
		Pay for 2022	63,699	63,699	0.0%
<i>(1) Member age 71. Difference attributable to Segal use of pay for 2022.</i>					
<b>2</b>	<b>Active, Safety, Non-PEPRA</b>	Present Value of Future Benefits	\$ 633,931	\$ 625,016	-1.4%
		Actuarial Accrued Liability (AAL)	371,852	356,844	-4.0%
		Normal Cost	34.1%	34.9%	2.3%
		Pay for 2022	110,958	110,958	0.0%
<b>3</b>	<b>Active, General, PEPRA</b>	Present Value of Future Benefits	\$ 158,145	\$ 152,269	-3.7%
		Actuarial Accrued Liability (AAL) <sup>(2)</sup>	34,591	24,150	-30.2%
		Normal Cost	8.6%	8.9%	3.7%
		Pay for 2022	134,974	134,974	0.0%
<i>(2) Due to difference in assumed entry age.</i>					
<b>4</b>	<b>Active, General, PEPRA</b>	Present Value of Future Benefits	\$ 179,357	\$ 175,258	-2.3%
		Actuarial Accrued Liability (AAL) <sup>(2)</sup>	17,354	11,970	-31.0%
		Normal Cost	11.6%	11.7%	0.8%
		Pay for 2022	105,360	105,360	0.0%
<i>(2) Due to difference in assumed entry age.</i>					
<b>5</b>	<b>Active, Safety, PEPRA</b>	Present Value of Future Benefits	\$ 347,492	\$ 348,185	0.2%
		Actuarial Accrued Liability (AAL)	155,977	151,741	-2.7%
		Normal Cost	42.8%	43.9%	2.6%
		Pay for 2022	134,974	134,974	0.0%
<b>6</b>	<b>Retiree, General</b>	Present Value of Future Benefits	\$ 276,587	\$ 275,189	-0.5%
<b>7</b>	<b>Retiree, Safety</b>	Present Value of Future Benefits	\$ 879,046	\$ 868,258	-1.2%
<b>8</b>	<b>Beneficiary, General</b>	Present Value of Future Benefits	\$ 67,954	\$ 67,954	0.0%
<b>9</b>	<b>Beneficiary, Safety</b>	Present Value of Future Benefits	\$ 988,438	\$ 988,438	0.0%
<b>10</b>	<b>Disability, Safety</b>	Present Value of Future Benefits	\$ 424,088	\$ 424,088	0.0%
<b>11</b>	<b>Deferred, General</b>	Present Value of Future Benefits	\$ 323,874	\$ 323,874	0.0%
<b>12</b>	<b>Deferred, Safety</b>	Present Value of Future Benefits	\$ 139,536	\$ 139,206	-0.2%

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Census Data**

Both the SCERA Staff and Segal provided us with the data that was used in the December 31, 2021 actuarial valuation. We reviewed the information in both files and reviewed the data questions provided to SCERA by Segal and the SCERA responses.

In Table II-7 on the following page, we include an exhibit comparing the processed December 31, 2021 data file – as modified appropriately based on the SCERA responses to Segal's questions, as noted in Segal's report and in follow-up communications for issues such as annualization of pay – to the raw data provided by SCERA to Segal and found only very minor differences between the two files. We understand that any discrepancies between these files are the result of the correspondence between Segal and SCERA described in the data questions and answers of which we were provided copies.

