ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM

BOARD OF RETIREMENT
2223 WELLINGTON AVENUE, SUITE 100
SANTA ANA, CA 92701

AUDIT COMMITTEE MEETING
March 27, 2018
10:30 a.m.

Members of the Committee
Frank Eley, Chair
Charles Packard, Vice Chair
Russell Baldwin
Shari Freidenrich

AGENDA

This agenda contains a brief general description of each item to be considered. The Committee may take action on any item included in the agenda; however, except as otherwise provided by law, no action shall be taken on any item not appearing on the agenda. The Committee may consider matters included on the agenda in any order, and not necessarily in the order listed.

PUBLIC COMMENT

At this time, members of the public may comment on matters not included on the Agenda that are within the subject matter jurisdiction of the Committee, provided that no action can be taken on any item not appearing on this Agenda unless otherwise authorized by law.

When addressing the Committee, please state your name for the record prior to providing your comments. Speakers will be limited to three (3) minutes.

NOTE: Public comment on matters listed in this agenda will be taken at the time the item is addressed, prior to the Committee's discussion of the item. Persons wishing to address items on the agenda should provide written notice to the Secretary of the Committee prior to the Committee's discussion on the item by signing in on the Public Comment Sign-In Sheet located at the back of the room.

ACTION ITEMS

A. **ACTUARIAL AUDIT REPORT FOLLOW-UP**
Presentation by Paul Angelo, Segal Consulting

Recommendation: Take appropriate action.

INFORMATION ITEMS

B. **2017 FINANCIAL STATEMENT AUDIT – ENTRANCE CONFERENCE**
Presentation by Linda Hurley and Amy Chiang, Macias Gini & O'Connell

COMMITTEE MEMBER COMMENTS

CHIEF EXECUTIVE OFFICER/STAFF COMMENTS

COUNSEL COMMENTS

ADJOURNMENT

NOTICE OF NEXT MEETINGS

GOVERNANCE COMMITTEE MEETING
March 28, 2018
9:00 A.M.

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM
2223 E. WELLINGTON AVENUE, SUITE 100
SANTA ANA, CA 92701

INVESTMENT COMMITTEE MEETING
March 29, 2018
9:00 A.M.

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM
2223 E. WELLINGTON AVENUE, SUITE 100
SANTA ANA, CA 92701

REGULAR BOARD MEETING
April 18, 2018
9:00 A.M.

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM
2223 E. WELLINGTON AVENUE, SUITE 100
SANTA ANA, CA 92701

All supporting documentation is available for public review in the retirement office during regular business hours, 8:00 a.m. – 5:00 p.m., Monday through Thursday and 8:00 a.m. – 4:30 p.m. on Friday.

It is OCERS' intention to comply with the Americans with Disabilities Act ("ADA") in all respects. If, as an attendee or participant at this meeting, you will need any special assistance beyond that normally provided, OCERS will attempt to accommodate your needs in a reasonable manner. Please contact OCERS via email at adminsupport@ocers.org or by calling 714-558-6200 as soon as possible prior to the meeting to tell us about your needs and to determine if accommodation is feasible. We would appreciate at least 48 hours' notice, if possible. Please also advise us if you plan to attend meetings on a regular basis.

A

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: March 15, 2018

TO: Members of the Audit Committee

FROM: Mark Adviento, Internal Auditor

SUBJECT: **ACTUARIAL AUDIT REPORT FOLLOW-UP**

Recommendation

Take appropriate action.

Background/Discussion

At the January 30, 2018 Audit Committee meeting, Cheiron presented the results of its actuarial audit report of the December 31, 2016 actuarial valuation performed by Segal Consulting for OCERS. The audit report also included the results of Cheiron's peer review of Segal Consulting's most recent Actuarial Experience Study (for the three years ending December 31, 2016).

Mr. Paul Angelo of Segal Consulting will address Cheiron's audit recommendations found in the audit report.

A copy of Segal Consulting's written response to Cheiron's audit is attached, as well as a copy of Cheiron's audit report.

Submitted by:

M.A. approved

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Mark Adviento, CPA
Internal Auditor

Segal Consulting

100 Montgomery Street Suite 500 San Francisco, CA 94104-4308
T 415.263.8200 www.segalco.com

March 20, 2018

Mr. Steven Delaney
Chief Executive Officer
Orange County Employees Retirement System
2223 Wellington Avenue
Santa Ana, CA 92701-3101

Re: Audit Findings from Cheiron on Valuation and Experience Study

Dear Steve,

Cheiron was contracted by the Board to review the liabilities and the contribution rates determined in the December 31, 2016 valuation for the 2018/2019 fiscal year. They were also contracted to review the economic and demographic assumptions recommended in our triennial experience study for use in the December 31, 2017, 2018 and 2019 valuations.

According to Cheiron, the results of "the valuation as of December 31, 2016 are reasonably accurate and were computed in accordance with generally accepted actuarial principles." Also, Cheiron found the economic and demographic assumptions "to be reasonable and in accordance with generally accepted actuarial principles." As noted both in their report and during their January 30, 2018 presentation to the Audit Committee, these are the principal results of the actuarial audit.

Cheiron also recommended that Segal review our rates of service retirement and post-retirement mortality as well as our methodology for converting the post-retirement generational mortality table into a static mortality table for determining benefits paid under the optional forms when members retire. In the rest of this letter, we provide some high level responses to the points raised by Cheiron in those three areas. In addition, we also provide clarifications in response to the comments they made with respect to our description of the procedure we use to establish our recommended 7.00% investment return assumption.

Service Retirement Rates

Cheiron commented that the rates of service retirement were generally higher for members with more years of service because those members tended to be eligible for higher benefits based on their service. We would generally agree with their comment and we have used the type of service based service retirement assumptions that Cheiron has recommended in their report for OCERS' Safety membership groups (and for a few of our other clients). However, whether a system should introduce that type of assumption depends on the years of service breakpoint, the number of members who actually retired above the service breakpoint and the resulting contribution rate impact of that type of assumption.

In the case of OCERS Safety members, we had until the most recent triennial experience study been assuming that all Safety Probation, Law and Fire members would retire immediately (i.e., 100% retirement rate) once they accrued a benefit equal to 100% of their final average salary (FAS). (For Safety legacy members covered under the 3% at 50 or 3% at 55 formula, they would accrue 100% of FAS after a service breakpoint of 33 1/3 years.) However, in the current triennial experience study, we no longer recommended 100% retirement rate for Fire members because the experience from the current three-year experience study period showed lower retirement rates among Fire members who had already accrued 100% of FAS.

For the other retirements during the current triennial experience study period, we included the following table on page 30 of our triennial experience study report to show the incidence of retirement based on years of service.

	Rate of Retirement (%)	
Years of Service	**Actual Rate - General Members**	**Actual Rate - Safety Members**
0 - 4	0.00	0.00
5 - 9	47.59	100.00
10 – 14	6.64	8.11
15 – 19	6.75	8.54
20 – 24	8.63	4.29
25 – 29	11.87	15.59
30 – 34	18.57	31.77
35 – 39	29.17	20.59
40 & over	29.17	0.00

For Safety members, other than those Probation and Law members who actually retired after 33 1/3 years of service, we did not observe a strong correlation between years of service and incidence of retirement.

In the case of General members, the service breakpoints that Cheiron suggested were less than 20 years of service, 20-29 years of service and more than 30 years of service. According to the actual incidence of retirement based on years of service for General members, we could consider bifurcating the retirement rates using a relatively high service breakpoint such as 35 years since the incidence of retirement increased somewhat between the 30 – 34 service category and 35 –

39 service category. However, given that there were only 69 retirements[1] out of a total of 1,412 retirements (i.e., around 5% of the total General retirements) who had over 35 years of service during the three-year experience study period, we believe it would still be appropriate to apply the age based service retirement assumptions for General members without the service breakpoint until the next triennial experience study to be completed before the December 31, 2020 valuation.

Benefit-Weighted Versus Headcount-Weighted Mortality Assumptions and Difference in Life Expectancies between General and Safety Retirees

As part of the current triennial experience study, Segal recommended a generational approach to predict future post-retirement mortality improvements. Under a generational approach, the amount of margin to anticipate future mortality improvement is about double the margin we used just three years ago in the last triennial experience study. Furthermore, we introduced the Board to the possible use of a benefit-weighted approach to setting the mortality tables whereby the age adjustment would be developed by weighting the mortality experience based on the level of a retiree's income at OCERS. We have not recommended the benefit-weighted approach in the current study because we believe it would be reasonable for the Board to continue the historical approach to setting the mortality tables without considering a retiree's income at OCERS (also known as the headcount-weighted approach) and to wait until more information pertaining to the income effect on mortality for public pension plans becomes available from the Society of Actuaries. (We note that the Society's "RP-2014" benefit-weighted mortality table was prepared without any data from public and multi-employer pension plans.)

Had the benefit-weighted mortality tables been used in the triennial experience study, the total employer and employee rate impact of the new mortality assumption for the System as a whole would have further increased by 2.6%[2] of payroll. Specifically, the 4.3% of payroll mortality impact as recommended by Segal using the headcount-weighted mortality tables would increase to 6.9% of payroll using the benefit-weighted mortality tables.

As we mentioned on page 39 of our triennial experience study report, the Retirement Plans Experience Committee (RPEC) of the Society of Actuaries is currently studying benefit-weighted mortality tables based on separate experience for public pension plans and those mortality tables will be available in 2018/2019. We believe that OCERS should consider a switch to use benefit-weighted mortality tables at the next triennial experience study after those public sector experience mortality tables become available.

Another comment related to mortality tables that Cheiron included in their findings had to do with the difference in life expectancies between the General retirees (including all beneficiaries) and Safety retirees that we recommended in our post-retirement mortality assumptions. While

[1] If we were to use a breakpoint of 30 years in lieu of 35 years, there were 270 retirements (or around 19% of the total retirements) who had over 30 years of service during the three-year experience study period.

[2] The additional 2.6% cost increase is based on the benefit-weighted mortality table with generational projection. Segal had previously analyzed the cost impact of applying the benefit-weighted mortality table with static projection in the triennial experience study.

Cheiron agreed that our recommended mortality assumptions for General retirees are reasonable (the RP-2014 male and female tables with no age adjustment), they believed our recommended mortality assumptions for Safety retirees (the RP-2014 male and female tables set back four years) with longer life expectancies are significantly more conservative. Furthermore, Cheiron cited an experience study performed by Milliman for the Oregon PERS in which Safety retirees covered by that system have shorter life expectancies than General retirees. (However, we noted that in Milliman's most recent experience study they prepared for the Los Angeles County Employees Retirement Association, they had recommended separate mortality tables to anticipate longer life expectancies for the Safety retirees covered under that plan.)

