



AGENDA

RETIREMENT BOARD MEETING

REGULAR MEETING
September 12, 2018
9:00 a.m.

Retirement Board Conference Room
The Willows Office Park
1355 Willow Way, Suite 221
Concord, California

THE RETIREMENT BOARD MAY DISCUSS AND TAKE ACTION ON THE FOLLOWING:

1. Pledge of Allegiance.
2. Accept comments from the public.
3. Routine items for September 12, 2018.
 - a. Approve certifications of membership.
 - b. Approve service and disability allowances.
 - c. Accept disability applications and authorize subpoenas as required.
 - d. Approve death benefits.
 - e. Accept Asset Allocation Report.
 - f. Accept Liquidity Report.

CLOSED SESSION

4. The Board will go into closed session pursuant to Govt. Code Section 54957 to consider recommendations from the Medical Advisor and/or staff regarding the following disability retirement applications:

<u>Member</u>	<u>Type Sought</u>	<u>Recommendation</u>
a. Thomas Andersen	Service Connected	Service Connected
b. Michael Murphy	Service Connected	Service Connected

5. The Board will continue in closed session pursuant to Govt. Code Section 54957 to evaluate the performance of the following public employee:

Title: Chief Executive Officer

OPEN SESSION

6. Consider and take possible action to adopt the December 31, 2017 Valuation Report and contribution rates for the period July 1, 2019—June 30, 2020.
7. Consider and take possible action regarding non-service connected disability retirement allowance of deceased member Robert Richardson.

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

8. Consider and take possible action regarding non-service connected disability retirement allowance of deceased member Andrea Sosa.
9. Presentation from staff and DLJ regarding a potential commitment to DLJ Real Estate.
10. Consider and take possible action regarding a commitment to DLJ Real Estate.
11. Presentation of Semi-Annual Disability Retirement Report.
12. Presentation of the San Ramon Valley Fire Protection District Final Audit Report.
13. Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS.
14. Consider authorizing the attendance of Board:
 - a. 6th Annual California Institutional Forum, Markets Group, December 5, 2018, Sonoma, CA.
 - b. 2019 Aether Annual Meeting, Aether Investment Partners, LLC, January 23-24, 2019, Denver, CO. (Note: Potential conflict with meeting)
15. Miscellaneous
 - a. Staff Report
 - b. Outside Professionals' Report
 - c. Trustees' comments

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

Meeting Date
9/12/18
Agenda Item
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Items requiring Board Action

A. Certifications of Membership – see list and classification forms.

B. Service and Disability Retirement Allowances:

<u>Name</u>	<u>Number</u>	<u>Effective Date</u>	<u>Option Type</u>	<u>Group</u>	<u>Selected</u>
Belon, Cynthia	62065	03/31/18	SR	Tier III	Unmodified
Bitner, Leslie	D3483	01/25/18	SR	Tier I	Unmodified
Bowser, Kathy	78858	05/05/18	SR	Pepra 5.3	Unmodified
Carty, Miriam	67823	06/11/18	SR	Tier III	Unmodified
Catolos, Gloria	70390	02/24/18	SR	Tier III	Unmodified
Cremin, Daniel	49358	03/31/18	SR	Tier I	Option 2
Ding, Patricia	60804	03/31/18	SR	Tier III	Unmodified
Gebken, Kevin	54609	05/31/18	SR	Tier III	Unmodified
Gonzalez, Livier	37529	03/31/18	SR	Tier II and III	Unmodified
Harden, Paul	73838	06/01/18	SR	Tier III	Unmodified
Hoang, Loan	47922	05/11/18	SR	Tier II and III	Unmodified
Houston, Stephanie	47660	05/21/18	SR	Tier II and III	Option 1
Jones, William	50428	06/18/18	SR	Safety A	Unmodified
McClung, Elizabeth	66454	05/07/18	SR	Safety A	Unmodified
McGuire, Francisca	64641	05/02/18	SR	Tier III	Unmodified
Melville, James	49485	06/15/18	SR	Safety A	Unmodified
Moore, Joanne	D9500	06/19/18	SR	Tier I	Option 1
Morgan, Kimberli	69353	06/17/18	SR	Tier III	Option 1
Parra, Otilia	69730	06/01/18	SR	Tier III	Option 1
Pickett, Antoine	46543	06/14/18	SR	Tier II and III	Unmodified
Pomroy, Joseph	D3406	05/16/18	SR	Tier I	Unmodified
Reese, Daphne	D3406	04/26/18	SR	Tier I	Unmodified
Scott, Rhonda	44634	06/04/18	SR	Tier II and III	Unmodified
Sumrall, Michael	69630	10/28/17	SCD	Safety A	Unmodified
Tehrani, Hamid	D3406	03/31/18	SR	Tier I	Unmodified
Van Hook, Tiffany	50655	06/01/18	SR	Safety A	Unmodified
Wilson, Carla	56942	06/01/18	SR	Tier II and III	Unmodified

KEY:

Group
 I = Tier I
 II = Tier II
 III = Tier III
 S/A = Safety Tier A
 S/C = Safety Tier C

Option
 * = County Advance
 Selected w/option

Type
 NSP = Non-Specified
 SCD = Service Connected Disability
 SR = Service Retirement
 NSCD = Non-Service Connected Disability

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

C.

Disability Retirement Applications: The Board's Hearing Officer is hereby authorized to issue subpoenas in the following cases involving disability applications:

<u>Name</u>	<u>Number</u>	<u>Filed</u>	<u>Type</u>
Gonzalez, Esmerelda	52606	07/06/18	SCD
Latula, Cassandra	62488	08/03/18	SCD
Puente, Jesus	65469	07/26/18	SCD
Stevens, David	D7830/1779	08/29/18	SCD

D.

Deaths:

<u>Name</u>	<u>Date of Death</u>	<u>Employer as of Date of Death</u>
Aliotti, Peter	08/28/18	Contra Costa County Fire Protection District
Bello-Wafford, Gwendalyn	08/19/18	Contra Costa County
Hamlin, Robert	08/19/18	Contra Costa County
Herrera, Dina	06/29/18	Contra Costa County
Howard, Gregory	06/17/18	Contra Costa Mosquito & Vector Control District
Lai, Ka-Siu	06/13/18	Contra Costa County
Machado, Juanita	08/09/18	Contra Costa County
Pharn, Saenyuan	07/13/18	Contra Costa County
Romiti, Bernard	07/11/18	Contra Costa County
Ryan, Bettie	08/05/18	Contra Costa County
Sautter, Allen	07/28/18	Beneficiary
Sessler, Judith	08/02/18	Contra Costa County
Thomas, Rebecca	08/25/18	Contra Costa County

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 Selected w/option

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CERTIFICATION OF MEMBERSHIPS

Name	Employee Number	Tier	Membership Date	Employer
Allard, Courtney	86968	P5.2	07/01/18	Contra Costa County
Anderson, Bradford	87007	P4.2	07/01/18	Contra Costa County Fire Protection District
Arega, Firehiwot	86947	P5.2	07/01/18	Contra Costa County
Aviles-Scott, Abran	87001	P5.2	07/01/18	Contra Costa County
Bagley, Maria	D3301	P5.3	07/01/18	Contra Costa Mosquito & Vector Control District
Barajas, Michele	D3406	P4.3	07/01/18	Central Contra Costa Sanitary District
Callan, Amy	87023	P5.2	07/01/18	Contra Costa County
Carrasco, Armando	87033	P5.2	07/01/18	Contra Costa County
Casillas, Juan Manuel	D7830	P4.3	07/01/18	San Ramon Valley Fire Protection District
Charles, Mercedes	87009	P5.2	07/01/18	Contra Costa County
Clark, Nicholas	87043	P5.2	07/01/18	Contra Costa County
Crowe, Kathlene	87068	P5.2	07/01/18	Contra Costa County
Cruse, Bryant	87017	P5.2	07/01/18	Contra Costa County
Cruz, Laura	86935	P5.2	07/01/18	Contra Costa County
Davenport, Heather	87004	P5.2	07/01/18	Contra Costa County
Day, Christopher	86838	S/E	07/01/18	Contra Costa County
Dominguez, Cristina	86177	P5.2	07/01/18	Contra Costa County
Drummer, Lauren	86973	P5.2	07/01/18	Contra Costa County
Feizollahi, Sandra	87015	P5.2	07/01/18	Contra Costa County
Fonseca, Silvia	87020	P5.2	07/01/18	Contra Costa County
Frischtak, Helena	87058	P5.2	07/01/18	Contra Costa County
Garcia, Christian	87113	P5.2	07/01/18	Contra Costa County
Garcia, Fredy	83451	P5.2	07/01/18	Contra Costa County
Gutierrez, Marco	83538	P5.2	07/01/18	Contra Costa County
Ha, Thyvan	86988	P5.2	07/01/18	Contra Costa County
Hara, Marcy	62670	III	07/01/18	Contra Costa County
Harris, Latrina	84336	P5.2	07/01/18	Contra Costa County
Harris, Laura	87059	P5.2	07/01/18	Contra Costa County
Heinrich, Katelyn	80420	P5.2	07/01/18	Contra Costa County
Hernandez, Jaime	D4980	P4.3	07/01/18	CCCERA
Hernandez, Thelma	84668	P5.2	07/01/18	Contra Costa County
Hodge, Paul	86990	P5.2	07/01/18	Contra Costa County
Ibarra, Noemi	87057	P5.2	07/01/18	Contra Costa County
Jewell, Cameron	87046	P5.2	07/01/18	Contra Costa County
Kolc, Laci	D3406	I	07/01/18	Central Contra Costa Sanitary District
Ladner-Pace, Nicole	87005	P5.2	07/01/18	Contra Costa County
Levi, Teisha	86945	P5.2	07/01/18	Contra Costa County
Li, Kitty	87000	P5.2	07/01/18	Contra Costa County
Lindstrom, Sorren	87022	P5.2	07/01/18	Contra Costa County
Loeza, Joana	87051	P5.2	07/01/18	Contra Costa County

Key:

I = Tier I	P4.2 = PEPR Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPR Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPR Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPR Tier 5 (3% COLA)	S/E = Safety Tier E