We also find that the methods and requirements provided in the Actuarial Standard of Practice No. 23 *Data Quality* have been adhered to, to the extent applicable for the valuation of pension plan obligations.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

<b>Table II-7</b>			
<b>Summary of Member Statistics as of December 31, 2021</b>			
	Segal	SCERA Data	Ratio
<b>Active Members</b>			
Total Number	4,066	4,066	100.0%
Average Age	45.2	45.2	100.0%
Average Service	9.7	9.7	100.0%
Average Compensation *	\$ 100,413	\$ 89,439	89.1%
<b>Vested Terminated Members</b>			
Total Number	1,569	1,570	100.1%
Average Age	45.1	45.0	99.9%
<b>Service Retirees</b>			
Total Number	4,169	4,177	100.2%
Average Age	70.2	70.2	100.0%
Average Monthly Benefit	\$ 3,271	\$ 3,274	100.1%
<b>Disabled Retirees</b>			
Total Number	652	652	100.0%
Average Age	64.7	64.7	100.0%
Average Monthly Benefit	\$ 2,690	\$ 2,690	100.0%
<b>Beneficiaries</b>			
Total Number	657	657	100.0%
Average Age	70.9	70.9	100.0%
Average Monthly Benefit	\$ 1,509	\$ 1,509	100.0%

\* SCERA Data is the compensation for calendar year 2021 prior to projecting salaries for the 2022 plan year.



**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Plan Provisions**

We compared the summary of plan provisions shown in Section 4, Exhibit 2 of Segal's December 31, 2021 valuation report to the benefits as summarized on the SCERA website and based on our understanding of the relevant sections of the County Employees Retirement Law (CERL). The plan provisions shown in Section 4 match the materials on the website and our understanding of the CERL.

Based on our close match of the Segal liabilities as part of our parallel valuation, we conclude that Segal has appropriately reflected material plan provisions in the actuarial valuation.

In addition, in order to verify that the actuarial valuation accurately reflects the way the Plan is administered, we reviewed sample benefit calculations provided by SCERA for members who commenced receiving benefits on or shortly after December 31, 2021. We compared the data used in the calculations to the information Segal used in the actuarial valuation for these members prior to retirement, and compared the actual benefits these members are now receiving to the benefit amounts we expected them to receive if the member had retired or become disabled shortly after the valuation date, based on our valuation model.

In all cases, the information provided in the actual benefit calculations was consistent with the information used in Segal's actuarial valuation. There were small discrepancies in some of the calculations between the service and pay amounts used in the valuation and actual benefit calculations, but this is to be expected, since the actual service and pay amounts will include items that may have occurred after the valuation date, such as service purchases and final compensation payments. In all cases the benefit formulas used to compute the benefits were applied consistently between the actuarial valuation and the benefit calculations.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Actuarial Assumptions**

The December 31, 2021 actuarial valuation results were based on assumptions ultimately adopted by the SCERA Board, based on recommendations made by Segal in the Actuarial Experience Study covering the three-year period ending December 31, 2020. As part of our actuarial audit review, we have performed a peer review of the experience study and have several comments and recommendations. We also note that our review is based on the information that would have been known to Segal at the time their experience study was performed (in October 2021).

It should be noted that the setting of assumptions involves a great deal of professional judgment and is both art and science. Two actuaries reviewing the same experience may reach different conclusions with respect to recommendations of actuarial assumptions. It is not our intent to substitute our judgment for the judgment of the consulting actuary to SCERA. Rather, it is our intent to determine whether the actuarial assumptions are reasonable based upon all of the data available, and in some cases, even when the current assumptions may be reasonable, to present alternatives for Segal and SCERA to consider.

**Demographic Assumptions**

We commend Segal for using 12 years of census data for the mortality experience. It is generally the case that using more data when analyzing participant behavior will produce more reliable results and mitigates anomalies in the experience. We encourage Segal to continue using this approach. We note that in some cases their review of other demographic assumptions (disability rates, terminations, etc.) only explicitly included the most recent three-year period, though data for prior periods is implicitly reflected by the fact that the prior assumptions formed the starting basis for their recommendations. We encourage Segal to explicitly reference and incorporate the data for prior periods when conducting their next experience study, especially since this period (from January 1, 2021 through December 31, 2023) may exhibit short-term fluctuations due to the pandemic and its aftermath.