As we pointed out on slide #9 of our presentation on October 16, 2017 (and a copy of that slide is included in Attachment A for ease of reference), Safety retirees continued to exhibit better than expected mortality experience during each of the 3 three-year experience study periods from 2008 to 2016.[3] Even though there were lower rates of death among the Safety retirees compared to the General retirees (and all beneficiaries), the System could incur additional UAAL if the trend of improved Safety retiree mortality experience were to continue. In addition, the more "conservative" assumptions for Safety could also be reasonable when considered in conjunction with the benefit-weighted approach[4] that we would likely recommend to the Board at the next experience study based on the public pension plan experience study that is currently underway, including separate tables for General and Safety retirees.

Approach to Convert Post-Retirement Generational Mortality Table into a Static Mortality Table for Determining Optional Forms of Payment and Reserves

We agree with Cheiron that there are different methods that could be considered to convert the generational mortality table into a static mortality table for use in determining benefits paid under the optional forms and reserves when members retire. We believe the approach we recommended in the current experience study to be reasonable and consistent with the past practice we have been following at OCERS. We would take Cheiron's recommendation for an alternative approach under advisement and consider implementing that as part of the next experience study.

Description of Segal's Procedure Used to Establish 7.00% Investment Return Assumption

In Cheiron's report, they commented that the economic assumptions (in particular the investment return assumption of 7.00% and inflation assumption of 2.75%) recommended by Segal to be "a reasonable set of assumptions." They also commented on the terminology we use to describe the effect of the "risk adjustment" component of the investment return. In our next experience study report we will provide a revised and clarified description of the risk adjustment as part of the

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3 For instance, for the Safety healthy retirees, the "Ratio of Actual to Proposed" deaths has eroded from 1.27 for 2008-2010 to 0.94 for 2010-2013 and then to 0.81 for 2013-2016. Generally speaking, we would like the ratio to be closed to 1.00 when using generational mortality tables.

4 As discussed earlier, under the benefit-weighted approach, a retiree receiving a higher benefit is expected to live longer compared to a retiree receiving a lower benefit.

expected arithmetic average return approach we use to develop our recommended investment return assumption.

We would also note that we do not believe Cheiron is doing an apples-to-apples comparison when they determine that under the geometric average return approach an assumption of 6.25% is necessary to obtain a 55% confidence level on a compounded basis. This is because under the geometric approach used by Cheiron for their other California clients, we understand they would not have reduced the expected return calculation by the 0.66% that Segal has taken as an allowance for future investment expenses. This means that, if they were to apply their model to OCERS in a manner consistent with their other clients, the 6.25% value would increase to a level comparable to our 7.00% recommended assumption.

Please let us know if you have any questions.

Sincerely,

Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary

Andy Yeung ASA, MAAA, FCA, EA
Vice President and Actuary

MYM/bbf
Enclosure

cc: Brenda Shott
Suzanne Jenike

Attachment A

OCERS Recent Mortality Experience

		General Healthy Including Spouse				9-year
2013-2016		2010-2013		2008-2010		
Expected:	976.5	Expected:	833.2	Expected:	708.1	**2,517**
Actual:	991.0	Actual:	939.0	Actual:	726.0	**2,656**
Ratio of Actual to Expected:	1.01	Ratio of Actual to Expected:	1.13	Ratio of Actual to Expected:	1.03	**1.06**
Proposed:	1018.6	Proposed:	888.6	Proposed:	798.5	**2,705**
Ratio of Actual to Proposed:	0.97	Ratio of Actual to Proposed:	1.06	Ratio of Actual to Proposed:	0.91	**0.98**
		Safety Healthy				
2013-2016		2010-2013		2008-2010		
Expected:	53.4	Expected:	40.3	Expected:	31.1	125
Actual:	47.0	Actual:	43.0	Actual:	47.0	137
Ratio of Actual to Expected:	0.88	Ratio of Actual to Expected:	1.07	Ratio of Actual to Expected:	1.51	1.10
Proposed:	58.2	Proposed:	45.6	Proposed:	37.1	141
Ratio of Actual to Proposed:	0.81	Ratio of Actual to Proposed:	0.94	Ratio of Actual to Proposed:	1.27	0.97
		General Disabled				
2013-2016		2010-2013		2008-2010		
Expected:	73.9	Expected:	64.8	Expected:	58.6	197
Actual:	76.0	Actual:	70.0	Actual:	69.0	215
Ratio of Actual to Expected:	1.03	Ratio of Actual to Expected:	1.08	Ratio of Actual to Expected:	1.18	1.09
Proposed:	78.8	Proposed:	71.1	Proposed:	67.9	218
Ratio of Actual to Proposed:	0.96	Ratio of Actual to Proposed:	0.99	Ratio of Actual to Proposed:	1.02	0.99
		Safety Disabled				
2013-2016		2010-2013		2008-2010		
Expected:	17.2	Expected:	13.0	Expected:	10.0	40
Actual:	21.0	Actual:	14.0	Actual:	18.0	53
Ratio of Actual to Expected:	1.22	Ratio of Actual to Expected:	1.08	Ratio of Actual to Expected:	1.80	1.32
Proposed:	21.0	Proposed:	17.0	Proposed:	14.5	53
Ratio of Actual to Proposed:	1.00	Ratio of Actual to Proposed:	0.83	Ratio of Actual to Proposed:	1.24	1.00

Expected: Based on assumptions recommended in the December 31, 2014 triennial experience study (RP-2000 projected, General -0, Safety -2).
Proposed: Based on assumptions recommended in the December 31, 2017 triennial experience study (RP-2014 base table, General -0, Safety -4).

Orange County Employees Retirement System

Actuarial Review of December 31, 2016 Actuarial Valuation and Actuarial Experience Study

Produced by Cheiron

January 2018

www.cheiron.us 1.877.CHEIRON (243.4766)

TABLE OF CONTENTS

Via Electronic Mail

January 24, 2018

Board of Trustees
Orange County Employees Retirement System
2223 Wellington Avenue
Santa Anna, CA 92701

Members of the Board:

Cheiron is pleased to present the results of our actuarial audit of the December 31, 2016 actuarial valuation of the Orange County Employees Retirement System (OCERS) and peer review of the Actuarial Experience Study covering the period from January 1, 2014 to December 31, 2016, 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 OCERS.

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 OCERS and Segal. This information includes, but is not limited to, actuarial assumptions and methods adopted by OCERS, 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.

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 which are consistent with 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 Trustees
Orange County Employees Retirement System
January 24, 2018

This report was prepared exclusively for the Orange County Employees Retirement System 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, FCA, MAAA, EA
Consulting Actuary

Anne Harper, FSA, MAAA, EA
Consulting Actuary

SECTION I – EXECUTIVE SUMMARY

Key Findings and Recommendations

The main findings of our review are as follows:

1. As a result of our efforts, we are able to confirm that the liabilities and costs computed in the valuation as of December 31, 2016 are reasonably accurate and were computed in accordance with generally accepted actuarial principles.

2. 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. However, we recommend that Segal review the recommendations in two areas – rates of retirement and mortality – and determine whether additional analysis is merited.

Our primary recommendations are related to the assumptions, and are summarized as follows:

- Cheiron determined the non-economic actuarial assumptions proposed in Segal's Experience Study to be generally reasonable and in compliance with acceptable standards of actuarial practice. In particular, we support their recommendation of a change to use generational mortality assumptions. However, as noted above, we believe Segal should review the methodology used to analyze the mortality and retirement assumptions:

    - In addition to examining the mortality experience based on the number of members who lived and died, we recommend analyzing the experience by the *benefit amounts*. Actuaries - ourselves included - have found that members with higher benefit amounts tend to live longer, on average. As a result, mortality assumptions based only on the number of deaths potentially understate OCERS liabilities.

    - As a related issue, since Segal recommends the use of base mortality tables derived from the most recent Society of Actuaries pension study (the RP-2014 Mortality Tables Report), we recommend they consider the use of the standard (benefit-weighted) RP-2014 tables, rather than the RP-2014 Headcount-Weighted versions.

    - We recommend that Segal consider how much credibility to assign to the mortality experience of the last nine years in developing proposed adjustments to the standard base tables, in particular for Safety service-retired members.

    - We recommend that Segal review the service retirement rates by both the age **and** service of the members in relation to the probability of leaving employment. The last experience study only showed the analysis using age-related rates. Based on our review of additional data provided by Segal, the number of years of service a member has earned affects the probabilities of retirement, which is consistent with our experience at other systems.

- Overall, the economic assumptions proposed in Segal's review represent a reasonable set of assumptions. However, we recommend that Segal clarify the meaning of their "risk adjustment" in developing the investment return assumption. The table in the report showing the "confidence level" over 15 years may be misleading because it overstates the probability of achieving the return on a compound basis.

Scope of Assignment

Cheiron performed a complete independent replication of OCERS December 31, 2016 actuarial valuation and reviewed the actuarial methods underlying that valuation. We reviewed the census data provided by OCERS 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 OCERS members, and compared the results to those shown in Segal's actuarial valuation report.

Additionally, Cheiron performed a review of the assumptions recommended by Segal for the December 31, 2017 valuation, as reflected in the actuarial experience study covering the period from January 1, 2014 through December 31, 2016. 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 and on additional data provided by Segal based on follow-up requests.

This audit provides OCERS 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.

In a few areas, alternative assumptions should be considered based on review of trends that would be effective in anticipating future experience and could have a material impact on the liabilities and cost of the Plan going forward.

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

This section summarizes our review of the actuarial valuation and experience study and our recommendations.

Valuation Procedures

Overall, we find that the December 31, 2016 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.

Valuation Results

Our independent replication of the December 31, 2016 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 OCERS as of December 31, 2016 is reasonable and can be relied on by the Board for its intended purpose. Our replication of the measures of plan liabilities and costs is summarized in Table II-1 below.

Table II-1
Summary of Valuation Results as of December 31, 2016
($ in millions)

	Segal	Cheiron	Ratio
Actuarial Accrued Liability	$ 17,933	$ 17,819	99.4%
Actuarial Value of Assets	13,103	13,103	100.0%
Unfunded Actuarial Accrued Liability (UAAL)	$ 4,830	$ 4,716	97.6%
Funded Percentage	73.1%	73.5%	100.6%
Contribution Rate by Component			
Employer Normal Cost Rate	14.61%	14.51%	99.3%
UAAL Rate	21.95%	21.43%	97.6%
Total Employer Contribution	36.56%	35.94%	98.3%

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

We note that all results are within 5% of Segal's calculation.

Our replication of the actuarial accrued liability by Rate Group is shown below in Table II-2. We note that the liabilities by Rate Group are all within the 5% threshold.

Table II-2
Actuarial Accrued Liability by Rate Group

	Segal	Cheiron	Ratio
General Members			
Rate Group #1	$ 437.5	$ 431.7	98.7%
Rate Group #2	10,021.6	9,933.6	99.1%
Rate Group #3	606.8	602.9	99.4%
Rate Group #5	840.7	823.7	98.0%
Rate Group #9	39.7	39.7	99.9%
Rate Group #10	207.6	207.0	99.7%
Rate Group #11	8.6	8.5	99.4%
Rate Group #12	9.2	9.1	98.9%
Safety Members			
Rate Group #6	$ 732.8	$ 737.3	100.6%
Rate Group #7	3,514.5	3,507.4	99.8%
Rate Group #8	1,514.4	1,518.3	100.3%
Combined	$17,933.4	$17,819.3	99.4%

Our replication of the employer contribution rates by Rate Group is shown below in Table II-3. We note that the employer rates by Rate Group are all within the 5% threshold.