CERTIFICATION OF MEMBERSHIPS

Name	Employee Number	Tier	Membership Date	Employer
Luna, Maria	86946	P5.2	07/01/18	Contra Costa County
Martinez, Blanca	87014	P5.3	07/01/18	In-Home Supportive Services Authority
McGloin, Bryan	D3406	P4.3	07/01/18	Central Contra Costa Sanitary District
Mitchell, Margaret	86951	III	07/01/18	Contra Costa County
Montes Castellon, Carol's	87018	P5.2	07/01/18	Contra Costa County
Moore, Artishia	80576	P4.2	07/01/18	Contra Costa County Fire Protection District
Najibi, Skender	87050	P5.2	07/01/18	Contra Costa County
Niswander, Geoffrey	D3406	P4.3	07/01/18	Central Contra Costa Sanitary District
Norry, Dahlia	87027	P5.2	07/01/18	Contra Costa County
Ottolini, Joseph	87019	P4.2	07/01/18	Contra Costa County Fire Protection District
Pena, Janira	87002	P5.2	07/01/18	Contra Costa County
Phan, Koy	87013	P5.2	07/01/18	Contra Costa County
Plascencia, Calvin	87011	P4.2	07/01/18	Contra Costa County Fire Protection District
Quibilan, Khristine	87137	P5.2	07/01/18	Contra Costa County
Rixford, Steven	86977	P5.2	07/01/18	Contra Costa County
Roberts, Mathew-Alexander	87094	P5.2	07/01/18	Contra Costa County
Rodrigues, Maribel	83711	P5.2	07/01/18	Contra Costa County
Rodriguez, Adriana	86929	P5.2	07/01/18	Contra Costa County
Rodriguez, Judith	82408	P5.2	07/01/18	Contra Costa County
Roman, Concepcion	87032	P5.2	07/01/18	Contra Costa County
Saud, Shakir	87052	P5.2	07/01/18	Contra Costa County
Semione, Kelly	86948	III	07/01/18	Contra Costa County
Shiu, Susan	86998	P5.2	07/01/18	Contra Costa County
Siackasorn, Moukdavanh	87130	P5.2	07/01/18	Contra Costa County
Simon, Ari	87030	P5.2	07/01/18	Contra Costa County
Smith, Anthony	D3406	P4.3	07/01/18	Central Contra Costa Sanitary District
Smith, Joy	D3406	P4.3	07/01/18	Central Contra Costa Sanitary District
Smith, Stephanie	85364	P5.2	07/01/18	Contra Costa County
Spring, Adam	87055	P5.2	07/01/18	Contra Costa County
Straiten, Crystal	86961	P5.2	07/01/18	Contra Costa County
Taylor, Raechel	82572	P5.2	07/01/18	Contra Costa County
Tesfazghi, Teblots	86930	P5.2	07/01/18	Contra Costa County
Thomas, Selina	87025	P5.2	07/01/18	Contra Costa County
Van Lohuizen, Melissa	76096	P5.2	06/01/18	Contra Costa County
Veteran, William	87158	P5.2	07/01/18	Contra Costa County
Wagner, Lauren	87091	P4.3	07/01/18	First Five of Contra Costa

Key:

I = Tier I	P4.2 = PEPR A Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPR A Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPR A Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPR A Tier 5 (3% COLA)	S/E = Safety Tier E

TIER CHANGES

Name	Employee Number	Old Tier	New Tier	Effective Date	Employer	Reason for Change
Aubin, Joan	83852	P5.2	III	10/01/16	Contra Costa County	Recip In Age & Tier Change
Botson, Jonathan	86714	P5.2	III	04/01/18	Contra Costa County	Recip In Age & Tier Change
Boyle, Mayra	D4980	P5.2	P4.3	07/01/18	CCCERA	Transferred Employers
Dutter, Tracie	86955	S/E	S/C	06/01/18	Contra Costa County Fire Protection District	Recip In Age & Tier Change
Frates, Kevin	85345	P4.2	I	10/01/17	Contra Costa County Fire Protection District	Recip In Age & Tier Change
Hatfield, Davina	D7830	P4.3	I	05/01/18	San Ramon Valley Fire Protection District	Recip In Age & Tier Change
Milburn, Russell	73642	S/A	III	06/01/18	Contra Costa County	Promotion
Shorr, Marc	86757	P5.2	III	04/01/18	Contra Costa County	Recip In Age & Tier Change
Vevaina, Zena	86717	P5.2	III	04/01/18	Contra Costa County	Recip In Age & Tier Change

Key:

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II = Tier II	P4.3 = PEPPRA Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPPRA Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPPRA Tier 5 (3% COLA)	S/E = Safety Tier E

Contra Costa County Employees' Retirement Association
Asset Allocation as of July 31, 2018

Liquidity	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Insight	674,999,346	7.8%	12.0%	-4.2%		
Sit	521,004,160	6.0%	5.5%	0.5%		
Dimensional Fund Advisors	466,789,708	5.4%	5.5%	-0.1%		
Total Liquidity	1,662,793,214	19.2%	23.0%	-3.8%	23.0%	-3.8%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	301,576,243	3.5%	3.0%	0.5%		
Jackson Square	329,649,004	3.8%	3.0%	0.8%		
BlackRock Index Fund	127,652,996	1.5%	1.0%	0.5%		
Emerald Advisors	236,941,838	2.7%	2.0%	0.7%		
Ceredex	211,564,451	2.4%	2.0%	0.4%		
Total Domestic Equity	1,207,384,532	14.0%	11.0%	3.0%	5.0%	9.0%
Global & International Equity						
Pyrford (BMO)	456,521,946	5.3%	5.5%	-0.2%		
William Blair	495,950,675	5.7%	5.5%	0.2%		
First Eagle	365,018,686	4.2%	4.0%	0.2%		
Artisan Global Opportunities	397,147,350	4.6%	4.0%	0.6%		
PIMCO/RAE Emerging Markets	356,800,709	4.1%	4.0%	0.1%		
TT Emerging Markets	331,301,642	3.8%	4.0%	-0.2%		
Total Global & International Equity	2,402,741,008	27.8%	27.0%	0.8%	24.0%	3.8%
Private Equity						
Private Credit	859,314,000	9.9%	10.0%	-0.1%	11.0%	-1.1%
Real Estate - Value Add	210,205,000	2.4%	4.0%	-1.6%	12.0%	-9.6%
Real Estate - Opportunistic & Distressed	161,424,000	1.9%	5.0%	-3.1%	5.0%	-3.1%
Real Estate - REIT (Adelante)	418,594,000	4.8%	4.0%	0.8%	4.0%	0.8%
High Yield (Allianz)	67,466,629	0.8%	1.0%	-0.2%	1.0%	-0.2%
Risk Parity	348,421,276	4.0%	2.0%	2.0%	0.0%	4.0%
Total Other Growth Assets	0	0.0%	5.0%	-5.0%	5.0%	-5.0%
Total Growth Assets	2,065,424,904	23.9%	31.0%	-7.1%	38.0%	-14.1%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	315,872,780	3.7%	3.5%	0.2%	3.0%	0.7%
Parametric Defensive Equity	200,372,422	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	185,842,751	2.2%	2.0%	0.2%	3.5%	-1.3%
Total Risk Diversifying	702,087,953	8.1%	8.0%	0.1%	10.0%	-1.9%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	52,461,926	0.6%		0.6%		
Cash	545,776,119	6.3%		6.3%		
Total Cash and Overlay	598,238,045	6.9%	0.0%	6.9%	0.0%	6.9%
Total Fund	8,638,669,656.03	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Private Market Investments
As of July 31, 2018

REAL ESTATE - Value Add

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Invesco IREF II	05/30/07	12/31/15	in full liq.			85,000,000	444,000	0.01%	
Invesco IREF III	08/01/13	08/01/20				35,000,000	13,282,000	0.15%	
Invesco IREF IV	12/01/14	12/01/21				35,000,000	20,544,000	0.24%	1,203,000
Long Wharf FREG IV	08/14/13	09/30/21				25,000,000	12,304,000	0.14%	
Long Wharf FREG V	10/31/16	09/30/24				50,000,000	36,187,000	0.42%	10,689,000
LaSalle Income & Growth Fund VI	01/31/12	01/31/19				75,000,000	31,047,000	0.36%	3,946,000
LaSalle Income & Growth Fund VII	10/31/16	09/30/24				75,000,000	47,616,000	0.55%	27,449,000
						505,000,000	161,424,000	1.87%	43,287,000
Outstanding Commitments							43,287,000		
Total							204,711,000		

REAL ESTATE -Opportunistic & Distressed

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
DLJ Real Estate Capital Partners, L.P. III	06/30/05	06/30/14	in full liq.			75,000,000	23,249,000	0.27%	
DLJ Real Estate Capital Partners, L.P. IV	12/31/07	09/30/18				100,000,000	92,208,000	1.07%	
DLJ Real Estate Capital Partners, L.P. V	07/31/13	12/31/22				75,000,000	23,433,000	0.27%	
Oaktree Real Estate Opportunities Fund V	02/01/11	02/01/21				50,000,000	6,520,000	0.08%	
Oaktree Real Estate Opportunities Fund VI	09/30/13	09/30/20				80,000,000	43,777,000	0.51%	
Oaktree Real Estate Opportunities Fund VII	02/28/15	02/28/23				65,000,000	20,360,000	0.24%	40,755,000
Siguler Guff Distressed Real Estate Opp. Fund	07/30/11	07/30/22				75,000,000	47,586,000	0.55%	7,362,000
Siguler Guff Distressed Real Estate Opp. Fund II	08/31/13	08/31/25				70,000,000	50,000,000	0.58%	21,002,000
Siguler Guff Distressed Real Estate Opp. II Co-Inv	01/31/16	10/31/25				25,000,000	20,496,000	0.24%	5,217,000
Paulson Real Estate Fund II	11/10/13	11/10/20				20,000,000	22,424,000	0.26%	
Angelo Gordon Realty Fund VIII	12/31/11	12/31/18				80,000,000	27,791,000	0.32%	
Angelo Gordon Realty Fund IX	10/10/14	10/10/22				65,000,000	40,750,000	0.47%	31,091,000
						780,000,000	418,594,000	4.85%	105,427,000
Outstanding Commitments							105,427,000		
Total							524,021,000		

PRIVATE CREDIT

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Torchlight Debt Opportunity Fund II	09/28/06	09/30/16	in full liq.			128,000,000	16,820,000	0.19%	
Torchlight Debt Opportunity Fund III	09/30/08	06/30/16	2nd 1 YR	LP	06/30/18	75,000,000	1,273,000	0.01%	
Torchlight Debt Opportunity Fund IV	08/01/12	08/30/20				60,000,000	29,050,000	0.34%	
Torchlight Debt Opportunity Fund V	12/31/14	09/17/22				75,000,000	48,318,000	0.56%	36,037,000
Angelo Gordon Energy Credit Opportunities	09/10/15	09/10/20				16,500,000	8,410,000	0.10%	
CCERA StepStone	12/01/17	11/30/27				400,000,000	106,334,000	1.23%	275,656,000
						754,500,000	210,205,000	2.43%	311,693,000
Outstanding Commitments							311,693,000		
Total							521,898,000		