We strongly support several changes Segal made to their approach in the recent study, including:

- The use of a benefits-weighted mortality rate analysis and their recommendation to use base mortality tables that were generated on a benefit-weighted basis,
- The application of credibility techniques when developing recommended adjustments to standard mortality tables, and
- The study and use of age and service-based retirement rate tables for the Legacy members.

***Retirement age for deferred vested members***

We also support Segal's recommendation to use different commencement age assumptions for the current and future deferred vested members, based on whether the members have established or are expected to establish reciprocity. Their recommendation to use an earlier commencement age for the members without reciprocity is consistent with our observations and recommendations at similar systems.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

However, we recommend that Segal consider further reductions in the assumed commencement ages for some non-reciprocal members, specifically the Safety Plan A members. Segal recommended a reduction in the assumed commencement age from 53 to 52, though their data showed an actual average commencement age of 50.8. Safety members under Section 31664.1 (3.0% @ 50) who are not working for a reciprocal system do not have *any* incentive to postpone retirement once they reach age 50, since their benefit multiplier does not increase.

In fact, if they postpone retirement to age 52 (following Segal's proposed assumption), they will be forfeiting two years of benefit payments. Therefore, we strongly suggest that Segal base their recommendation for the commencement age for deferred non-reciprocal members to be no greater than the youngest age at which the member would be eligible for their maximum benefit (age 50 for Safety Plan A, age 60 for General Plan A), unless they have specific evidence that members eligible to commence benefits at those ages are not doing so.

***Reciprocity rates for deferred vested members***

As part of their last experience review, Segal recommended maintaining the assumption that 25% of General deferred vested members will go on to be covered by a reciprocal retirement system, and reducing the same assumption from 40% to 35% for Safety members. They based this analysis on the percentage of deferred members in the valuation data who were identified as having gone to work with a reciprocal employer.

However, for many of the 1937 Act plans we have worked with (as either the system or auditing actuary), we understand that members may not report that they have established reciprocity with another system until just prior to retirement. Therefore, we generally request that the system provide us with information on the number of members that have *retired from deferred status* and have reciprocity with another system during the experience study period or we perform our own research on these members, rather than just looking at the data reported on those who have terminated. When we have reviewed reciprocity rates under both methods – by looking at new terminations and newly retired deferred vested members who subsequently were employed by a reciprocal system - the rates are generally substantially higher when looking at recent retirements.

We suggest that as part of the next experience study for SCERA, Segal considers analyzing this assumption using retirement experience of deferred vested members in addition to their current method of analyzing the data for deferred vested members.

**Economic Assumptions**

Overall, the economic assumptions proposed in Segal's review represented a reasonable set of assumptions, based on the information known as of the time the study was performed. Segal recommended a reduction to the assumed rate of price inflation from 2.75% to 2.50%, and a corresponding reduction in the investment return assumption and wage growth assumption to 6.75% and 3.00%, respectively, to reflect the same rate of real investment return and real wage growth.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

In general, we believe the information presented by Segal in their study was appropriate and supported their recommendations. However, there are two areas in which the methodologies they used to analyze the investment return assumption differ from those we generally use (both of which we commented on as part of our prior audit), and our understanding is that Segal has recently adopted similar approaches in their experience studies for other 1937 Act systems.

***Investment Returns and Expenses***

A frequent assumption used in setting return assumptions is that the additional returns earned due to active management will offset the higher level of expenses associated with active management. In both the most recent and prior experience study reports, instead of this approach Segal assumed that additional expenses for active management simply reduce the return, which is a more conservative assumption but implies that – all other things being equal – Segal's model would have resulted in a higher recommended return assumption if the Board were invested passively instead of using active managers.

Segal commented on this in their most recent study, and we have recently reviewed other experience study reports from Segal that have reflected a change in their approach to only deduct investment expenses associated with “investment consulting fees, custodian fees, and other miscellaneous investment expenses,” explicitly excluding investment expenses associated with active management. We use a similar approach for our clients, and we would support Segal making a change to use this approach for future studies for SCERA.