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

Table II-3
Comparison of Employer Contribution Rates

	Segal	Cheiron	Ratio
General Members			
Rate Group #1	16.37%	16.48%	100.6%
Rate Group #2	33.66%	33.58%	99.7%
Rate Group #3	11.61%	11.30%	97.4%
Rate Group #5	25.48%	24.51%	96.2%
Rate Group #9	23.82%	23.25%	97.6%
Rate Group #10	30.54%	30.45%	99.7%
Rate Group #11	10.88%	10.59%	97.3%
Rate Group #12	22.74%	23.11%	101.6%
Safety Members			
Rate Group #6	47.79%	46.27%	96.8%
Rate Group #7	62.81%	61.43%	97.8%
Rate Group #8	47.81%	45.79%	95.8%
Combined	36.56%	35.94%	98.3%

In determining the unfunded actuarial liability, Segal relies on reserve balances provided by OCERS, as well as information related to the liabilities associated with the withdrawal calculations for individual employers provided outside of the actuarial valuation report. Our review did not include an audit of these additional sources of information.

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 our understanding of additional cost-sharing as described in the valuation report. For the Non-PEPRA (Legacy) tiers, we understand the employee contribution rates to be made up of the following components:

- A Basic rate providing for an annuity equal to
  - 1/200th (Plan A) One Year Final Average Compensation at a retirement age of 60, or
  - 1/120th (Plan B) Three Year Final Average Compensation at a retirement age of 60, or

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

- 1/100th (Plans G, H, I and J) Three Year (One Year Plans G & I) Final Average Compensation at a retirement age of 55, or
- 1/120th (Plans M, N, O and P) Three Year (One Year Plans M & O) Final Average Compensation at a retirement age of 60, or
- 1/100th (Plan S) Three Year Final Average Compensation at a retirement age of 60, or
- 1/200th (Plans E and Q) One Year Final Average Compensation at a retirement age of 50, or
- 1/100th (Plans F and R) Three Year Final Average Compensation at a retirement age of 60.
- A COLA rate providing for one-half of the cost of the COLA.

Non-PEPRA Safety members with 30 or more years of service (and General members hired on or before March 7, 1973) are exempt from paying member contributions.

We have verified the calculations of the individual employee contribution rates based on the applicable provisions of the CERL and generally have found these rates to be correct. Our Basic (non-COLA) rates were within 0.01% of Segal's rates for all Legacy tiers. We checked the COLA loading factors for all Legacy Tiers and they were within 5% for all Tiers except where there are historical cost-sharing mechanisms in place.

For the PEPRA members, the employee contribution rates were calculated following the proposed methodology outlined in Segal's December 4, 2012 letter. The total member rates computed for the new CalPEPRA tiers 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 and all but two Rate Groups where only a handful of members fall outside of the 5% margin. We do not believe this represents a significant discrepancy.

The Segal methodology is commonly used by '37 Act systems (determining Basic rates and then applying a COLA load based on each years' valuation results) and appears to meet the requirement that "*Any increases in contribution shall be shared equally between the county or district and the contributing members*" (CERL 31873). However, we have previously shared with Segal's consultants an alternative methodology for determining employee COLA contribution rates, which involves calculating a distinct COLA rate for each individual entry-age, rather than applying a certain percentage load to the Basic rates. This methodology has the advantage of avoiding annual changes to the COLA contribution rates; the COLA rates will only change if there is a modification to the benefit provisions or actuarial assumptions.

Census Data

Both the OCERS Staff and Segal provided us with the data that was used in the December 31, 2016 actuarial valuations. We reviewed the information in both files, and reviewed the data questions provided to OCERS by Segal and the OCERS responses.

We find that the data used in the valuation is valid, complete and contains the necessary data elements for purposes of performing the actuarial valuation of OCERS. In Table II-4 on the next page we include an exhibit comparing the processed December 31, 2016 data file - as modified appropriately based on the OCERS 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 OCERS 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 OCERS described in the data questions and answers of which we were provided copies. Note that the average compensation shown for Segal is prior to any projection to 2017 and for Cheiron represents the full time equivalent pay provided by OCERS. 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.

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

Table II-4
Summary of Member Statistics as of December 31, 2016

	Segal Processed Data	Cheiron Raw Data	Ratio
Active Members			
Total Number	21,746	21,828	100.4%
Average Age	45.4	45.4	100.0%
Average Service	12.9	12.9	100.0%
Average Compensation	$ 76,431	$ 76,019	99.5%
Vested Terminated Members			
Total Number	5,370	5,292	98.5%
Average Age	44.8	44.9	100.2%
Service Retirees			
Total Number	12,767	12,807	100.3%
Average Age	69.7	69.7	100.0%
Average Monthly Benefit	$ 3,946	$ 3,935	99.7%
Disabled Retirees			
Total Number	1,419	1,418	99.9%
Average Age	65.0	65.0	100.0%
Average Monthly Benefit	$ 3,458	$ 3,466	100.2%
Beneficiaries			
Total Number	2,183	2,183	100.0%
Average Age	72.8	72.8	100.0%
Average Monthly Benefit	$ 1,945	$ 1,956	100.6%

In reviewing the data processes employed in the valuation, we recommend the following improvements to enhance the valuation process:

a) Cheiron supports Segal's request to have all terminated members reported. Unreported members could affect experience study results if the decrement status is not valued correctly.

b) Cheiron recommends that the COLA amounts, STAR and regular, be reported separately since the STAR COLA may be handled separate from the pension valuation.
c) When computing full-time equivalent pay adjustments, Cheiron recommends reviewing members with large changes. Segal included members with changes greater than 20% in the data questions and asked OCERS to review a sample. OCERS' sample did not include the member with the largest change. We suggest that Segal request that OCERS look at the 10 (or some other figure) largest changes and a sample set of any remaining changes.
d) There are a large number of survivors with an unknown gender. Although assumptions can be made, Cheiron suggests updating the data with gender, if possible.
e) There are a number of retirees with Joint & Survivor elections and no beneficiary date of birth reported. We recommend updating this information, if possible, as the correct information could affect the type of benefit valued (life annuity vs. Joint & Survivor). If updated information is not available, the continued use of assumptions is acceptable.

Plan Provisions

We compared the summary of plan provisions shown in Section 4, Exhibit IV of Segal's December 31, 2016 valuation report to the benefits as summarized in the member handbooks shown on the OCERS website. In general, the plan provisions shown in the exhibit match what is in the handbooks, and based on our close match of the Segal liabilities as part of our parallel valuation, we conclude that Segal has appropriately reflected these provisions in the actuarial valuation.

Actuarial Assumptions

The December 31, 2016 actuarial valuation were based on the assumptions ultimately adopted by the OCERS Board, based on recommendations made by Segal in the Actuarial Experience Study covering the three-year period ending December 31, 2013. Normally, our review of the valuation report would include a review of the assumptions used in that report. However, since the December 31, 2016 actuarial valuation was issued, Segal has made recommendations to modify a number of these assumptions as part of the Actuarial Experience Study covering the three-year period ending December 31, 2016, to be used in the December 31, 2017 actuarial valuation. As part of our actuarial audit review, we have performed a peer review of this study and have the following comments and recommendations:

Mortality

Segal recommended that OCERS adopt a new approach for developing mortality assumptions based on the generational projection of mortality improvements. Segal suggested the following steps, which are consistent with those used by other actuaries:

1. Select a standard mortality table based on experience most closely matching the anticipated experience of the System.

2. Compare the actual experience of the System to that predicted by the selected standard table for the period of the experience study.
3. Adjust the standard table, either fully or partially, depending on the level of credibility for the System's experience. This adjusted table is called the base table.
4. Select an appropriate standard mortality improvement projection scale and apply it to the base table.

We strongly support the recommended change to the generational mortality approach. However, we have issues with the application of steps #1-3 in Segal's experience study.

Benefit vs. Headcount-Weighted

Our issues with steps #1 and #2 are related, and have to do with the fact that mortality studies in the U.S. have consistently shown that higher income individuals have longer life expectancies than lower income individuals. Because higher income individuals also typically have higher pension benefit amounts, it is important for a pension plan to use assumptions that are weighted to reflect the impact on liability. Otherwise, the mortality assumptions could accurately predict the number of deaths at each age, but still underestimate the liabilities, if the higher-benefit members are outliving the lower-benefit members.

Segal briefly mentioned the benefit-weighted approach in their experience study report, but then stated that the "head-count basis is the more common practice currently and is the approach used by Segal in the past for its California public system clients (including OCERS) and by other public sector actuaries in California." Segal included no other justification in their report for using the Headcount-Weighted RP-2014 Tables as the standard mortality table upon which to base their recommendations (step #1 above), as opposed to the standard RP-2014 Tables, which are benefit-weighted.

However, the report published by the Retirement Plans Experience Committee (RPEC) that accompanied the release of the RP-2014 tables clearly states, "*For the measurement of most pension obligations, tables weighted by benefit amount generally produce the most appropriate results.*" The report also describes a number of applications in which headcount-weighted tables may produce more accurate results, including estimates of average age at death, projections of retirement populations, and the measurement of OPEB plan obligations; the list of exceptions did not include the measurement of liabilities in traditional pay-related defined benefit plans.

One reason that RPEC recommends the use of the benefit-weighted tables for pension applications is that the behavior of the two tables are quite different: the mortality rates for the headcount-weighted tables are considerably higher at earlier ages, but gradually converge with the benefit-weighted rates at the highest ages. Using a headcount-weighted table will tend to overstate mortality rates in the early years of retirement, and understate it in later years, assuming the overall actual-to-expected ratio is close to 100% based on the number of deaths. Unless Segal has sufficient evidence to indicate that the pattern of mortality for OCERS looks

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

closer to the headcount-weighted tables (measured on a liability-weighted basis), we believe the default should be to use a benefit-weighted table when a choice between such tables is available.

In addition to selecting the headcount-weighted RP-2014 tables as the standard table, Segal only reviewed the OCERS actual mortality experience on a headcount basis (step #2). We at Cheiron have made it a standard practice to at least review the mortality experience by both benefit amount and headcount in our studies for SACRS systems, and it is our understanding that the other actuarial consulting firm providing actuarial valuation services to non-Segal clients in the '37 Act systems (Milliman) has also been reviewing the experience on both bases in their recent experience studies.