Private Market Investments
As of July 31, 2018

PRIVATE EQUITY	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Adams Street Partners	12/22/95	12/22/25				180,000,000	120,932,000	1.40%	71,080,000
Adams Street Secondary II	12/31/08	12/31/20				30,000,000	8,205,000	0.09%	12,637,000
Adams Street Secondary V	10/31/12	10/31/22				40,000,000	23,087,000	0.27%	15,740,000
Adams Street Venture Innovation Fund	03/09/16	03/09/28				75,000,000	14,663,000	0.17%	64,088,000
Bay Area Equity Fund	06/14/04	12/31/14	2nd 2 YR	LP	12/31/2017	10,000,000	2,965,000	0.03%	
Bay Area Equity Fund II	2/29/09	12/31/19				10,000,000	8,615,000	0.10%	
Carpenter Community BancFund	10/31/09	10/31/19				30,000,000	4,399,000	0.05%	
EIF USPF I	11/08/02	11/08/15	in full liq.	LP	11/08/15	30,000,000	755,000	0.01%	
EIF USPF II	06/15/05	06/15/15	3rd 1 YR	LP	06/15/18	50,000,000	24,074,000	0.28%	
EIF USPF III	02/28/07	02/28/17	1st 1 YR	LP	02/28/18	65,000,000	29,923,000	0.35%	
EIF USPF IV	06/28/10	06/28/20				50,000,000	48,350,000	0.56%	
Oaktree Private Investment Fund 2009	02/28/10	12/15/19				40,000,000	8,633,000	0.24%	
Ocean Avenue Fund II	05/07/14	05/07/24				30,000,000	22,313,000	0.26%	4,584,000
Ocean Avenue Fund III	12/09/15	12/09/25				50,000,000	19,579,000	0.07%	34,500,000
Paladin III	08/15/08	08/15/18				25,000,000	18,413,000	0.21%	
Pathway	11/09/98	05/31/21				125,000,000	19,590,000	0.23%	14,246,000
Pathway 2008	12/26/08	12/26/23				30,000,000	18,494,000	0.21%	5,738,000
Pathway 6	05/24/11	05/24/26				40,000,000	31,071,000	0.36%	10,201,000
Pathway 7	02/07/13	02/07/23				70,000,000	51,767,000	0.60%	18,021,000
Pathway 8	11/23/15	11/23/25				50,000,000	23,971,000	0.28%	28,770,000
Siguler Guff CCCERA Opportunities	06/03/14	05/31/25				200,000,000	143,739,000	1.66%	68,500,000
Siguler Guff Secondary Opportunities	12/31/16	12/31/26				50,000,000	34,824,000	0.40%	16,069,000
Real Assets									
Aether III & III Surplus	11/30/13	11/30/20				75,000,000	81,457,000	0.94%	12,378,000
Aether IV	01/01/16	01/01/28				50,000,000	19,023,000	0.22%	30,656,000
ARES EIF V	09/09/15	11/19/25				50,000,000	29,545,000	0.34%	18,371,000
Commonfund Capital Natural Resources IX	06/30/13	06/30/20				50,000,000	42,318,000	0.49%	10,930,000
Wastewater Opportunity Fund	12/31/15	11/30/22				25,000,000	8,609,000	0.10%	16,209,000
						1,545,000,000	859,314,000	9.93%	452,718,000
Outstanding Commitments							452,718,000		
Total							1,312,032,000		

Market value column is the latest ending quarter plus any additional capital calls after the ending quarter.

The Target Termination column is the beginning of liquidation of the fund, however, some funds may be extended for an additional two or three years.



Meeting Date
9/12/18
Agenda Item
#3f.

**Contra Costa County Employees' Retirement Association
Liquidity Report – July 2018**

July 2018 Performance

	Cash Flow	Coverage Ratio
Benefit Cash Flow Projected by Model	\$38,000,000	
Liquidity Sub-Portfolio Cash Flow	\$38,000,000	100%
Actual Benefits Paid	\$38,956,190	98%
Next Month's Projected Benefit Payment	\$38,000,000	

Monthly Manager Positioning – July 2018

	Beginning Market Value	Liquidity Program Cash Flow	Market Value Change/Other Activity	Ending Market Value
Sit	\$482,786,680	(\$1,000,000)	\$39,217,480	\$521,004,160
DFA	\$329,410,558	(\$13,000,000)	\$150,379,150	\$466,789,708
Insight	\$697,455,828	(\$24,000,000)	\$1,543,518	\$674,999,346
Liquidity	\$1,509,653,066	(\$38,000,000)	\$191,140,148	\$1,662,793,214
Cash	\$229,721,551	(\$956,190)	\$317,010,758	\$545,776,119
Liquidity + Cash	\$1,739,374,617	(\$38,956,190)	\$508,150,906	\$2,208,569,333

Functional Roles

Manager	Portfolio Characteristics	Liquidity Contribution
Sit	High quality portfolio of small balance, government guaranteed mortgages with higher yields.	Pays out net income on monthly basis.
DFA	High quality, short duration portfolio of liquid, low volatility characteristics.	Pays out a pre-determined monthly amount. DFA sources liquidity from across their portfolio.
Insight	Buy and maintain (limited trading) portfolio of high quality, short duration, primarily corporates.	Completion portfolio makes a payment through net income and bond maturities that bridges the gap between other managers and projected payment.
Cash	STIF account at custodial bank.	Buffer in the event of any Liquidity shortfall/excess.

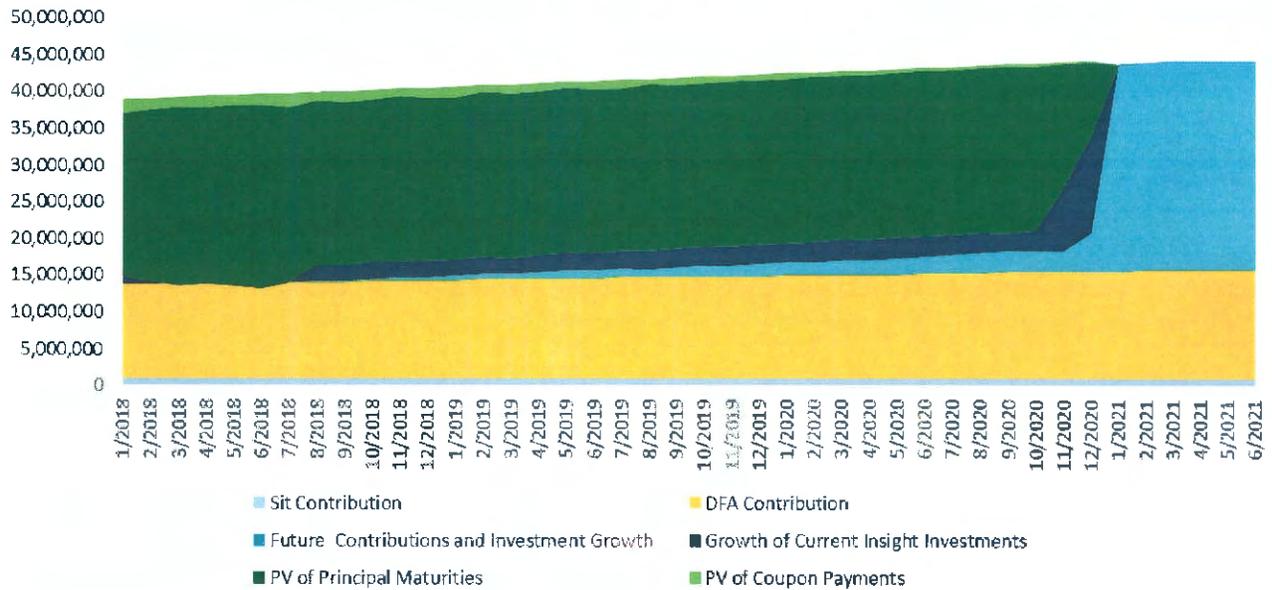
Notes

The seventh cash flow from the liquidity program for 2018 was completed on July 23 and produced a lower cash flow (\$956 thousand) than our actual benefit payments.

Cash Flow Structure

The chart below shows the sources of cash flow for the next several years of CCCERA's projected benefit payments. This table will change slightly as the model is tweaked and as the portfolios receive new rounds of funding each July as part of the Annual Funding Plan.

**Dollar Investment by Cashflow Period
Current & Future Investments**



MEMORANDUM

Date: September 12, 2018

To: CCCERA Board of Retirement

From: Gail Strohl, Chief Executive Officer

Subject: Consider and take possible action to adopt the December 31, 2017 Valuation Report and contribution rates for the period July 1, 2019-June 30, 2020.

Background

At the August 22 Board meeting, Segal Consulting presented the December 31, 2017 Valuation Report, including employer and member contribution rates. The enclosed contribution rate packet is a document to assist employers in implementing contribution rates. This document will be included in the valuation report beginning with the December 31, 2018 Valuation Report next year.

Recommendation

Consider and take possible action to adopt the December 31, 2017 Valuation Report and contribution rates for the period July 1, 2019-June 30, 2020.



100 Montgomery Street Suite 500 San Francisco, CA 94104-4308
T 415.263.8260 www.segalco.com

John W. Monroe, ASA, MAAA, EA
Vice President & Actuary
jmonroe@segalco.com

August 29, 2018

Ms. Gail Strohl
Chief Executive Officer
Contra Costa County Employees' Retirement Association
1355 Willow Way, Suite 221
Concord, CA 94520

**Re: Contra Costa County Employees' Retirement Association
Contribution Rate Packet for the Period from July 1, 2019 through June 30, 2020**

Dear Gail:

As requested, we have prepared the enclosed contribution rate packet that contains the employer and member contribution rates for the period from July 1, 2019 through June 30, 2020.