We also note that in the most recent and prior experience study reports, Segal based their recommendations for the assumed rate of return on their analysis of the average arithmetic return. They also included a comparison to an alternative model that incorporates forward looking expected geometric returns, which are lower than expected arithmetic returns.

Our experience studies generally use this latter approach, and our understanding is that Segal has been transitioning to this approach with their recent 1937 Act experience studies; we would support this change as well for SCERA. However, as Segal noted in their prior study, it would not necessarily result in a different recommendation for the assumed return, especially if considered in conjunction with a change in the investment expense adjustment as discussed above.

***Pensionable Payroll Growth Assumption***

Segal recommended the use of a payroll growth assumption (used in the calculation of the UAAL payment) equal to the sum of the inflation rate plus real “across the board” salary increases, which is the assumption used to project the non-merit and promotional components of salary growth for individual members.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

This is a standard approach and the resulting recommended assumption of 3.00% payroll growth remains reasonable. However, for their next study we recommend that Segal consider including an analysis of the potential impact of the PEPRAs compensation limits on the rates of payroll growth, which could over time lead to lower rates of growth in the amount of overall pensionable compensation compared to the rates of individual salary increases, if a growing portion of the active membership begins to be affected by those limits. However, the recent high levels of inflation may have moderated this concern, at least temporarily, since the PEPRAs compensation limits have increased substantially over the last two years.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Actuarial Methods**

Actuarial methods relate to the application of actuarial assumptions in the determination of Plan liabilities and contributions. These methods include the actuarial cost method, amortization policy, actuarial asset smoothing, and cost-sharing methodologies. The questions guiding our review of the actuarial methods were the following:

- Are the methods acceptable and appropriate for the intended purpose?
- Do the methods comply with relevant accounting and actuarial standards?

**Actuarial Cost Method**

The individual Entry Age Actuarial Cost Method is used in the December 31, 2021 actuarial valuation. Under this method, the expected cost of benefits for each individual member is allocated over that member's career as a level percentage of that member's expected salary. The normal cost for the plan is the sum of the individual normal costs calculated for each member. We concur with this methodology and note that it is a "Model Practice" based on the guidance issued by the California Actuarial Advisory Panel (CAAP), and a "Best Practice" based on guidance issued by the Government Finance Officers Association.

The Segal experience study page 68 noted a recommended refinement to the Entry Age calculation, specifically to exclude periods of service with a reciprocal system in determining the period over which the SCERA benefits are to be allocated. We agree with this refinement and note that this adjustment is required to bring the Entry Age calculation into compliance with the methods required to be used in the GASB 67/68 disclosure requirements. We reviewed the calculations for a member with prior reciprocal service as one of our individual test lives, and found that Segal is applying the method as described in their reports.

**Asset Smoothing Method**

The Actuarial (or smoothed) Value of Assets is determined using a five-year period for gains and losses. In our opinion, this method satisfies the Actuarial Standard of Practice which governs asset valuation methods (ASOP No. 44), which requires that the actuarial asset value should fall within a "reasonable range around the corresponding market value" and that differences between the actuarial and the market value should be "recognized within a reasonable period of time."

We have confirmed that the Segal report applies the actuarial smoothing method as described. We have one minor comment, which was also included in our prior audit report. Segal is including the cash flows associated with the administrative expenses in the non-investment cash flows. We encourage Segal to review whether the administrative expenses should be included as an offset to the investment returns instead of as a non-investment cash flow, since the assumed rate of investment return is net of both investment and administrative expenses.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Amortization Policy**

The current Amortization Policy for SCERA is a layered amortization policy, with the balance of the unfunded liability as of December 31, 2007 amortized as a level percentage of payroll over a closed 20-year period, and with each subsequent year's unfunded liability amortized as a level percentage of payroll over a new closed 20-year period.