In our experience with most (but not all) of the SACRS plans and other public plans we work with in California, we have found a significant difference in the actual-to-expected ratios calculated on a headcount-weighted basis compared to a benefits-weighted basis, though the amount of the difference does vary between plans and employee populations. We note that in the experience study that Milliman recently completed for the Oregon Public Employee Retirement System (http://www.oregon.gov/pers/Documents/2016-Exp-Study.pdf), the difference between the benefit- and headcount-weighted actual-to-expected ratios averaged about 10% for both males/females and Miscellaneous/Safety members, which is consistent with the level we have found in some systems and represents a material difference.

Credibility

Very few pension plans have sufficient experience to develop their own mortality tables. Most plans instead adjust a standard table (step #3). However, with approximately 1000 deaths necessary for full credibility (defined by a 90% probability that the observed rate is within 5% of the true rate) and actual mortality rates quite low at most ages, many plans lack sufficient data to perform even a full adjustment to a standard table (i.e. adjust the tables so the actual-to-expected ratio based on the plan's data is close or equal to 100%).

Segal's experience study report includes a table (page 41) that indicates the number of deaths included in the nine-year extended study period. The number of actual General member deaths is well over 1000, so it is reasonable to consider this experience fully credible and appropriate to propose an adjustment to the standard tables that results in an active-to-expected ratio close to 100%. However, the amount of Safety mortality experience is much smaller, with only 137 deaths reported over the nine-year period. This amount of data should not be considered to be fully credible, and caution should be used in applying significant adjustments to the standard tables, which Segal has done in their recommendation to apply a four-year setback to the ages for Safety members.

In particular, caution should be used when the proposed assumptions represent an unusual difference in assumptions from other groups. In this case, Segal has proposed mortality assumptions for the OCERS Safety members that are significantly more conservative (i.e. expecting longer lifespans, for members of the same gender) than those for the General members.

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

Historically, public pension plans have generally assumed shorter lifespans for Safety members, and though that practice has been changing recently in some places, we have not seen a significant amount of experience that demonstrates the tables have completely turned. For example, in the Oregon PERS study referenced above, Milliman indicated that there was still a margin of somewhere between 5-9% between the actual-to-expected ratios for the Miscellaneous and Safety male experience, with the Safety members continuing to exhibit higher rates of mortality.

Similarly, we question whether an 80% adjustment to the Headcount-Weighted RP-2014 Employee table is appropriate for the active members. The Segal report does not include any information related to the number of active deaths, but we feel comfortable in assuming it was well under 1000 during the study period. Finally, we recommend that Segal consider whether the RP-2014 Disabled Mortality tables are more appropriate than the significantly-adjusted Headcount-Weighted RP-2014 Healthy Annuity Table recommended in the report, based on the limited amount of disability mortality experience.

Optional Forms

Segal stated in their report that an emerging practice in the development of age-based member contribution rates, optional forms of payment and reserves is to "approximate the use of a generational mortality table by the use of a static table with projection of the mortality improvement over a period that is close to the duration of the benefit payments for active members."

While we agree with this practice – and have suggested it to our own clients – for the determination of the member contribution rates, we have concerns over the use of this approach for determining the optional forms of payment and reserves. The use of a static projection period equal to that of the duration of payments for the average active member is expected to result in a projection well beyond that of a member *expected to retire in the next three years* (or the period of time we expect these factors to be applicable).

For our clients, we generally recommend the use of factors using the full generationally-projected mortality tables, based on those computed for a member expected to retire at the mid-point of the time period to which the factors are expected to be used. Alternatively, if there are significant operational advantages to using a static table, we recommend Segal calculate the expected duration for a member expected to retire in the next few years, rather than using the duration for the overall active population.

In summary for the mortality assumption, we recommend that Segal:

- Reconsider whether the RP-2014 Headcount-Weighted tables are the most appropriate to use as the basis of the OCERS-specific assumptions,
- Review whether an analysis of the OCERS actual experience on a benefit-weighted basis would have an impact on their recommended assumptions, and

- Review whether the level of credibility assigned to the actual mortality experience of the subpopulations of OCERS - in particular the populations of Safety service retirees, and all disabled and active members – is appropriate, given the numbers of exposures and deaths in these populations, as well as prior behavioral differences.
- Review the duration used in the static projection of mortality for the optional forms of benefits and reserves.

We note that the mortality assumptions are of particular importance in the measurement of Plan liabilities, since they are used to determine both the member and employer rates, for both Legacy and PEPRA members. In our experience, it is likely that the use of a benefit-weighted derived mortality table and/or analyzing the mortality experience on a benefit-weighted basis will increase the Plan's liabilities and as a result increase the Plan costs, if the pattern of OCERS mortality experience is similar to that of other plans.

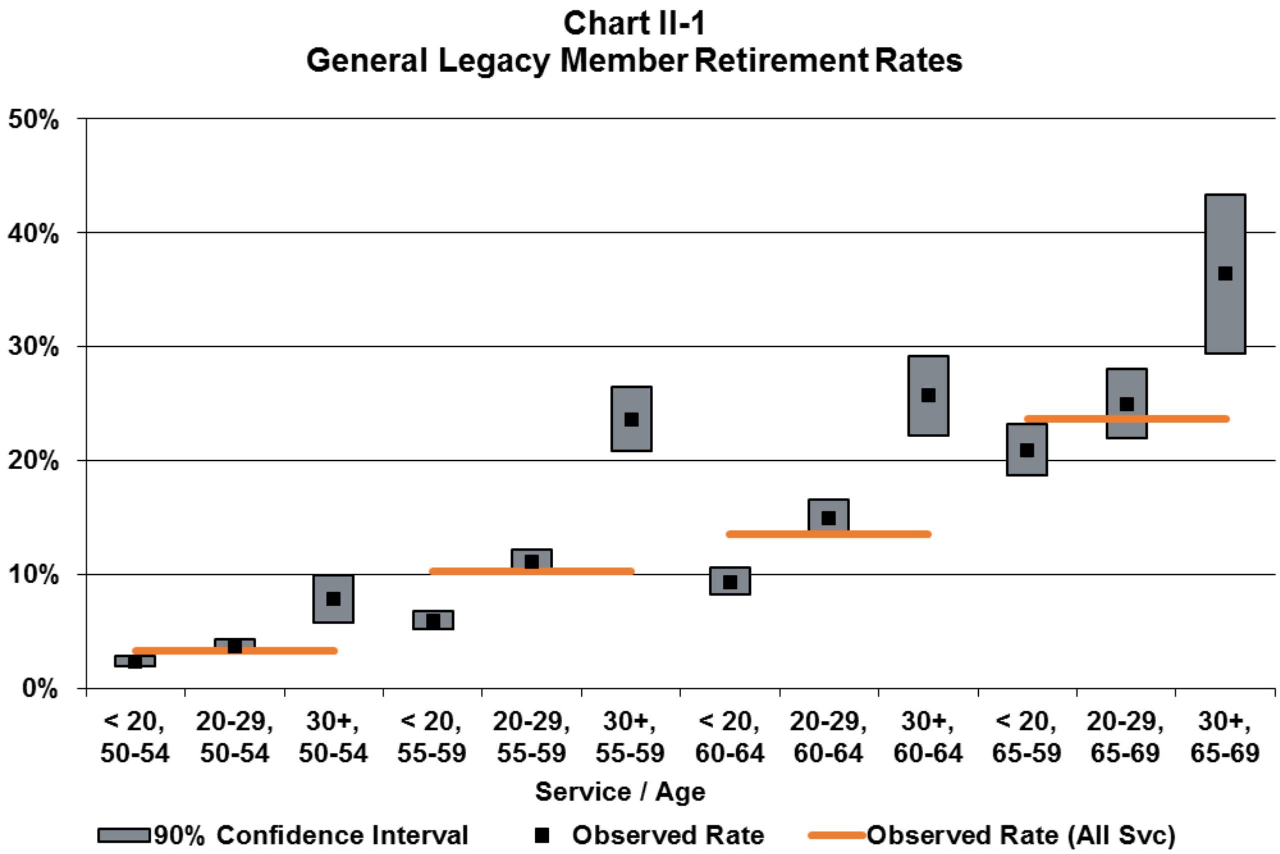
Retirement

Segal proposed rates that vary by age and Tier. We focused our analysis on Segal's recommendations related to the General and Safety Legacy members (excluding those covered under formulas 31676.12 and 31664.2), because those were the groups with the most observed experience.

The rates recommended by Segal appear reasonable based on the experience presented in their report, if the comparison of the actual and expected number of retirements *looks only at the member's age at retirement*. However, the appropriateness of the assumptions appears quite different when reviewing the experience by looking at both the age and service of the members in relation to the probability of retirement.

We requested – and Segal provided – a summary of the service retirement decrements and exposures by five-year age *and* service bands. In Chart II-1 below, we summarize this information for the General Legacy members (excluding those in Plan S), based on grouping the experience into separate categories for those with less than 20 years of service, between 20 and 30 years of service, or greater than 30 years of service. The black squares represent the actual percentage of members within each age and service band who retired during the study period. The orange lines represent the actual percentage of members within each age band (across all service levels) who retired during the study period; equivalent to the approach Segal has taken in developing their rates. The gray bars represent the 90% confidence interval for the decrement rate (i.e. there is a 90% likelihood that the underlying rate lies within the band).

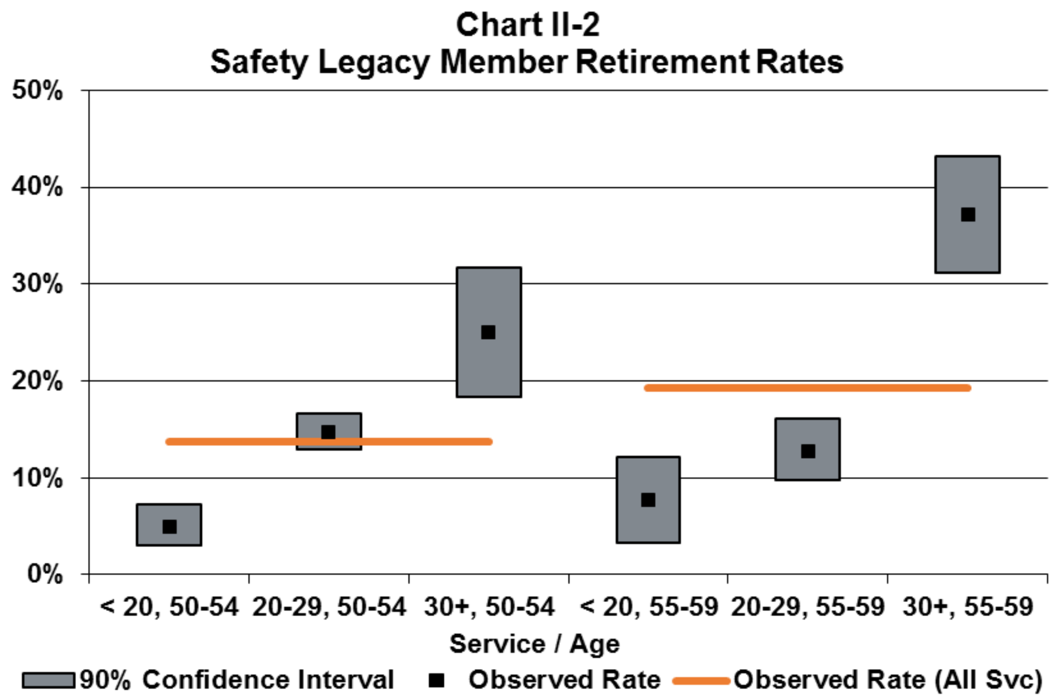
SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS



As seen in this graph, a large difference exists between both the observed rates and the 90% confidence intervals at the selected service levels. This discrepancy in the rates matters, because all other things being equal, the liabilities will be more heavily weighted towards those with higher levels of service (and thus higher benefits). If the retirement rates accurately predict the number of retirements by age, but overestimate the number of retirements for those with low levels of service and underestimate the number of retirements for those with high levels of service, it is likely that the assumptions will underestimate – potentially significantly – the future liabilities and costs of the Plan.