The following documents are enclosed:

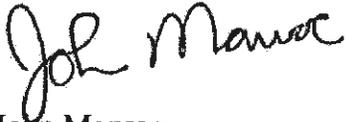
- Contribution Rate Packet Cover Page
- Contribution Rate Packet Table of Contents
- Contribution Rate Packet Cover Memo
- Board of Supervisors Resolution
- Employer Contribution Rates (Exhibits A and B)
- Member Contribution Rates (Exhibits C through O)
- Examples for Subvention and Employee Cost Sharing
- Prepayment Discount Factor for 2019-2020

The information enclosed is based on the December 31, 2017 actuarial valuation results including the participant data and actuarial assumptions on which that valuation was based. That valuation was completed under the supervision of John Monroe, ASA, MAAA, EA.

Ms. Gail Strohl
August 29, 2018
Page 2

We will also send these documents to you electronically. Please let us know if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "John Monroe". The signature is written in a cursive style with a large, stylized "J" and "M".

John Monroe

EK/hy
Enclosures (5551511)



**CONTRA COSTA COUNTY
EMPLOYEES' RETIREMENT ASSOCIATION**

**CONTRIBUTION RATE PACKET FOR
JULY 1, 2019 through JUNE 30, 2020**

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

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3	Employer Rates & Refundability Discount Factors for General PEPRA Tiers 4 and 5 with 2% Maximum COLA (Exhibit A - 2)
4	Employer Rates & Refundability Discount Factors for General PEPRA Tiers 4 and 5 with 3% Maximum COLA (Exhibit A - 3)
5	Employer Rates & Refundability Discount Factors for Safety Tiers A and C (Exhibit B - 1)
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7	General Non-PEPRA Cost Group #1 Member Rates (Exhibit C)
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15	Safety Non-PEPRA Cost Group #9 Member Rates (Exhibit K)
16	Safety Non-PEPRA Cost Group #10 Member Rates (Exhibit L)
17	Safety Non-PEPRA Cost Group #11 Member Rates (Exhibit M)

18	Safety Non-PEPRA Cost Group #12 Member Rates (Exhibit N)
19	General and Safety PEPRA Member Rates (Exhibit O)
20	Examples for Subvention and Employee Cost Sharing
21	Prepayment Discount Factor for 2019-20

MEMORANDUM

Date: September __, 2018
To: Interested Parties and Participating Employers
From: Gail Strohl, Chief Executive Officer
Subject: Contribution Rates Effective July 1, 2019

At its August 22, 2018 meeting, the Retirement Board reviewed the actuary's valuation report for the year ending December 31, 2017. That report recommends employer and employee contribution rates, which will become effective on July 1, 2019. A copy of the December 31, 2017 Actuarial Valuation can be found on CCCERA's website at www.cccera.org under the Actuarial Valuations link.

Enclosed are the employer and employee contribution rates to be used effective July 1, 2019 through June 30, 2020.

Please note the following:

- ✓ **The rates are effective July 1, 2019 through June 30, 2020 and have not yet been adopted by the County Board of Supervisors.**
- ✓ **The rates are BEFORE ANY EMPLOYER SUBVENTION of the employee contribution.** The rates quoted here are the employer required rates without taking into consideration any employer subvention of employee contributions. A convenient methodology for adding subvention is included for your use on page 20. Note that subvention is not always permitted for PEPRA members.
- ✓ **The rates are BEFORE ANY INCREASE IN EMPLOYEE RATE to pay a portion of the employer contribution.** If an employee's rate needs to be increased to pay a portion of the employer contribution, both employee and employer rates would need to be adjusted accordingly. A convenient methodology for adding subvention is included for your use on page 20.

THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA

Adopted this Order on _____, by the following vote:

- AYES:
NOES:
ABSENT:
ABSTAIN:

SUBJECT: Approving Contribution Rates to be charged Resolution No. _____
by the Contra Costa County
Employees' Retirement Association.

Pursuant to Government Code Section 31454 and on recommendation of the Board of the Contra Costa County Employees' Retirement Association, BE IT RESOLVED that the following contribution rates are approved to be effective for the period July 1, 2019 through June 30, 2020.

I. Employer Contribution Rates for Basic and Cost-of-Living Components and Non-refundability Discount Factors

- A. For General Members (Sec. 31676.11, Sec. 31676.16 and Sec. 7522.20(a)) See attached Exhibit A
B. For Safety Members (Sec. 31664, Sec. 31664.1 and Sec. 7522.25(d)) See attached Exhibit B

II. Employee Contribution Rates for Basic and Cost-of-Living Components

See attached Exhibits C through O

The Pension Obligation Bonds (POB) issued by the County in March 1994 and April 2003, affected contribution rates for certain County employees. The following non-County employers who participate in the Retirement Association are referred to as "Districts".

- Bethel Island Municipal Improvement District
Byron, Brentwood Knightsen Union Cemetery District
Central Contra Costa Sanitary District
Contra Costa County Employees' Retirement Association
Contra Costa Housing Authority
Contra Costa Mosquito and Vector Control District
Local Agency Formation Commission (LAFCO)
Rodeo Sanitary District
In-Home Supportive Services Authority
First 5 - Children & Families Commission
Contra Costa County Fire Protection District
East Contra Costa Fire Protection District
Moraga-Orinda Fire Protection District
Rodeo-Hercules Fire Protection District
San Ramon Valley Fire Protection District

All other departments/employers are referred to as "County" including the Superior Court of California, Contra Costa County.

Contra Costa County Fire Protection District and Moraga-Orinda Fire Protection District issued Pension Obligation Bonds in 2005 which affected contribution rates for these two employers. Subsequently, Contra Costa County Fire Protection District has made additional payments to CCCERA for its UAAL in 2006 and 2007.

First 5 - Children & Families Commission made a UAAL prepayment in 2013 which affected contribution rates for that employer.

Central Contra Costa Sanitary District made a UAAL prepayment in 2013, 2014 and 2015 which affected contribution rates for that employer.

Local Agency Formation Commission made a UAAL prepayment in 2017 which affected contribution rates for that employer.

San Ramon Valley Fire Protection District made a UAAL prepayment in 2017 which affected contribution rates for that employer.

Exhibit A - 1

**CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EMPLOYER CONTRIBUTION RATES EFFECTIVE FOR JULY 1, 2019 THROUGH JUNE 30, 2020 for General Tier 1 and 3 Legacy Members**

GENERAL TIERS - ENHANCED

Tier 1 BASIC Enhanced

First \$350 monthly & in Social Security
Excess of \$350 monthly & in Social Security

All Eligible \$ if NOT in Social Security

Tier 1 COL Enhanced

First \$350 monthly
Excess of \$350 monthly

All Eligible \$ if NOT in Social Security

Non-Refundability Factor

	Cost Group #1					Cost Group #3	Cost Group #4	Cost Group #5
	Moraga-Orinda		Districts			Central Contra Costa	Contra Costa	Contra Costa County
	County	Fire District	First 5	LAFCO	without POB	Sanitary District	Housing Authority	Fire Protection District
First \$350 monthly & in Social Security	15.57%	N/A	15.48%	18.48%	18.94%	N/A	20.14%	N/A
Excess of \$350 monthly & in Social Security	23.35%	N/A	23.21%	27.72%	28.40%	N/A	30.20%	N/A
All Eligible \$ if NOT in Social Security	23.35%	20.82%	N/A	N/A	28.40%	36.29%	N/A	22.39%
First \$350 monthly	3.51%	N/A	3.59%	6.07%	6.24%	N/A	9.14%	N/A
Excess of \$350 monthly	5.27%	N/A	5.39%	9.10%	9.36%	N/A	13.72%	N/A
All Eligible \$ if NOT in Social Security	5.27%	5.03%	N/A	N/A	9.36%	14.31%	N/A	10.36%
Non-Refundability Factor	0.9602	0.9602	0.9602	0.9602	0.9602	0.9588	0.9571	0.9591

Tier 3 BASIC Enhanced

First \$350 monthly
Excess of \$350 monthly

All Eligible \$ if NOT in Social Security

Tier 3 COL Enhanced

First \$350 monthly
Excess of \$350 monthly

All Eligible \$ if NOT in Social Security

Non-Refundability Factor

	Cost Group #2	
	County	Districts without POB
First \$350 monthly	15.59%	19.03%
Excess of \$350 monthly	23.39%	28.55%
All Eligible \$ if NOT in Social Security	N/A	28.55%
First \$350 monthly	3.44%	6.20%
Excess of \$350 monthly	5.16%	9.29%
All Eligible \$ if NOT in Social Security	N/A	9.29%
Non-Refundability Factor	0.9576	0.9576

GENERAL TIER NON-ENHANCED

Tier 1 BASIC NON-Enhanced

First \$350 monthly
Excess of \$350 monthly

All Eligible \$ if NOT in Social Security

Tier 1 COL NON-Enhanced

First \$350 monthly
Excess of \$350 monthly

All Eligible \$ if NOT in Social Security

Non-Refundability Factor

	Cost Group #6
	Districts without POB
First \$350 monthly	9.13%
Excess of \$350 monthly	13.69%
All Eligible \$ if NOT in Social Security	N/A
First \$350 monthly	2.68%
Excess of \$350 monthly	4.02%
All Eligible \$ if NOT in Social Security	N/A
Non-Refundability Factor	0.9556

Cost Group	Employer Name	Tier
Cost Group #1	County General LAFCO CC Mosquito & Vector Control District Bethel Island Municipal Improvement District First 5 - Children and Families Commission Contra Costa County Employees' Retirement Association Superior Court East Contra Costa Fire Protection District Moraga-Orinda Fire Protection District Rodeo-Hercules Fire Protection District San Ramon Valley Fire Protection District	Tier 1 Enhanced (2% @ 55)
Cost Group #2	County General In-Home Supportive Services CC Mosquito & Vector Control District Superior Court	Tier 3 Enhanced (2% @ 55)
Cost Group #3	Central Contra Costa Sanitary District	Tier 1 Enhanced (2% @ 55)
Cost Group #4	Contra Costa Housing Authority	Tier 1 Enhanced (2% @ 55)
Cost Group #5	Contra Costa County Fire Protection District	Tier 1 Enhanced (2% @ 55)
Cost Group #6	Rodeo Sanitary District Byron Brentwood Cemetery District	Tier 1 Non-enhanced (1.67% @ 55)

Basic rates shown include an administrative expense load of 0.66% of payroll. This load has been integrated and adjusted as appropriate into the first \$350 and excess of \$350 monthly rates shown.