We have confirmed that the Segal report applies the amortization method as described. This amortization method is in accordance with funding policy guidance issued by the CAAP, GFOA, and the Conference of Consulting Actuaries Public Plans Community, as well as requirements for calculating an Actuarially Determined Contribution under the revised Actuarial Standard of Practice No. 4 (*Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*), which will be effective for the December 31, 2023 actuarial valuation. This amortization policy also meets the minimum standards of the '37 Act.

**Cost Sharing Methods**

The valuation report includes a description of the cost sharing methods used to determine the Normal Cost and UAAL rates for the County, Courts, and Sonoma Valley Fire District (SVFD) members. We have confirmed that the contribution rates have been determined in accordance with methods as described in Section 4, Exhibit 1 of Segal's report (page 90), and that these methods represent a reasonable set of methodologies for allocating costs in a multi-employer cost sharing plan.

**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS**

**Contents of the Reports**

We find the actuarial valuation and experience study reports to be in compliance with the Actuarial Standards of Practice, including recent updates to ASOPs regarding risk and modeling. We understand that Segal publishes a stand-alone risk report annually in addition to the actuarial valuation. We observed that the risk report contains many of the forward-looking projections we typically include in our own actuarial valuation reports, and we support the practice of producing these projections on an annual basis.

Future reports are expected to contain additional disclosures now required by ASOP No. 4. In particular, for measurement dates (and reports issued) on or after February 15, 2023, the report should disclose a Low-Default-Risk Obligation Measure under an alternative discount rate “derived from low-default-risk fixed income securities.”



**ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES RETIREMENT ASSOCIATION**

**APPENDIX A – GLOSSARY OF TERMS**

**1. Actuarial Assumptions**

Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, investment income, and salary increases. Demographic assumptions (rates of mortality, disability, turnover, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

**2. Actuarial Gain (Loss)**

The difference between actual experience and actuarial assumption anticipated experience during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial funding method.

**3. Actuarial Accrued Liability (AAL or AL)**

The actuarial accrued liability is the present value of all benefits accrued as of the valuation date using the methods and assumptions of the valuation. It is also referred to by some actuaries as the “accrued liability.”

**4. Actuarial Present Value**

The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payment.

**5. Actuarial Value of Assets**

The Actuarial Value of Assets equals the Market Value of Assets adjusted according to the smoothing method. The smoothing method is intended to smooth out the short-term volatility of investment returns in order to stabilize contribution rates and the funded status.

**6. Actuarial Cost Method**

A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal costs and the Actuarial Liability. It is sometimes referred to as the “actuarial funding method.”

ACTUARIAL AUDIT REPORT OF THE  
SONOMA COUNTY EMPLOYEES RETIREMENT ASSOCIATION

**APPENDIX A – GLOSSARY OF TERMS**

**7. Funded Status**

The Actuarial Value of Assets divided by the Actuarial Liability. The funded status can also be calculated using the Market Value of Assets.

**8. Governmental Accounting Standards Board**

The Governmental Accounting Standards Board (GASB) defines the accounting and financial reporting requirements for governmental entities. GASB Statement No. 67 defines the plan accounting and financial reporting for governmental pension plans, and GASB Statement No. 68 defines the employer accounting and financial reporting for participating in a governmental pension plan.

**9. Market Value of Assets**

The fair value of the Plan’s assets assuming that all holdings are liquidated on the measurement date.

**10. Normal Cost**

The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. It is sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial liability is not part of the normal cost.

**11. Present Value of Future Benefits**

The estimated amount of assets needed today to pay for all benefits promised in the future to current members of the Plan, assuming all actuarial assumptions are met.

**12. Present Value of Future Normal Costs**

The actuarial present value of retirement system benefits allocated to future years of service.

**13. Unfunded Actuarial Accrued Liability (UAL or UAAL)**

The difference between the actuarial accrued liability and the Actuarial Value of Assets. This is sometimes referred to as the “unfunded accrued liability.”



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