In the following graph, we show a similar breakdown in the Safety Legacy member (excluding those in Plan R) retirement experience, for those between the ages of 50 and 59 (the patterns are less dramatic after age 60).

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS



These differences in behavior make sense on an intuitive level as it is reasonable to assume that, for two members of the same age, the one with the higher level of service will be more likely to retire, if for no other reason than the higher-service member is more likely to have achieved their desired level of post-retirement replacement income.

In their report, Segal discussed the use of retirement assumptions based on age and service. They concluded that they did not have enough reliable experience to develop credible assumptions by age and service. However, they did not provide any explanation or supporting information to support their claim that there is not enough "reliable experience to make credible recommended retirement assumptions". We strongly disagree with this conclusion; the information presented in the graphs shown above clearly indicate that the OCERS retirement experience can be used to conclude with a high degree of confidence that assumptions based only on age are inadequate for appropriately anticipating member behavior.

While it is true that the amount of experience may make it difficult to generate reliable assumptions at *each* age and service combination, it is certainly possible to develop reasonable assumptions that distinguish between higher and lower service levels. Segal has used this approach themselves for other clients: for the University of California Retirement System Staff members, they have recommended that their base retirement rates be multiplied by 70% for those with less than 10 years of service and by 160% for those with more than 20 years of service. A similar adjustment could certainly be developed for OCERS, especially given that the level of experience necessary to develop credible retirement assumptions is much less than that needed to develop fully-credible mortality assumptions (since the frequency of retirement is much higher than that of death).

In Segal's report, they also accurately noted that CalPERS produces and utilizes retirement rates that vary by age and service. As an alternative to developing a set of broad service-based adjustment factors based on OCERS experience, Segal could review whether the relative differences in retirement rates at various service levels used by CalPERS for similar benefit formulas provide a reasonable fit to the OCERS data, and then adjust those rates as necessary to bring the overall level of expected retirements into closer alignment with the OCERS experience at each age.

For example, if the CalPERS rate of retirement for a 2.7% @ 55 Miscellaneous member (similar to the 31676.19 CERL formula for many General OCERS members) at age 55 with 25 years of service is approximately double that of an individual of the same age but with only 10 years of service, Segal could develop a set of retirement rates for OCERS that reflect the same relationship between these service levels, but provide a more accurate fit to the overall number of members expected to retire at each age (based on the OCERS data). This table could then be reviewed to determine whether it provides a better fit (measured by age and service) to the actual OCERS experience than the current age-only based rates.

Regardless of the approach taken, we recommend that Segal review the retirement experience for OCERS by age and service, and determine whether their recommended age-based retirement rates could be expected to materially underestimate the liabilities if the recent patterns of behavior by age and service continue to present themselves.

Economic Assumptions

Overall, all three of the economic assumption scenarios (Recommendations A, B and C) proposed in Segal's review represent a reasonable set of assumptions. In particular, we agree with Segal's recommendation to maintain or reduce the assumed rate of price inflation from 3.00% to 2.75%, and to reduce the investment return assumption from 7.25% to 7.00% or 6.75%, reflecting a net real return of either 4.00% or 4.25%.

We have comments, however, on the "risk adjustment" that Segal used in developing their return recommendation, as well as several other aspects of the economic assumptions.

Risk Adjustment

In their experience study report, Segal spends a significant amount of time discussing the concept of a "risk adjustment" – also referred to as a margin for adverse deviation. The following language is from their experience study report (page 14):

> *In our model, the confidence level associated with a particular risk adjustment represents the likelihood that the actual average return would equal or exceed the assumed value over a 15-year period. For example, if we set our real rate of return assumption using a risk adjustment that produces a confidence level of 60%, then there would be a 60% chance (6 out of 10) that the average return over 15 years will be equal to or greater than the assumed value.*

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

Later in their report, they note that they anticipate a 0.47% offset to the investment return assumption to be a sufficient "risk adjustment" to provide a confidence level of 55%. However, this does **not** mean that there is a 55% chance of achieving the proposed return assumption of 7%, **when compounded over a 15-year period**. Average annual returns and average compound returns are different concepts, and the Board should focus on achieving an average compound return equal to or greater than the assumed rate of return.

To illustrate the difference between these concepts, consider an extreme example: if your return is 100% one year (i.e. you doubled your money) and -100% the following (i.e. you lost all your money), then the arithmetic average annual return is 0%, but the average compound return is 100% (i.e. you still don't have any money!). At the end of the day, most investors care about the geometric or compound rate. In the extreme example above, an investor would gladly agree to hide their money under a mattress and earn nothing for two years, versus double their money and then lose it all the next year (but still earn the same arithmetic return!).

As stated above, Segal's "confidence level" model provided OCERS with the likelihood that the arithmetic average investment return will exceed the assumption over a 15-year period. However, the likelihood that the geometric or compound average return will exceed the assumption is considerably less. In fact, rather than a 55% chance, there is roughly a 46% chance that the compound return will equal or exceed 7.00%. The expected return would need to be lowered to around 6.75% to obtain a 50/50 confidence level, and lowered all the way down to 6.25% to achieve a 55% confidence level on a compound basis.

Investment 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. Instead of this approach, Segal assumes 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 result in a higher recommended return assumption if the Board were invested passively instead of using active managers. While there is much debate about this question among investment professionals, we prefer to remain neutral, assuming no advantage or disadvantage to active management.

We appreciate that Segal has identified this issue - of whether the expenses associated with active management should be excluded from the expected return - for further study with Staff. We also note that the conservatism included in this approach may enhance the likelihood that the investment return assumption could be achieved on a compound basis, thus offsetting a portion of the impact from the risk adjustment issue identified above. However, we still anticipate that there would be less than a 55% chance of achieving the 7.00% proposed assumption on a compound basis, even if the majority of the active management expenses were *not* deducted from the investment returns.

Inflation

We believe Segal's recommendation to maintain a 3% inflation assumption still represents a reasonable long-term assumption. However, we note that the average inflation assumption for the investment consultants cited by Segal (2.3%), as well as the inflation forecasts used by Social Security (2.6%) and derived from 30-year Treasury bonds (1.87%) are all still significantly below the recommended rate.

While we understand that large and sudden changes in long-term assumptions can be disruptive to the employers and members, and we acknowledge that a 3% inflation assumption still represents a reasonable long-term expectation given historical rates, we recommend that Segal and the Board continue to monitor this assumption and consider further reductions if market-based inflation expectations remain low.

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, 2016 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. Segal has also applied this method in a manner which complies with the disclosure requirements under GASB Statements 67 and 68.

Asset Smoothing Method

The actuarial (or smoothed) value of assets is determined using a five-year period for gains and losses. We have confirmed that the Segal report applies the actuarial smoothing method as described.

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 commend Segal for including the funded ratio and unfunded liability using both the market value and smoothed value of assets in their report. These disclosures are included in the "Model Disclosure Elements for Actuarial Valuation Reports" adopted by the CAAP.

Amortization Policy

The current Amortization Policy for OCERS is a layered amortization policy, with the balance of the unfunded liability as of December 31, 2012 amortized as a level percentage of payroll over a closed 20-year period beginning December 31, 2013 (17 years remaining as of December 31, 2016). Each subsequent year's unfunded liability attributable to experience gains or losses, assumption changes, and cost method changes is amortized as a level percentage of payroll over a new closed 20-year period. Plan amendments are amortized over closed 15-year periods and early retirement incentive programs will be amortized over five years.

We have confirmed that the Segal report applies the amortization method as described. This amortization method is in accordance with the recent funding policy guidance issued by the CAAP, GFOA, and the Conference of Consulting Actuaries Public Plans Community. This amortization policy also meets the minimum standards of the '37 Act.

Contents of the Reports

We find the actuarial valuation and experience study reports to be in compliance with Actuarial Standards of Practice. We have already mentioned one area in which we believe the experience study report could be enhanced – such as clarifying the risk adjustment factor in the experience study report.

More disclosure regarding the methodology and calculation of the employee COLA contribution rates would better satisfy the Actuarial Standards of Practice No. 41. In particular, adding a description of the cost sharing arrangements for the legacy tiers, the mechanisms for determining the COLA loading and scaling factors should be addressed and included in the valuation report.

We also encourage Segal to consider whether a demonstration of future expected funding progress and contribution rates and/or additional statements regarding risk should be contained within the actuarial valuation report. This report represents to the public the current financial condition of OCERS, and as such, we recommend it include a prospective view.

We believe that a longer projection can also be helpful to the Board, and we typically include such projections as part of our actuarial valuation reports. For example, such a projection could show the Board how the costs are expected to be affected by the interplay of the assumptions changes *and* the deferred losses currently reflected in the smoothed value of assets.

SECTION II – SUMMARY OF REVIEW AND RECOMMENDATIONS

With respect to risk, although Segal does briefly describe some common volatility ratios in the Section 2 of their report, there is no mention of these ratios or any other discussion of volatility in the Executive Summary. Also, there is no discussion regarding positive or negative cash flow and the risks associated with these situations. We note that the Actuarial Standards Board has recently released a new Standard of Practice related to the disclosure of risk for pension plans, the content of which may be useful to Segal and the Board in assessing whether additional risk disclosures could add value to the valuation report.

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 Liability

The Actuarial 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" or "actuarial 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."

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 Liability (UAL)

The difference between the Actuarial Liability and the Actuarial Value of Assets. This is sometimes referred to as the "unfunded accrued liability."

Classic Values, Innovative Advice

B

Memorandum

DATE: March 20, 2018

TO: Members of the Audit Committee

FROM: Brenda Shott, Assistant CEO, Finance and Internal Operations

SUBJECT: **2017 FINANCIAL STATEMENT AUDIT – ENTRANCE CONFERENCE**

Presentation

Background/Discussion

Attached is the 2017 Audit Service Plan prepared by Linda Hurley, CPA and Partner at MGO. This plan includes an overview of MGO's audit services; the engagement service team for the financial statement audit; timeline for deliverables; highlights of MGO's audit approach, scope and objectives; and overall summary of audit responsibilities.