Exhibit A - 2

**CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EMPLOYER CONTRIBUTION RATES EFFECTIVE FOR JULY 1, 2019 THROUGH JUNE 30, 2020 for General Tier 4 and 5 PEPRA Members with 2% Maximum COLA**

GENERAL PEPRA TIERS

Tier 4 BASIC

All Eligible \$

Tier 4 COL

All Eligible \$

Non-Refundability Factor

	Cost Group #1					Cost Group #3	Cost Group #4	Cost Group #5
	Moraga-Orinda		Districts			Central Contra Costa	Contra Costa	Contra Costa County
	County	Fire District	First 5	LAFCO	without POB	Sanitary District	Housing Authority	Fire Protection District
All Eligible \$	19.51%	N/A	N/A	N/A	N/A	N/A	N/A	19.58%
All Eligible \$	3.67%	N/A	N/A	N/A	N/A	N/A	N/A	9.03%
Non-Refundability Factor	0.9605	N/A	N/A	N/A	N/A	N/A	N/A	0.9630

Tier 5 BASIC

All Eligible \$

Tier 5 COL

All Eligible \$

Non-Refundability Factor

	Cost Group #2	
	County	Districts without POB
All Eligible \$	18.91%	23.99%
All Eligible \$	3.52%	7.59%
Non-Refundability Factor	0.9611	0.9611

Cost Group	Employer Name	Tier
Cost Group #1	County General LAFCO CC Mosquito & Vector Control District Bethel Island Municipal Improvement District First 5 - Children and Families Commission Contra Costa County Employees' Retirement Association Superior Court East Contra Costa Fire Protection District Moraga-Orinda Fire Protection District Rodeo-Hercules Fire Protection District San Ramon Valley Fire Protection District	Tier 4 (2.5% @ 67)
Cost Group #2	County General In-Home Supportive Services CC Mosquito & Vector Control District Superior Court	Tier 5 (2.5% @ 67)
Cost Group #3	Central Contra Costa Sanitary District	Tier 4 (2.5% @ 67)
Cost Group #4	Contra Costa Housing Authority	Tier 4 (2.5% @ 67)
Cost Group #5	Contra Costa County Fire Protection District	Tier 4 (2.5% @ 67)
Cost Group #6	Rodeo Sanitary District Byron Brentwood Cemetery District	Tier 4 (2.5% @ 67)

Some tiers are not applicable to employers as shown above in the rate table.

Basic rates shown include an administrative expense load of 0.66% of payroll.

Exhibit A - 3

**CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EMPLOYER CONTRIBUTION RATES EFFECTIVE FOR JULY 1, 2019 THROUGH JUNE 30, 2020 for General Tier 4 and 5 PEPRA Members with 3% Maximum COLA**

GENERAL PEPRA TIERS

Tier 4 BASIC

All Eligible \$

Tier 4 COL

All Eligible \$

Non-Refundability Factor

	Cost Group #1					Cost Group #3	Cost Group #4	Cost Group #5	Cost Group #6
	Moraga-Orinda		First 5	LAFCO	Districts without POB	Central Contra Costa Sanitary District	Contra Costa Housing Authority	Contra Costa County Fire Protection District	Districts without POB
	County	Fire District							
	19.66%	17.42%	19.51%	23.99%	24.74%	31.02%	25.85%	21.56%	10.20%
	4.66%	4.49%	4.77%	8.45%	8.73%	13.23%	12.95%	10.74%	3.47%
	0.9613	0.9613	0.9613	0.9613	0.9613	0.9670	0.9654	0.9606	0.9643

Tier 5 BASIC

All Eligible \$

Tier 5 COL

All Eligible \$

Non-Refundability Factor

Cost Group #2	
County	Districts without POB
19.13%	24.21%
0.9631	0.9631

Cost Group	Employer Name	Tier
Cost Group #1	County General LAFCO CC Mosquito & Vector Control District Bethel Island Municipal Improvement District First 5 - Children and Families Commission Contra Costa County Employees' Retirement Association Superior Court East Contra Costa Fire Protection District Moraga-Orinda Fire Protection District Rodeo-Hercules Fire Protection District San Ramon Valley Fire Protection District	Tier 4 (2.5% @ 67)
Cost Group #2	County General In-Home Supportive Services CC Mosquito & Vector Control District Superior Court	Tier 5 (2.5% @ 67)
Cost Group #3	Central Contra Costa Sanitary District	Tier 4 (2.5% @ 67)
Cost Group #4	Contra Costa Housing Authority	Tier 4 (2.5% @ 67)
Cost Group #5	Contra Costa County Fire Protection District	Tier 4 (2.5% @ 67)
Cost Group #6	Rodeo Sanitary District Byron Brentwood Cemetery District	Tier 4 (2.5% @ 67)

Basic rates shown include an administrative expense load of 0.66% of payroll.

Exhibit B - 1

**CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
 EMPLOYER CONTRIBUTION RATES EFFECTIVE FOR JULY 1, 2019 THROUGH JUNE 30, 2020 for Safety Tier A and C Legacy Members**

	Cost Group #7	Cost Group #8		Cost Group #10	Cost Group #11
	County	Contra Costa County Fire Protection District	East Contra Costa Fire Protection District	Moraga-Orinda Fire Protection District	San Ramon Valley Fire Protection District
Safety Tiers Enhanced					
<u>Safety A BASIC Enhanced</u>					
All eligible \$	45.59%	37.23%	65.44%	35.21%	51.05%
<u>Safety A COL Enhanced</u>					
All eligible \$	26.89%	35.66%	57.17%	35.73%	25.79%
Non-Refundability Factor	0.9657	0.9666	0.9666	0.9688	0.9665

	Cost Group #9	Cost Group	Employer Name	Tier
<u>Safety C BASIC Enhanced</u>	County	Cost Group # 7	County Safety	Tier A Enhanced (3% @ 50)
All eligible \$	43.65%	Cost Group # 8	Contra Costa County Fire Protection District East Contra Costa Fire Protection District	Tier A Enhanced (3% @ 50)
<u>Safety C COL Enhanced</u>		Cost Group # 9	County Safety	Tier C Enhanced (3% @ 50)
All eligible \$	24.05%	Cost Group # 10	Moraga-Orinda Fire Protection District	Tier A Enhanced (3% @ 50)
Non-Refundability Factor	0.9670	Cost Group # 11	San Ramon Valley Fire Protection District	Tier A Enhanced (3% @ 50)
		Cost Group # 12	Rodeo Hercules Fire Protection District	Tier A Non-enhanced (2% @ 50)
Safety Tier Non-Enhanced	Cost Group #12			
<u>Safety A BASIC NON-Enhanced</u>	Rodeo-Hercules Fire Protection District			
All eligible \$	14.89%			
Monthly Contribution Towards UAAL	\$68,942			
<u>Safety A COL NON-Enhanced</u>				
All eligible \$	5.21%			
Monthly Contribution Towards UAAL	\$48,581			
Non-Refundability Factor	0.9718			

Basic rates shown include an administrative expense load of 0.66% of payroll.

Exhibit B - 2

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

EMPLOYER CONTRIBUTION RATES EFFECTIVE FOR JULY 1, 2019 THROUGH JUNE 30, 2020 for Safety Tier D and E PEPRA Members

SAFETY PEPRA TIERS

Safety D BASIC (3% Maximum COLA)

All eligible \$
Monthly Contribution Towards UAAL

Safety D COL (3% Maximum COLA)

All eligible \$
Monthly Contribution Towards UAAL

Non-Refundability Factor

Cost Group #7	Cost Group #8		Cost Group #10	Cost Group #11	Cost Group #12
	Contra Costa County Fire Protection District	East Contra Costa Fire Protection District	Moraga-Orinda Fire Protection District	San Ramon Valley Fire Protection District	Rodeo-Hercules Fire Protection District
37.45%	28.91%	57.12%	27.16%	41.49%	11.92%
N/A	N/A	N/A	N/A	N/A	\$12,744
25.67%	34.36%	55.87%	34.32%	24.11%	5.07%
N/A	N/A	N/A	N/A	N/A	\$8,980
0.9758	0.9770	0.9770	0.9787	0.9794	0.9803

Safety E BASIC (2% Maximum COLA)

All eligible \$

Safety E COL (2% Maximum COLA)

All eligible \$

Non-Refundability Factor

Cost Group #8 Contra Costa County Fire Protection District	Cost Group #9 County
28.53%	36.09%
32.26%	23.30%
0.9748	0.9752

Cost Group	Employer Name	Tier
Cost Group # 7	County Safety	Tier D (2.7% @ 57)
Cost Group # 8	Contra Costa County Fire Protection District East Contra Costa Fire Protection District Contra Costa County Fire Protection District	Tier D (2.7% @ 57) Tier E (2.7% @ 57)
Cost Group # 9	County Safety	Tier E (2.7% @ 57)
Cost Group # 10	Moraga-Orinda Fire Protection District	Tier D (2.7% @ 57)
Cost Group # 11	San Ramon Valley Fire Protection District	Tier D (2.7% @ 57)
Cost Group # 12	Rodeo Hercules Fire Protection District	Tier D (2.7% @ 57)

Basic rates shown include an administrative expense load of 0.66% of payroll.