Submitted by:

Brenda M Shott

Brenda Shott
Assistant CEO, Finance and Internal Operations

mgo
Type Atypical
A new breed of professional services firm

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM

FY 2017 Audit Service Plan

PREPARED FOR YOU BY:

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OUR APPROACH, LIKE OUR PLAN THAT FOLLOWS, IS ALL ABOUT CLEAR COMMUNICATION, INNOVATION, A WILLINGNESS TO ALWAYS GO THE EXTRA MILE, AND FULL TRANSPARENCY — BECAUSE THAT'S WHAT IT TAKES TO DELIVER THE HIGHEST LEVEL OF ASSURANCE.

On behalf of Macias Gini & O'Connell LLP (MGO) we are pleased to present our 2017 Audit Service Plan (Plan) for the Orange County Employees Retirement System ("Retirement System"). In preparing our Plan we have drawn on our experience in serving the Retirement System in prior years and numerous retirement systems within California. This Plan presents our engagement service team; timeline for deliverables; highlights our audit approach, scope and objectives; and summarizes audit responsibilities under *Government Auditing Standards*, issued by the Comptroller General of the United States. Also included in this document is a summary of recent technical developments in governmental accounting and financial reporting that may impact the Retirement System.

We are committed to serving the Retirement System so that retirees, current employees, elected officials, and management continue to have the utmost confidence in the Retirement System's financial statements, internal control systems, and compliance with laws and regulations. We dedicate the resources of our team and provide ongoing access to our very best resources to exceed the Retirement Board's and management's expectations.

We appreciate the opportunity to be of service and look forward to discussing the highlights of our Plan with the Retirement Board and management.

Linda Hurley

Linda C. Hurley, CPA
PARTNER

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SECTION 1

Overview of MGO Audit Services

MGO TYPE ATYPICAL

A new breed of professional services firm

Our goal is to continuously exceed the expectations of management and the Retirement Board in providing efficient, cost-effective, and high-quality services to the Retirement System.

MGO Objectives.

Our mission is to be the professional service firm that consistently exceeds the expectations of our clients and our people. Our objective is to deliver seamless, high quality, and timely service to the Retirement System in all areas in which we provide professional services. These include accounting and auditing, consulting, tax and other specialized services. We will meet our objectives by identifying opportunities to provide value added services to the Retirement System. In order to accomplish this, we will:

- Identify and resolve reporting, accounting and audit issues timely and effectively;
- Regularly communicate with the Retirement System;
- Complete our audit on a timely basis;
- Provide seamless service across the organization;
- Understand your organization, culture, programs and services;
- Provide the suited experienced professionals;
- Utilize specialists where unique skill sets are required;
- Apply our technical knowledge to identify solutions to organizational and financial issues;
- Respond to critical issues with a sense of urgency;
- Act as another set of “eyes and ears”;
- Meet all deadlines; and
- Communicate key findings to top management and the Retirement Board.

Our focus is on the Retirement System's Critical Audit Areas and Operational Changes.

Through planned face-to-face meetings with the Retirement Board, the Executive Director, and key management personnel throughout the year, we will directly ascertain the Retirement System's expectations of us and we will communicate our responsibilities to the Retirement System under professional standards. We will listen to what members of management and the Retirement Board expect from us. We will also ask them to tell us what service attributes are most important to them. We will use this information to develop a comprehensive audit approach to respond to identified issues and service needs for 2017.

Audit Services.

Our audit services emphasize comprehensive planning and risk assessment to fulfill our professional responsibilities and enable us to be responsive to the needs of the Retirement System's management and the Retirement Board.

Our Service Team.
An important part of successfully implementing our plan is identifying and utilizing the appropriate resources. We have selected an engagement team that is committed to carrying out our service plan. Linda Hurley, Engagement Partner, leads our service team. Amy Chiang, Engagement Manager, will support Linda in providing quality service to the Retirement System.

Quality and Responsive Service.
We provide service, which stresses responsive attention year-round. Close communication with our clients is one of our top service qualities. We will work with you as business advisors, and we will place special emphasis on being actively involved in understanding all significant financial and reporting matters.

Accordingly, we will meet with you regularly to stay abreast of your service needs and special concerns. You can call upon us as a resource at any time.

Audit Approach.
Our audit approach carefully considers the identification of key risk areas and allocation of appropriate resources.

Professionals with more than ten years of governmental auditing and accounting experience lead all phases of our audit. With our experienced leaders in the field, our efficiency and effectiveness increase when dealing with complex accounting and auditing issues.

Our audit procedures include analytical reviews, verification of balances and transactions based on independent supporting documentation using statistical and judgmental sampling techniques, confirmation of key balances, and the analysis of key assumptions supporting significant estimates made by management.

This document further presents discussions on our approach to the services we will provide to the Retirement System, details our framework for planning and performing the audit, and sets forth our audit scope and timing.

SECTION 2

Your Engagement Professionals

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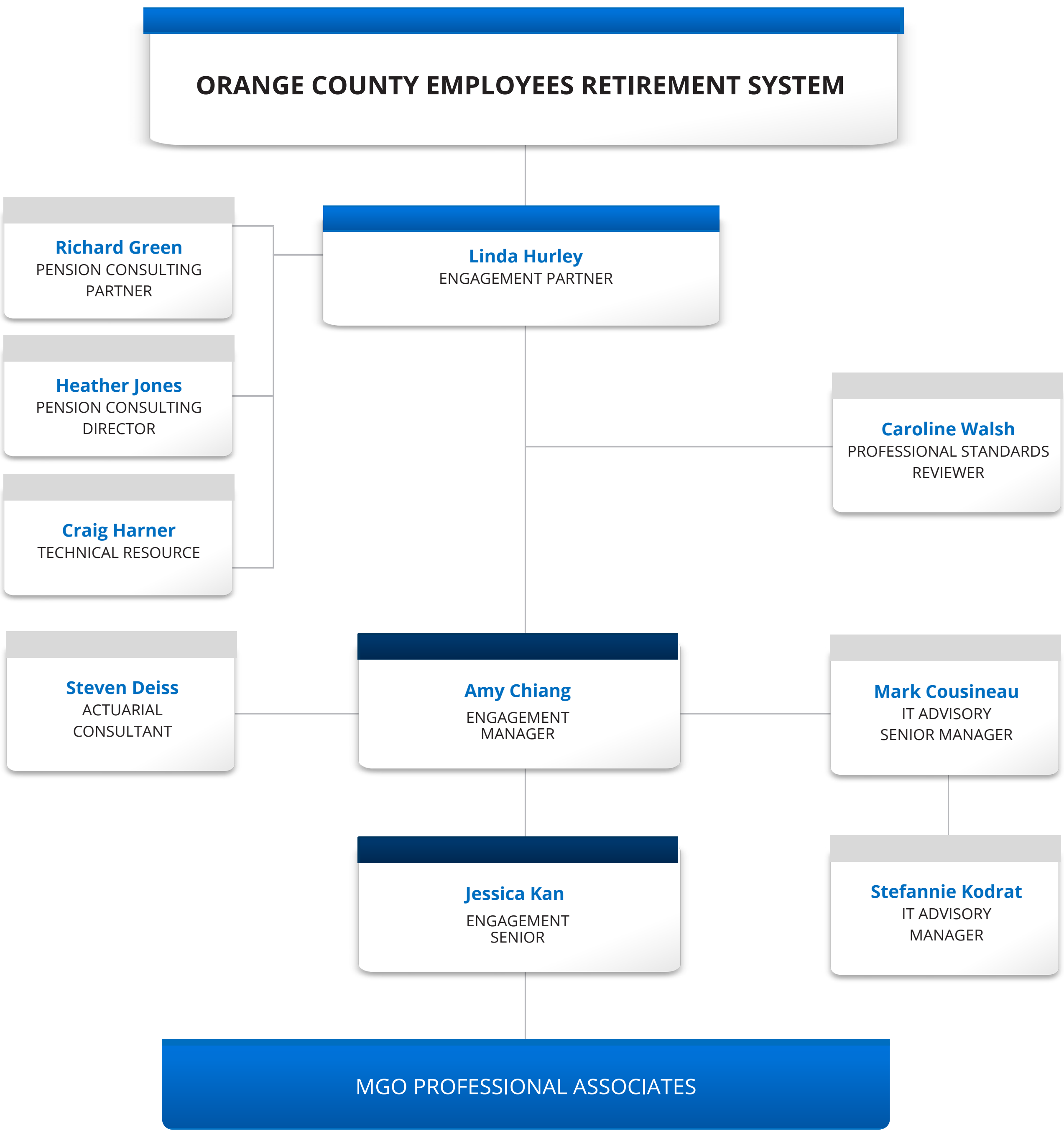
The engagement team selected to serve the Retirement System represents the strong, balanced blend of talent, professional skills, and industry experience that is most critical to working effectively with retirement systems of your size and magnitude.

The MGO Team is integrated to allow us to respond to your needs. We are committed to providing the resources necessary to meet the timeline that has been established by the Retirement System. This commitment includes providing the appropriate number and level of staffing to meet your needs.



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SECTION 3

The Audit Timeline

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We recognize the importance of timely completion of audit tasks and deliverables. The timing of our audit procedures will be coordinated with the Retirement System to minimize disruption of the Retirement System's operations and ensure timely delivery of all reports by your deadlines.

Government-related entities often depend on a structure of interlocking relationships for managing public programs and resources. Our philosophy for a successful engagement is based on organization, communication, and coordination between the two parties responsible for the completion of the audit – the accounting firm and the client. We take coordination seriously and regard it as an integral factor to the relationship. We welcome the Retirement System's involvement in the planning process and believe that monitoring progress will result in timely financial reporting.

We are committed to delivering the Retirement System's reports according to the proposed time plan.

AUDIT TIMELINE	
Planning	**DATES**
Client services planning meeting	3/27
Submit Audit Plan to Retirement Board	3/19
Execution of Tests of Controls	
On-site fieldwork	4/2 - 4/6
Execution of Substantive Procedures	
Receipt of final client trial balances and prepared by client items	4/9
Perform year-end fieldwork	4/9 - 5/25
Reporting	
Issuance of Comprehensive Annual Financial Report	6/1
Issuance of Independent Auditor's Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with Government Auditing Standards	6/1
Issuance of Independent Auditor's Report on Schedule of Pension Amounts by Employer	6/1
Issuance of Report to the Audit Committee	6/1
Audit Committee Presentation	
Presentation of audit results	6/7

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SECTION 4

Understanding the Audit

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PLANNING

TIMELY INVOLVEMENT WITH RISKS AND ISSUES

Planning the Retirement System's audits is a continuous process. Our ongoing attention to changes in the Retirement System's economic and operating environment enables us to react to changing circumstances and unanticipated events and enhances our understanding of the Retirement System. The objectives of the planning phase are to develop an audit plan that 1) effectively and efficiently meets our professional responsibilities and 2) meets or exceeds the expectations and needs of the management of the Retirement System.