Exhibit C
GENERAL Cost Group #1 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic not in Social</u>	<u>Basic in Social</u>	<u>COLA</u>	<u>Total not in Social</u>	<u>Total in Social</u>
	<u>Security</u>	<u>Security*</u>		<u>Security</u>	<u>Security*</u>
15	5.41%	5.42%	2.69%	8.10%	8.11%
16	5.50%	5.51%	2.74%	8.24%	8.25%
17	5.59%	5.60%	2.79%	8.38%	8.39%
18	5.68%	5.69%	2.84%	8.52%	8.53%
19	5.77%	5.78%	2.89%	8.66%	8.67%
20	5.86%	5.87%	2.94%	8.80%	8.81%
21	5.96%	5.97%	2.99%	8.95%	8.96%
22	6.05%	6.06%	3.04%	9.09%	9.10%
23	6.15%	6.16%	3.10%	9.25%	9.26%
24	6.25%	6.26%	3.15%	9.40%	9.41%
25	6.35%	6.36%	3.21%	9.56%	9.57%
26	6.45%	6.46%	3.26%	9.71%	9.72%
27	6.56%	6.57%	3.32%	9.88%	9.89%
28	6.66%	6.67%	3.37%	10.03%	10.04%
29	6.77%	6.78%	3.43%	10.20%	10.21%
30	6.88%	6.89%	3.49%	10.37%	10.38%
31	6.99%	7.00%	3.55%	10.54%	10.55%
32	7.10%	7.11%	3.61%	10.71%	10.72%
33	7.21%	7.22%	3.67%	10.88%	10.89%
34	7.33%	7.34%	3.74%	11.07%	11.08%
35	7.45%	7.46%	3.80%	11.25%	11.26%
36	7.57%	7.58%	3.87%	11.44%	11.45%
37	7.69%	7.70%	3.94%	11.63%	11.64%
38	7.82%	7.83%	4.01%	11.83%	11.84%
39	7.95%	7.96%	4.08%	12.03%	12.04%
40	8.08%	8.09%	4.15%	12.23%	12.24%
41	8.22%	8.23%	4.22%	12.44%	12.45%
42	8.36%	8.37%	4.30%	12.66%	12.67%
43	8.50%	8.51%	4.38%	12.88%	12.89%
44	8.65%	8.66%	4.46%	13.11%	13.12%
45	8.81%	8.82%	4.55%	13.36%	13.37%
46	8.95%	8.96%	4.62%	13.57%	13.58%
47	9.10%	9.11%	4.70%	13.80%	13.81%
48	9.25%	9.26%	4.79%	14.04%	14.05%
49	9.41%	9.42%	4.87%	14.28%	14.29%
50	9.57%	9.58%	4.96%	14.53%	14.54%
51	9.73%	9.74%	5.05%	14.78%	14.79%
52	9.90%	9.91%	5.14%	15.04%	15.05%
53	10.06%	10.07%	5.23%	15.29%	15.30%
54	10.18%	10.19%	5.29%	15.47%	15.48%
55	10.32%	10.33%	5.37%	15.69%	15.70%
56	10.40%	10.41%	5.41%	15.81%	15.82%
57	10.39%	10.40%	5.41%	15.80%	15.81%
58	10.29%	10.30%	5.35%	15.64%	15.65%
59	10.02%	10.03%	5.21%	15.23%	15.24%
60 and over	10.02%	10.03%	5.21%	15.23%	15.24%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 54.51% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE:** For members in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67.
The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit D
GENERAL Cost Group #2 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic not in Social</u>	<u>Basic in Social</u>	<u>COLA</u>	<u>Total not in Social</u>	<u>Total in Social</u>
	<u>Security</u>	<u>Security*</u>		<u>Security</u>	<u>Security*</u>
15	5.40%	5.41%	2.47%	7.87%	7.88%
16	5.49%	5.50%	2.51%	8.00%	8.01%
17	5.58%	5.59%	2.56%	8.14%	8.15%
18	5.67%	5.68%	2.60%	8.27%	8.28%
19	5.76%	5.77%	2.65%	8.41%	8.42%
20	5.85%	5.86%	2.69%	8.54%	8.55%
21	5.94%	5.95%	2.74%	8.68%	8.69%
22	6.04%	6.05%	2.79%	8.83%	8.84%
23	6.14%	6.15%	2.84%	8.98%	8.99%
24	6.24%	6.25%	2.89%	9.13%	9.14%
25	6.34%	6.35%	2.94%	9.28%	9.29%
26	6.44%	6.45%	2.99%	9.43%	9.44%
27	6.54%	6.55%	3.04%	9.58%	9.59%
28	6.64%	6.65%	3.09%	9.73%	9.74%
29	6.75%	6.76%	3.14%	9.89%	9.90%
30	6.86%	6.87%	3.20%	10.06%	10.07%
31	6.97%	6.98%	3.25%	10.22%	10.23%
32	7.08%	7.09%	3.31%	10.39%	10.40%
33	7.20%	7.21%	3.37%	10.57%	10.58%
34	7.31%	7.32%	3.42%	10.73%	10.74%
35	7.43%	7.44%	3.48%	10.91%	10.92%
36	7.55%	7.56%	3.54%	11.09%	11.10%
37	7.68%	7.69%	3.61%	11.29%	11.30%
38	7.80%	7.81%	3.67%	11.47%	11.48%
39	7.93%	7.94%	3.73%	11.66%	11.67%
40	8.07%	8.08%	3.80%	11.87%	11.88%
41	8.20%	8.21%	3.87%	12.07%	12.08%
42	8.34%	8.35%	3.94%	12.28%	12.29%
43	8.49%	8.50%	4.01%	12.50%	12.51%
44	8.63%	8.64%	4.08%	12.71%	12.72%
45	8.78%	8.79%	4.16%	12.94%	12.95%
46	8.94%	8.95%	4.24%	13.18%	13.19%
47	9.09%	9.10%	4.31%	13.40%	13.41%
48	9.23%	9.24%	4.38%	13.61%	13.62%
49	9.38%	9.39%	4.46%	13.84%	13.85%
50	9.54%	9.55%	4.54%	14.08%	14.09%
51	9.72%	9.73%	4.63%	14.35%	14.36%
52	9.88%	9.89%	4.71%	14.59%	14.60%
53	10.03%	10.04%	4.78%	14.81%	14.82%
54	10.18%	10.19%	4.86%	15.04%	15.05%
55	10.28%	10.29%	4.91%	15.19%	15.20%
56	10.35%	10.36%	4.94%	15.29%	15.30%
57	10.32%	10.33%	4.93%	15.25%	15.26%
58	10.16%	10.17%	4.85%	15.01%	15.02%
59	10.04%	10.05%	4.79%	14.83%	14.84%
60 and over	10.04%	10.05%	4.79%	14.83%	14.84%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 50.01% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE:** For members in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67.
The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit E

GENERAL Cost Group #3 Non-PEPRA Member Contribution Rates

Membership Date before January 1, 2013

Effective 7/1/19 - 6/30/20

Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	5.62%	2.85%	8.47%
16	5.71%	2.90%	8.61%
17	5.80%	2.95%	8.75%
18	5.90%	3.00%	8.90%
19	5.99%	3.05%	9.04%
20	6.09%	3.11%	9.20%
21	6.18%	3.16%	9.34%
22	6.28%	3.21%	9.49%
23	6.39%	3.27%	9.66%
24	6.49%	3.33%	9.82%
25	6.59%	3.39%	9.98%
26	6.70%	3.45%	10.15%
27	6.81%	3.51%	10.32%
28	6.91%	3.56%	10.47%
29	7.03%	3.63%	10.66%
30	7.14%	3.69%	10.83%
31	7.25%	3.75%	11.00%
32	7.37%	3.82%	11.19%
33	7.49%	3.88%	11.37%
34	7.61%	3.95%	11.56%
35	7.73%	4.02%	11.75%
36	7.86%	4.09%	11.95%
37	7.99%	4.16%	12.15%
38	8.12%	4.23%	12.35%
39	8.25%	4.30%	12.55%
40	8.39%	4.38%	12.77%
41	8.53%	4.46%	12.99%
42	8.68%	4.54%	13.22%
43	8.82%	4.62%	13.44%
44	8.98%	4.71%	13.69%
45	9.13%	4.79%	13.92%
46	9.28%	4.87%	14.15%
47	9.44%	4.96%	14.40%
48	9.60%	5.05%	14.65%
49	9.74%	5.13%	14.87%
50	9.91%	5.22%	15.13%
51	10.07%	5.31%	15.38%
52	10.24%	5.40%	15.64%
53	10.40%	5.49%	15.89%
54	10.54%	5.57%	16.11%
55	10.62%	5.61%	16.23%
56	10.69%	5.65%	16.34%
57	10.66%	5.64%	16.30%
58	10.48%	5.54%	16.02%
59	9.92%	5.23%	15.15%
60 and over	9.92%	5.23%	15.15%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 55.32% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE: The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.**

Exhibit F
GENERAL Cost Group #4 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic not in Social</u>	<u>Basic in Social</u>	<u>COLA</u>	<u>Total not in Social</u>	<u>Total in Social</u>
	<u>Security</u>	<u>Security*</u>		<u>Security</u>	<u>Security*</u>
15	5.38%	5.39%	2.67%	8.05%	8.06%
16	5.46%	5.47%	2.71%	8.17%	8.18%
17	5.55%	5.56%	2.76%	8.31%	8.32%
18	5.64%	5.65%	2.81%	8.45%	8.46%
19	5.73%	5.74%	2.86%	8.59%	8.60%
20	5.82%	5.83%	2.91%	8.73%	8.74%
21	5.92%	5.93%	2.96%	8.88%	8.89%
22	6.01%	6.02%	3.01%	9.02%	9.03%
23	6.11%	6.12%	3.06%	9.17%	9.18%
24	6.21%	6.22%	3.12%	9.33%	9.34%
25	6.31%	6.32%	3.17%	9.48%	9.49%
26	6.41%	6.42%	3.23%	9.64%	9.65%
27	6.51%	6.52%	3.28%	9.79%	9.80%
28	6.62%	6.63%	3.34%	9.96%	9.97%
29	6.72%	6.73%	3.40%	10.12%	10.13%
30	6.83%	6.84%	3.46%	10.29%	10.30%
31	6.94%	6.95%	3.52%	10.46%	10.47%
32	7.05%	7.06%	3.58%	10.63%	10.64%
33	7.17%	7.18%	3.64%	10.81%	10.82%
34	7.28%	7.29%	3.70%	10.98%	10.99%
35	7.40%	7.41%	3.77%	11.17%	11.18%
36	7.52%	7.53%	3.83%	11.35%	11.36%
37	7.64%	7.65%	3.90%	11.54%	11.55%
38	7.77%	7.78%	3.97%	11.74%	11.75%
39	7.90%	7.91%	4.04%	11.94%	11.95%
40	8.03%	8.04%	4.11%	12.14%	12.15%
41	8.16%	8.17%	4.18%	12.34%	12.35%
42	8.30%	8.31%	4.25%	12.55%	12.56%
43	8.45%	8.46%	4.34%	12.79%	12.80%
44	8.59%	8.60%	4.41%	13.00%	13.01%
45	8.75%	8.76%	4.50%	13.25%	13.26%
46	8.90%	8.91%	4.58%	13.48%	13.49%
47	9.05%	9.06%	4.66%	13.71%	13.72%
48	9.19%	9.20%	4.74%	13.93%	13.94%
49	9.35%	9.36%	4.83%	14.18%	14.19%
50	9.50%	9.51%	4.91%	14.41%	14.42%
51	9.67%	9.68%	5.00%	14.67%	14.68%
52	9.84%	9.85%	5.09%	14.93%	14.94%
53	9.99%	10.00%	5.17%	15.16%	15.17%
54	10.13%	10.14%	5.25%	15.38%	15.39%
55	10.25%	10.26%	5.31%	15.56%	15.57%
56	10.36%	10.37%	5.37%	15.73%	15.74%
57	10.34%	10.35%	5.36%	15.70%	15.71%
58	10.19%	10.20%	5.28%	15.47%	15.48%
59	9.79%	9.80%	5.06%	14.85%	14.86%
60 and over	9.79%	9.80%	5.06%	14.85%	14.86%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 54.34% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE:** For members in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67.
The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit G

GENERAL Cost Group #5 Non-PEPRA Member Contribution Rates

Membership Date before January 1, 2013

Effective 7/1/19 - 6/30/20

Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	5.40%	2.66%	8.06%
16	5.49%	2.70%	8.19%
17	5.58%	2.75%	8.33%
18	5.67%	2.80%	8.47%
19	5.76%	2.85%	8.61%
20	5.85%	2.90%	8.75%
21	5.94%	2.95%	8.89%
22	6.04%	3.00%	9.04%
23	6.14%	3.05%	9.19%
24	6.24%	3.11%	9.35%
25	6.34%	3.16%	9.50%
26	6.44%	3.22%	9.66%
27	6.54%	3.27%	9.81%
28	6.64%	3.32%	9.96%
29	6.75%	3.38%	10.13%
30	6.86%	3.44%	10.30%
31	6.97%	3.50%	10.47%
32	7.08%	3.56%	10.64%
33	7.20%	3.63%	10.83%
34	7.31%	3.69%	11.00%
35	7.43%	3.75%	11.18%
36	7.55%	3.81%	11.36%
37	7.68%	3.88%	11.56%
38	7.80%	3.95%	11.75%
39	7.93%	4.02%	11.95%
40	8.07%	4.09%	12.16%
41	8.20%	4.16%	12.36%
42	8.34%	4.24%	12.58%
43	8.49%	4.32%	12.81%
44	8.63%	4.40%	13.03%
45	8.78%	4.48%	13.26%
46	8.94%	4.56%	13.50%
47	9.09%	4.64%	13.73%
48	9.23%	4.72%	13.95%
49	9.38%	4.80%	14.18%
50	9.54%	4.89%	14.43%
51	9.72%	4.98%	14.70%
52	9.88%	5.07%	14.95%
53	10.03%	5.15%	15.18%
54	10.18%	5.23%	15.41%
55	10.28%	5.29%	15.57%
56	10.35%	5.32%	15.67%
57	10.32%	5.31%	15.63%
58	10.16%	5.22%	15.38%
59	10.04%	5.16%	15.20%
60 and over	10.04%	5.16%	15.20%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 53.88% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE:** The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit H
GENERAL Cost Group #6 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic not in Social</u>	<u>Basic in Social</u>	<u>COLA</u>	<u>Total not in Social</u>	<u>Total in Social</u>
	<u>Security</u>	<u>Security*</u>		<u>Security</u>	<u>Security*</u>
15	6.13%	6.14%	2.61%	8.74%	8.75%
16	6.23%	6.24%	2.66%	8.89%	8.90%
17	6.33%	6.34%	2.71%	9.04%	9.05%
18	6.43%	6.44%	2.75%	9.18%	9.19%
19	6.54%	6.55%	2.80%	9.34%	9.35%
20	6.64%	6.65%	2.85%	9.49%	9.50%
21	6.75%	6.76%	2.90%	9.65%	9.66%
22	6.86%	6.87%	2.95%	9.81%	9.82%
23	6.97%	6.98%	3.00%	9.97%	9.98%
24	7.08%	7.09%	3.05%	10.13%	10.14%
25	7.20%	7.21%	3.11%	10.31%	10.32%
26	7.31%	7.32%	3.16%	10.47%	10.48%
27	7.43%	7.44%	3.21%	10.64%	10.65%
28	7.55%	7.56%	3.27%	10.82%	10.83%
29	7.67%	7.68%	3.33%	11.00%	11.01%
30	7.80%	7.81%	3.39%	11.19%	11.20%
31	7.93%	7.94%	3.45%	11.38%	11.39%
32	8.06%	8.07%	3.51%	11.57%	11.58%
33	8.19%	8.20%	3.57%	11.76%	11.77%
34	8.32%	8.33%	3.63%	11.95%	11.96%
35	8.46%	8.47%	3.69%	12.15%	12.16%
36	8.61%	8.62%	3.76%	12.37%	12.38%
37	8.75%	8.76%	3.82%	12.57%	12.58%
38	8.90%	8.91%	3.89%	12.79%	12.80%
39	9.06%	9.07%	3.97%	13.03%	13.04%
40	9.23%	9.24%	4.05%	13.28%	13.29%
41	9.38%	9.39%	4.12%	13.50%	13.51%
42	9.54%	9.55%	4.19%	13.73%	13.74%
43	9.69%	9.70%	4.26%	13.95%	13.96%
44	9.86%	9.87%	4.34%	14.20%	14.21%
45	10.02%	10.03%	4.41%	14.43%	14.44%
46	10.19%	10.20%	4.49%	14.68%	14.69%
47	10.38%	10.39%	4.58%	14.96%	14.97%
48	10.53%	10.54%	4.65%	15.18%	15.19%
49	10.69%	10.70%	4.72%	15.41%	15.42%
50	10.83%	10.84%	4.79%	15.62%	15.63%
51	10.90%	10.91%	4.82%	15.72%	15.73%
52	10.87%	10.88%	4.80%	15.67%	15.68%
53	10.71%	10.72%	4.73%	15.44%	15.45%
54	10.28%	10.29%	4.53%	14.81%	14.82%
55	10.28%	10.29%	4.53%	14.81%	14.82%
56	10.28%	10.29%	4.53%	14.81%	14.82%
57	10.28%	10.29%	4.53%	14.81%	14.82%
58	10.28%	10.29%	4.53%	14.81%	14.82%
59	10.28%	10.29%	4.53%	14.81%	14.82%
60 and over	10.28%	10.29%	4.53%	14.81%	14.82%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 46.19% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE:** For members in Social Security, the rate should only be applied to monthly compensation in excess of \$116.67.
The rate should be applied to compensation up to the annual IRC 401(a)(17) compensation limit.

Exhibit I
SAFETY Cost Group #7 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	9.05%	6.42%	15.47%
16	9.05%	6.42%	15.47%
17	9.05%	6.42%	15.47%
18	9.05%	6.42%	15.47%
19	9.05%	6.42%	15.47%
20	9.05%	6.42%	15.47%
21	9.05%	6.42%	15.47%
22	9.19%	6.52%	15.71%
23	9.34%	6.63%	15.97%
24	9.50%	6.75%	16.25%
25	9.65%	6.87%	16.52%
26	9.81%	6.99%	16.80%
27	9.97%	7.11%	17.08%
28	10.14%	7.23%	17.37%
29	10.31%	7.36%	17.67%
30	10.48%	7.49%	17.97%
31	10.65%	7.61%	18.26%
32	10.84%	7.76%	18.60%
33	11.03%	7.90%	18.93%
34	11.22%	8.04%	19.26%
35	11.42%	8.19%	19.61%
36	11.62%	8.34%	19.96%
37	11.81%	8.48%	20.29%
38	12.01%	8.63%	20.64%
39	12.22%	8.79%	21.01%
40	12.44%	8.95%	21.39%
41	12.67%	9.13%	21.80%
42	12.90%	9.30%	22.20%
43	13.19%	9.51%	22.70%
44	13.42%	9.69%	23.11%
45	13.62%	9.84%	23.46%
46	13.66%	9.87%	23.53%
47	13.60%	9.82%	23.42%
48	13.39%	9.66%	23.05%
49	13.01%	9.38%	22.39%
50	13.01%	9.38%	22.39%
51	13.01%	9.38%	22.39%
52	13.01%	9.38%	22.39%
53	13.01%	9.38%	22.39%
54	13.01%	9.38%	22.39%
55	13.01%	9.38%	22.39%
56	13.01%	9.38%	22.39%
57	13.01%	9.38%	22.39%
58	13.01%	9.38%	22.39%
59	13.01%	9.38%	22.39%
60 and over	13.01%	9.38%	22.39%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 74.80% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE: The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.**

Exhibit J
SAFETY Cost Group #8 Non-PEPRA Member Contribution Rates

Membership Date before January 1, 2013

Effective 7/1/19 - 6/30/20

Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	9.03%	6.56%	15.59%
16	9.03%	6.56%	15.59%
17	9.03%	6.56%	15.59%
18	9.03%	6.56%	15.59%
19	9.03%	6.56%	15.59%
20	9.03%	6.56%	15.59%
21	9.03%	6.56%	15.59%
22	9.17%	6.66%	15.83%
23	9.32%	6.78%	16.10%
24	9.48%	6.90%	16.38%
25	9.63%	7.01%	16.64%
26	9.79%	7.14%	16.93%
27	9.95%	7.26%	17.21%
28	10.12%	7.39%	17.51%
29	10.28%	7.51%	17.79%
30	10.46%	7.65%	18.11%
31	10.64%	7.79%	18.43%
32	10.82%	7.93%	18.75%
33	11.00%	8.06%	19.06%
34	11.20%	8.22%	19.42%
35	11.39%	8.36%	19.75%
36	11.59%	8.52%	20.11%
37	11.79%	8.67%	20.46%
38	11.99%	8.82%	20.81%
39	12.20%	8.98%	21.18%
40	12.41%	9.14%	21.55%
41	12.63%	9.31%	21.94%
42	12.88%	9.50%	22.38%
43	13.16%	9.72%	22.88%
44	13.42%	9.92%	23.34%
45	13.58%	10.04%	23.62%
46	13.61%	10.06%	23.67%
47	13.52%	9.99%	23.51%
48	13.41%	9.91%	23.32%
49	13.04%	9.63%	22.67%
50	13.04%	9.63%	22.67%
51	13.04%	9.63%	22.67%
52	13.04%	9.63%	22.67%
53	13.04%	9.63%	22.67%
54	13.04%	9.63%	22.67%
55	13.04%	9.63%	22.67%
56	13.04%	9.63%	22.67%
57	13.04%	9.63%	22.67%
58	13.04%	9.63%	22.67%
59	13.04%	9.63%	22.67%
60 and over	13.04%	9.63%	22.67%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 76.58% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE: The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.**