To accomplish our planning objectives, we will:

- Document our understanding of the internal and external factors affecting the Retirement System, which enables us to identify and evaluate relevant areas of risk.
- Document our understanding of the Retirement System control environment, accounting systems and control procedures for significant audit areas and transaction streams.
- Finalize an audit plan that identifies critical audit areas and procedures to address such risks.
- Ensure that our plan provides appropriate audit coverage.
- Coordinate our audit services with the support of Retirement System personnel for maximum efficiency.
- Develop and execute an audit plan that provides a basis for the issuance of our opinion and is designed to deliver our services effectively and efficiently.
- Strive to add value.

CLIENT SERVICE PROGRAM

The Retirement System receives the direct attention of one of our most knowledgeable and experienced professionals, Linda Hurley. Linda will review our annual client service plan and the reports prepared on the results of each year’s work, and the assignment of personnel to the engagement. In addition, she will assure that your specialized needs receive priority access to top resources from anywhere in our organization.

ENVIRONMENTAL ASSESSMENT

In addition, our planning process evaluates the Retirement System's financial reporting risks based on the broader environment in which the Retirement System operates, drawing upon our knowledge of economic and operational changes affecting the Retirement System, including the impact of:

- Recent economic trends and their effect on the Retirement System's plan net position
- Retirement System's current funded status
- Receipt of the annual required contribution

PERFORMANCE – EXECUTION OF AUDIT PLAN

Our audit scope must be designed to provide sufficient audit coverage to enable us to express an opinion on the Retirement System's financial statements, as well as addressing all known audit risks, which could materially impact those financial statements.

Performance generally includes the following steps:

- Performance of audit tests and evaluation of results
- Development of organizational insights
- Review of financial statements and subsequent events
- Obtaining management representations

During the course of the audit, we use our knowledge gained during the planning phase related to your current organizational strategies, economic conditions, internal control, and the identified risks to tailor our audit procedures.

APPROACH TO CRITICAL AUDIT AREAS

We have identified certain critical audit areas facing the Retirement System. During our planning phase of the audit, we expand our understanding of these critical audit areas and obtain further information as needed in order to appropriately design audit procedures to address these issues.

- Implementation of GASB Statement No. 72 - investment valuation at fair value, including alternative investments, real estate, derivative instruments and securities lending activities
- Employer and Employee Contributions, including the proper calculation of employer and employee contributions based on pensionable earnings and approved contribution rates
- Retirement benefits deductions, including eligibility of retirees and accurate calculation and disbursements of monthly benefits
- Reasonableness of actuarial assumptions and calculations for pension and other postemployment benefits
- Implementation considerations of GASB Statement No. 74 related to the County of Orange and Orange County Fire Authority (OCFA)

TIMING OF OUR WORK

We have timed our work to coincide with key activities that are taking place in the Retirement System throughout the year. The Audit Timeline section of this Plan outlines the timing of our procedures.

THE RESULT

Our process is designed to enable us to issue the independent auditor's reports within the agreed upon timeline. The result of our work will also include the timely delivery of observations and recommendations regarding the control environment and operations of your organization. Such communications will be delivered both formally, through the reports to management, as well as through regular meetings with management.

SCOPE AND RESPONSIBILITY

Our audits are conducted in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards* (GAS), issued by the Comptroller General of the United States for the purpose of expressing opinion on the fair presentation of the Retirement System's financial statements in conformity with accounting principles generally accepted in the United States of America. In addition, we will perform certain limited procedures involving required supplementary information mandated by the Governmental Accounting Standards Board as required by GAAS. Our audits are designed to obtain reasonable (as opposed to absolute) assurance about whether the financial statements are fairly presented.

REPORTING RESPONSIBILITY UNDER AUDITING STANDARDS GENERALLY ACCEPTED IN THE UNITED STATES OF AMERICA AND GAS

We will also report directly to management and to you matters coming to our attention during the course of our audit that we believe are deficiencies. A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements in a timely basis. A material weakness is a deficiency, or combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity’s financial statements will not be prevented, or detected and corrected in a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance. In addition to communications about our responsibilities under U.S. generally accepted auditing standards and the planned scope and timing of the audit, we will communicate to you certain other matters related to the conduct of our audit, including where appropriate the following matters:

- Qualitative Aspects of Accounting Practices
- Corrected and Uncorrected Misstatements
- Difficulties Encountered in Performing the Audit
- Disagreements with Management
- Representations
- Management Consultations with Other Independent Accountants
- Other Audit Findings or Issues
- Other Information in Documents Containing Audited Financial Statements

MANAGEMENT COMMENTS

One of the primary service objectives is to make constructive and timely recommendations and to provide advice to you and management on matters we believe warrant attention. We have tailored our audit approach to focus on those risks that are important to achieving control and reporting objectives. We have the benefit of being objective outsiders in considering the information we gather. The result is that we are able to add the perspective of our experience and expertise to translate our audit findings into recommendations and insights concerning existing or potential problems. We will keep management and you apprised of any matters that we believe warrant consideration whenever they come to our attention.

ASSESSMENT – CLIENT SERVICE SATISFACTION

We conclude the client service cycle by obtaining direct feedback as to whether we have met the Retirement System's expectations through service quality assessment meetings with management – the same individuals with whom we established expectations during our planning process. In addition to communicating with management regarding the effectiveness of our services, we use the assessment results to identify the most effective way to deliver our services as well as those areas where we need to focus and improve during the upcoming year. Our assessment process requests feedback from management on the following questions:

- Based on your most recent experience, how likely is it that you would recommend MGO (Macias Gini & O'Connell LLP) to a friend or colleague?
- What is the primary reason behind the rating you provided?
- What is one thing we could be doing differently to increase the value of our services to you?

Once we receive the response to this feedback, we identify opportunities to add value; to identify the most experienced people within our organization to best respond to the Retirement System's needs and to monitor the delivery of such services to ensure we exceed your service expectation.

In addition, we will hold recurring meetings with management to discuss emerging issues. The key objective of these meetings is to consolidate our combined knowledge of the Retirement System's organizational changes and new programs or initiatives. Such meetings will result in a better understanding of the challenges facing the Retirement System and will enable us to proactively identify opportunities and bring creative ideas to the attention of management of the Retirement System.

SECTION 5

Our Role and Your Responsibilities

MGO Type Atypical

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We are pleased to confirm our understanding of the services we are to provide the Orange County Employees Retirement System ("Retirement System") for the year ended December 31, 2017. We will audit the Retirement System's statements of fiduciary net position as of December 31, 2017 and the related statements of changes in fiduciary net position for the fiscal year then ended, which comprise the Retirement System's basic financial statements.

Accounting standards generally accepted in the United States provide for certain required supplementary information (RSI), such as management's discussion and analysis (MD&A), to supplement the Retirement System's basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. As part of our engagement, we will apply certain limited procedures to the Retirement System's RSI in accordance with auditing standards generally accepted in the United States of America. These limited procedures will consist of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We will not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance. The following RSI is required by generally accepted accounting principles and will be subjected to certain limited procedures, but will not be audited:

1. Management's Discussion and Analysis
2. Schedule of Changes in Net Pension Liability of Participating Employers
3. Schedule of Investment Returns
4. Schedule of Employer Contributions
5. Significant Factors Affecting Trends in Actuarial Information - Pension Plan

We have also been engaged to report on supplementary information other than RSI that accompanies the Retirement System's financial statements. We will subject the following supplementary information to the auditing procedures applied in our audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America and will provide an opinion on it in relation to the financial statements as a whole:

1. Schedule of Contributions
2. Schedule of Administrative Expenses
3. Schedule of Investment Expenses
4. Schedule of Payments for Professional Services

The Retirement System's Comprehensive Annual Financial Report (CAFR) will also include introductory, investment, actuarial, and statistical sections prepared by the Retirement Systems that will not be subjected to the auditing procedures applied in our audit of the financial statements, and for which our auditor’s report will not provide any opinion or any assurance.

Our engagement also includes an audit of the Schedule of Pension Amounts by Employer (Schedule) for the year ended December 31, 2017, relating to a cost-sharing multiple-employer pension plan under the requirements of Governmental Accounting Standards Board (GASB) Statement No. 68, *Accounting and Financial Reporting for Pension Plans, an Amendment of GASB Statement No. 27*.

AUDIT OBJECTIVES

The objective of our audit is the expression of an opinion as to whether the Retirement System's basic financial statements are fairly presented, in all material respects, in conformity with U.S. generally accepted accounting principles and to report on the fairness of the supplementary information referred to in the preceding paragraphs when considered in relation to the financial statements as a whole. Our audit will be conducted in accordance with auditing standards generally accepted in the United States of America and the standards for financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, and will include tests of the accounting records of the Retirement System and other procedures we consider necessary to enable us to express such opinion. We will issue a written report upon completion of our audit of the Retirement System's financial statements. Our report will be addressed to the Board of Retirement (Board) or the Retirement System. We cannot provide assurance that an unmodified opinion will be expressed. Circumstances may arise in which it is necessary for us to modify our opinions or add emphasis-of-matter or other-matter paragraphs. If our opinion on the financial statements are other than unmodified, we will discuss the reasons with management and the Board in advance. If, for any reason, we are unable to complete the audit or are unable to form or have not formed an opinion, we may decline to express an opinion or to issue a report, or may withdraw from this engagement.

We will also provide a report (that does not include an opinion) on internal control related to the financial statements and compliance with the provisions of laws, regulations, and the provisions of contracts and grant agreements, noncompliance with which could have a material effect on the financial statements as required by *Government Auditing Standards*. The report on internal control and compliance and other matters will include a paragraph that states (1) that the purpose of the report is solely to describe the scope of testing of internal control and compliance, and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control on compliance, and (2) that the report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. The paragraph will also state that the report is not suitable for any other purpose. If during our audit we become aware that the Retirement System is subject to an audit requirement that is not encompassed in the terms of this engagement, we will communicate to management and those charged with governance that an audit in accordance with U.S. generally accepted auditing standards and the standards for financial audits contained in *Government Auditing Standards* may not satisfy the relevant legal, regulatory, or contractual requirements.

MANAGEMENT RESPONSIBILITIES

Management is responsible for the financial statements and all accompanying information as well as all representations contained therein.

Management is responsible for making all management decisions and performing all management functions relating to the financial statements and related notes and for accepting full responsibility for such decisions. Further, management is required to designate an individual with suitable skill, knowledge, or experience to oversee any nonaudit services we provide and for evaluating the adequacy and results of those services and accepting responsibility for them.

Management is responsible for establishing and maintaining effective internal controls, including evaluating and monitoring ongoing activities, to help ensure that appropriate goals and objectives are met; following laws and regulations; and ensuring that management is reliable and financial information is reliable and properly reported. Management is also responsible for implementing systems designed to achieve compliance with applicable laws, regulations, contracts, and grant agreements. Management is also responsible for the selection and application of accounting principles, for the preparation and fair presentation of the financial statements in conformity with U.S. generally accepted accounting principles, and for compliance with applicable laws and regulations and the provisions of contracts and grant agreements.

Management is also responsible for making all financial records and related information available to us and for the accuracy and completeness of that information. Management is also responsible for providing us with (1) access to all information of which management is aware that is relevant to the preparation and fair presentation of the financial statements, (2) additional information that we may request for the purpose of the audit, and (3) unrestricted access to persons within the government from whom we determine it necessary to obtain audit evidence.

Management's responsibilities include adjusting the financial statements to correct material misstatements and for confirming to us in the written representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the latest period presented are immaterial, both individually and in the aggregate, to the financial statements taken as a whole.

Management is responsible for the design and implementation of programs and controls to prevent and detect fraud, and for informing us about all known or suspected fraud affecting the government involving (1) management, (2) employees who have significant roles in internal control, and (3) others where the fraud or illegal acts could have a material effect on the financial statements. Management's responsibilities include informing us of any knowledge of any allegations of fraud or suspected fraud affecting the government received in communications from employees, former employees, grantors, regulators, or others. In addition, management is responsible for identifying and ensuring that the entity complies with applicable laws, regulations, contracts, agreements, and grants, and for taking timely and appropriate steps to remedy any fraud, illegal acts, violations of contracts or grant agreements, or abuse that we may report.

Management is responsible for the preparation of the supplementary information in conformity with U.S. generally accepted accounting principles. Management agrees to include our report on the supplementary information in any document that contains and indicates that we have reported on the supplementary information. Management also agrees to include the audited financial statements with any presentation of the supplementary information that includes our report thereon. Management's responsibilities include acknowledging to us in the written representation letter that (1) management is responsible for presentation of the supplementary information in accordance with GAAP; (2) management believes the supplementary information, including its form and content, is fairly presented in accordance with GAAP; (3) the methods of measurement or presentation have not changed from those used in the prior period (or, if they have changed, the reasons for such changes); and (4) management has disclosed to us any significant assumptions or interpretations underlying the measurement or presentation of the supplementary information.

Management is responsible for establishing and maintaining a process for tracking the status of audit findings and recommendations. Management is also responsible for identifying for us previous financial audits, attestation engagements, performance audits or other studies related to the objectives discussed in the Audit Objectives section of this letter. This responsibility includes relaying to us corrective actions taken to address significant findings and recommendations resulting from those audits, attestation engagements, performance audits, or other studies. Management is also responsible for providing management's views on our current findings, conclusions, and recommendations, as well as the planned corrective actions, for the report, and for the timing and format for providing that information.

With regard to the electronic dissemination of audited financial statements, including financial statements published electronically on the Retirement System's website, management understands that electronic sites are a means to distribute information and, therefore, we are not required to read the information contained in these sites or to consider the consistency of other information in the electronic site with the original document. With regard to using the auditor's reports, management understands that a written consent must be obtained from us prior to reproduce or use our reports in bond offering official statements or other documents.

AUDIT PROCEDURES—GENERAL

An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; therefore, our audit will involve judgment about the number of transactions to be examined and the areas to be tested. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We will plan and perform the audit to obtain reasonable rather than absolute assurance about whether the financial statements are free of material misstatement, whether from (1) errors, (2) fraudulent financial reporting, (3) misappropriation of assets, or (4) violations of laws or governmental regulations that are attributable to the entity or to acts by management or employees acting on behalf of the entity. Because the determination of abuse is subjective, *Government Auditing Standards* do not expect auditors to provide reasonable assurance of detecting abuse.

Because of the inherent limitations of an audit, combined with the inherent limitations of internal control, and because we will not perform a detailed examination of all transactions, there is a risk that material misstatements may exist and not be detected by us, even though the audit is properly planned and performed in accordance with U.S. Generally accepted auditing standards and *Government Auditing Standards*. In addition, an audit is not designed to detect immaterial misstatements or violations of laws or governmental regulations that do not have a direct and material effect on the financial statements. However, we will inform management of any material errors, fraudulent financial reporting, or misappropriation of assets that come to our attention. We will also inform management of any violations of laws or governmental regulations that come to our attention, unless clearly inconsequential, and of any material abuse that comes to our attention. Our responsibility as auditors is limited to the period covered by our audit and does not extend to later periods for which we are not engaged as auditors.

Our procedures will include tests of documentary evidence supporting the transactions recorded in the accounts, and may include direct confirmation of certain assets and liabilities by correspondence with selected individuals, funding sources, creditors, and financial institutions. We will request written representations from the Retirement System's attorneys as part of the engagement, and they may bill the Retirement System for responding to this inquiry. At the conclusion of our audit, we will require certain written representations from management about the financial statements; compliance with laws, regulations, contracts, and grant agreements; and other responsibilities required by generally accepted auditing standards.

AUDIT PROCEDURES—INTERNAL CONTROLS

Our audit will include obtaining an understanding of the entity and its environment, including internal control, sufficient to assess the risks of material misstatement of the financial statements and to design the nature, timing, and extent of further audit procedures. Tests of controls may be performed to test the effectiveness of certain controls that we consider relevant to preventing and detecting errors and fraud that are material to the financial statements and to preventing and detecting misstatements resulting from illegal acts and other noncompliance matters that have a direct and material effect on the financial statements. Our tests, if performed, will be less in scope than would be necessary to render an opinion on internal control and, accordingly, no opinion will be expressed in our report on internal control issued pursuant to *Government Auditing Standards*.

An audit is not designed to provide assurance on internal control or to identify significant deficiencies or material weaknesses. However, during the audit, we will communicate to management and those charged with governance internal control related matters that are required to be communicated under AICPA Professional Standards and *Government Auditing Standards*.

AUDIT PROCEDURES—COMPLIANCE

As part of obtaining reasonable assurance about whether the financial statements are free of material misstatement, we will perform tests of the Retirement System's compliance with the provisions of applicable laws, regulations, contracts, agreements, and grants. However, the objective of our audit will not be to provide an opinion on overall compliance and we will not express such an opinion in our report on compliance issued pursuant to *Government Auditing Standards*.

AUDIT ADMINISTRATION AND OTHERS

We may from time to time, and depending on the circumstances, use third-party service providers in serving the Retirement System's account. We may share confidential information about the Retirement System with these service providers, but remain committed to maintaining the confidentiality and security of the information. Accordingly, we maintain internal policies, procedures, and safeguards to protect the confidentiality of any personal information. In addition, we will secure confidentiality agreements with all service providers to maintain the confidentiality of the Retirement System's information and we will take reasonable precautions to determine that they have appropriate procedures in place to prevent the unauthorized release of any confidential information to others. In the event that we are unable to secure an appropriate confidentiality agreement, the Retirement System will be asked to provide consent prior to the sharing of any confidential information with the third-party service provider. Furthermore, we will remain responsible for the work provided by any such third-party service providers.

We understand that the Retirement System's employees will prepare all confirmations we request and will locate any documents selected by us for testing.

We will provide copies of our reports to the Retirement System; however, management is responsible for distribution of the reports and the financial statements. Unless restricted by law or regulation, or containing privileged and confidential information, copies of our reports are to be made available for public inspection.

The audit documentation for this engagement is the property of Macias Gini & O'Connell LLP and constitutes confidential information. However, subject to applicable laws and regulations, audit documentation and appropriate individuals will be made available upon request and in a timely manner to the California State Controller's Office or the U.S. Government Accountability Office for purposes of a quality review of the audit, to resolve audit findings, or to carry out oversight responsibilities. We will notify the Retirement System of any such request. If requested, access to such audit documentation will be provided under the supervision of Macias Gini & O'Connell LLP personnel. Furthermore, upon request, we may provide copies of selected audit documentation to the aforementioned parties. These parties may intend, or decide, to distribute the copies or information contained therein to others, including other governmental agencies.

The audit documentation for this engagement will be retained for a minimum of seven years after the report release date or for any additional period requested by the California State Controller's Office.

In connection with this engagement, we may communicate with management or others via e-mail transmission. As e-mail can be intercepted and read, disclosed, or otherwise used or communicated by an unintended third party, or may not be delivered to each of the parties to whom they are directed and only to such parties, we cannot guarantee or warrant that e-mail from us will be properly delivered and read only by the addressee. Therefore, we specifically disclaim and waive any liability or responsibility whatsoever for interception or unintentional disclosure or communication of e-mail transmissions, or for the unauthorized use or failed delivery of e-mail transmitted by us in connection with the performance of this engagement. In that regard, management agrees that we shall have no liability for any loss of damage to any person or entity resulting from the use of e-mail transmissions, including any consequential, incidental, direct, indirect, or special damages, such as loss of revenues or anticipated profits, or disclosure or communication of confidential or proprietary information.

With regards to the electronic dissemination of audited financial statements, including financial statements published electronically on the Retirement System's website, management understands that electronic sites are a means to distribute information and, therefore, we are not required to read the information contained in these sites or to consider the consistency of other information in the electronic site with the original document.

Professional and certain regulatory standards require us to be independent in both fact and appearance, with respect to the Retirement System in the performance of our services. Any discussions that the Retirement System has with personnel of our firm regarding employment could pose a threat to our independence. Therefore, the Retirement System agrees to inform us prior to any such discussions so that we can implement appropriate safeguards to maintain our independence.

Government Auditing Standards require that we provide you with a copy of our most recent external peer review report and any letter of comment, and any subsequent peer review reports and letters of comment received during the period of the contract. Our 2015 peer review is presented on the next page.

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September 17, 2015

System Review Report

To the Partners of Macias Gini & O'Connell LLP
and the National Peer Review Committee

We have reviewed the system of quality control for the accounting and auditing practice of Macias Gini & O'Connell, LLP (the firm) applicable to engagements not subject to PCAOB permanent inspection in effect for the year ended March 31, 2015. Our peer review was conducted in accordance with the Standards for Performing and Reporting on Peer Reviews established by the Peer Review Board of the American Institute of Certified Public Accountants. As a part of our peer review, we considered reviews by regulatory entities, if applicable, in determining the nature and extent of our procedures. The firm is responsible for designing a system of quality control and complying with it to provide the firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Our responsibility is to express an opinion on the design of the system of quality control and the firm's compliance therewith based on our review. The nature, objectives, scope, limitations of, and the procedures performed in a System Review are described in the standards at www.aicpa.org/prsummary.

As required by the standards, engagements selected for review included engagements performed under *Government Auditing Standards* and audits of employee benefit plans.

In our opinion, the system of quality control for the accounting and auditing practice of Macias Gini & O'Connell, LLP applicable to engagements not subject to PCAOB permanent inspection in effect for the year ended March 31, 2015, has been suitably designed and complied with to provide the firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Firms can receive a rating of *pass, pass with deficiency(ies)* or *fail.* Macias Gini & O'Connell, LLP has received a peer review rating of *pass.*

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Questions?

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