Exhibit K
SAFETY Cost Group #9 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	8.64%	3.90%	12.54%
16	8.64%	3.90%	12.54%
17	8.64%	3.90%	12.54%
18	8.64%	3.90%	12.54%
19	8.64%	3.90%	12.54%
20	8.64%	3.90%	12.54%
21	8.64%	3.90%	12.54%
22	8.78%	3.97%	12.75%
23	8.92%	4.04%	12.96%
24	9.07%	4.11%	13.18%
25	9.22%	4.18%	13.40%
26	9.37%	4.25%	13.62%
27	9.52%	4.32%	13.84%
28	9.68%	4.40%	14.08%
29	9.84%	4.48%	14.32%
30	10.01%	4.56%	14.57%
31	10.18%	4.64%	14.82%
32	10.35%	4.72%	15.07%
33	10.53%	4.81%	15.34%
34	10.71%	4.89%	15.60%
35	10.89%	4.98%	15.87%
36	11.07%	5.06%	16.13%
37	11.25%	5.15%	16.40%
38	11.45%	5.25%	16.70%
39	11.64%	5.34%	16.98%
40	11.83%	5.43%	17.26%
41	12.05%	5.53%	17.58%
42	12.27%	5.64%	17.91%
43	12.45%	5.72%	18.17%
44	12.53%	5.76%	18.29%
45	12.51%	5.75%	18.26%
46	12.43%	5.71%	18.14%
47	12.17%	5.59%	17.76%
48	12.55%	5.77%	18.32%
49	13.14%	6.05%	19.19%
50	13.14%	6.05%	19.19%
51	13.14%	6.05%	19.19%
52	13.14%	6.05%	19.19%
53	13.14%	6.05%	19.19%
54	13.14%	6.05%	19.19%
55	13.14%	6.05%	19.19%
56	13.14%	6.05%	19.19%
57	13.14%	6.05%	19.19%
58	13.14%	6.05%	19.19%
59	13.14%	6.05%	19.19%
60 and over	13.14%	6.05%	19.19%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 47.78% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE: The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.**

Exhibit L
SAFETY Cost Group #10 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	9.05%	6.39%	15.44%
16	9.05%	6.39%	15.44%
17	9.05%	6.39%	15.44%
18	9.05%	6.39%	15.44%
19	9.05%	6.39%	15.44%
20	9.05%	6.39%	15.44%
21	9.05%	6.39%	15.44%
22	9.19%	6.50%	15.69%
23	9.34%	6.61%	15.95%
24	9.50%	6.73%	16.23%
25	9.65%	6.84%	16.49%
26	9.81%	6.96%	16.77%
27	9.97%	7.08%	17.05%
28	10.14%	7.20%	17.34%
29	10.31%	7.33%	17.64%
30	10.48%	7.46%	17.94%
31	10.65%	7.58%	18.23%
32	10.84%	7.73%	18.57%
33	11.03%	7.87%	18.90%
34	11.22%	8.01%	19.23%
35	11.42%	8.16%	19.58%
36	11.62%	8.31%	19.93%
37	11.81%	8.45%	20.26%
38	12.01%	8.60%	20.61%
39	12.22%	8.75%	20.97%
40	12.44%	8.92%	21.36%
41	12.67%	9.09%	21.76%
42	12.90%	9.26%	22.16%
43	13.19%	9.48%	22.67%
44	13.42%	9.65%	23.07%
45	13.62%	9.80%	23.42%
46	13.66%	9.83%	23.49%
47	13.60%	9.78%	23.38%
48	13.39%	9.63%	23.02%
49	13.01%	9.34%	22.35%
50	13.01%	9.34%	22.35%
51	13.01%	9.34%	22.35%
52	13.01%	9.34%	22.35%
53	13.01%	9.34%	22.35%
54	13.01%	9.34%	22.35%
55	13.01%	9.34%	22.35%
56	13.01%	9.34%	22.35%
57	13.01%	9.34%	22.35%
58	13.01%	9.34%	22.35%
59	13.01%	9.34%	22.35%
60 and over	13.01%	9.34%	22.35%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 74.50% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE: The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.**

Exhibit M
SAFETY Cost Group #11 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	9.17%	6.88%	16.05%
16	9.17%	6.88%	16.05%
17	9.17%	6.88%	16.05%
18	9.17%	6.88%	16.05%
19	9.17%	6.88%	16.05%
20	9.17%	6.88%	16.05%
21	9.17%	6.88%	16.05%
22	9.32%	7.00%	16.32%
23	9.47%	7.12%	16.59%
24	9.63%	7.25%	16.88%
25	9.78%	7.37%	17.15%
26	9.94%	7.49%	17.43%
27	10.11%	7.63%	17.74%
28	10.28%	7.76%	18.04%
29	10.45%	7.90%	18.35%
30	10.62%	8.03%	18.65%
31	10.80%	8.17%	18.97%
32	10.99%	8.32%	19.31%
33	11.17%	8.47%	19.64%
34	11.37%	8.62%	19.99%
35	11.57%	8.78%	20.35%
36	11.77%	8.94%	20.71%
37	11.97%	9.10%	21.07%
38	12.17%	9.26%	21.43%
39	12.38%	9.42%	21.80%
40	12.59%	9.59%	22.18%
41	12.83%	9.78%	22.61%
42	13.07%	9.97%	23.04%
43	13.34%	10.18%	23.52%
44	13.60%	10.39%	23.99%
45	13.76%	10.52%	24.28%
46	13.80%	10.55%	24.35%
47	13.71%	10.48%	24.19%
48	13.44%	10.26%	23.70%
49	12.83%	9.78%	22.61%
50	12.83%	9.78%	22.61%
51	12.83%	9.78%	22.61%
52	12.83%	9.78%	22.61%
53	12.83%	9.78%	22.61%
54	12.83%	9.78%	22.61%
55	12.83%	9.78%	22.61%
56	12.83%	9.78%	22.61%
57	12.83%	9.78%	22.61%
58	12.83%	9.78%	22.61%
59	12.83%	9.78%	22.61%
60 and over	12.83%	9.78%	22.61%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 79.12% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE: The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.**

Exhibit N
SAFETY Cost Group #12 Non-PEPRA Member Contribution Rates
Membership Date before January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>Entry Age</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
15	9.17%	4.75%	13.92%
16	9.17%	4.75%	13.92%
17	9.17%	4.75%	13.92%
18	9.17%	4.75%	13.92%
19	9.17%	4.75%	13.92%
20	9.17%	4.75%	13.92%
21	9.17%	4.75%	13.92%
22	9.32%	4.83%	14.15%
23	9.47%	4.91%	14.38%
24	9.63%	5.00%	14.63%
25	9.78%	5.08%	14.86%
26	9.94%	5.17%	15.11%
27	10.11%	5.26%	15.37%
28	10.28%	5.35%	15.63%
29	10.45%	5.44%	15.89%
30	10.62%	5.54%	16.16%
31	10.80%	5.64%	16.44%
32	10.99%	5.74%	16.73%
33	11.17%	5.84%	17.01%
34	11.37%	5.95%	17.32%
35	11.57%	6.06%	17.63%
36	11.77%	6.16%	17.93%
37	11.97%	6.27%	18.24%
38	12.17%	6.38%	18.55%
39	12.38%	6.50%	18.88%
40	12.59%	6.61%	19.20%
41	12.83%	6.74%	19.57%
42	13.07%	6.87%	19.94%
43	13.34%	7.02%	20.36%
44	13.60%	7.16%	20.76%
45	13.76%	7.25%	21.01%
46	13.80%	7.27%	21.07%
47	13.71%	7.22%	20.93%
48	13.44%	7.08%	20.52%
49	12.83%	6.74%	19.57%
50	12.83%	6.74%	19.57%
51	12.83%	6.74%	19.57%
52	12.83%	6.74%	19.57%
53	12.83%	6.74%	19.57%
54	12.83%	6.74%	19.57%
55	12.83%	6.74%	19.57%
56	12.83%	6.74%	19.57%
57	12.83%	6.74%	19.57%
58	12.83%	6.74%	19.57%
59	12.83%	6.74%	19.57%
60 and over	12.83%	6.74%	19.57%

Administrative Expense: 0.47% of payroll added to Basic rates.

COLA Loading: 54.55% applied to Basic rates prior to adjustment for administrative expenses.

***NOTE: The rate should be applied to all compensation up to the annual IRC 401(a)(17) compensation limit.**

Exhibit O
PEPRA Tiers Member Contribution Rates
Membership Date on or after January 1, 2013
Effective 7/1/19 - 6/30/20
Expressed as a Percentage of Monthly Payroll*

<u>General Tiers</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
Cost Group #1 – PEPRA Tier 4 (2% COLA)	8.80%	2.02%	10.82%
Cost Group #1 – PEPRA Tier 4 (3% COLA)	8.95%	3.01%	11.96%
Cost Group #2 - PEPRA Tier 5 (2% COLA)	8.20%	1.87%	10.07%
Cost Group #2 - PEPRA Tier 5 (3%/4% COLA)	8.42%	2.79%	11.21%
Cost Group #3 - PEPRA Tier 4 (3% COLA)	8.03%	2.80%	10.83%
Cost Group #4 - PEPRA Tier 4 (3% COLA)	9.49%	3.24%	12.73%
Cost Group #5 - PEPRA Tier 4 (2% COLA)	9.46%	2.19%	11.65%
Cost Group #5 - PEPRA Tier 4 (3% COLA)	11.44%	3.90%	15.34%
Cost Group #6 - PEPRA Tier 4 (3% COLA)	10.01%	3.47%	13.48%

<u>Safety Tiers</u>	<u>Basic</u>	<u>COLA</u>	<u>Total</u>
Cost Group #7 - PEPRA Tier D	14.86%	6.13%	20.99%
Cost Group #8 - PEPRA Tier D	14.28%	6.00%	20.28%
Cost Group #8 - PEPRA Tier E	13.90%	3.90%	17.80%
Cost Group #9 - PEPRA Tier E	13.50%	3.76%	17.26%
Cost Group #10 - PEPRA Tier D	13.33%	5.65%	18.98%
Cost Group #11 - PEPRA Tier D	12.66%	5.40%	18.06%
Cost Group #12 - PEPRA Tier D	11.92%	5.07%	16.99%

The Basic rates shown above also include an administrative expense load of 0.47% of payroll.

<p>*NOTE: The rate should be applied to all compensation (whether or not in Social Security) up to the applicable annual Gov. Code 7522.10(d) compensation limit.</p>
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CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

SUBVENTION

All rates are shown as a percent of payroll.

Employee contribution rates vary depending upon their tier and age at entry. To compute the exact subvention percent for each employee, do the following:

Employee rate – Decrease the employee's rate by the subvention percent (i.e. 25%, 50%, etc.).

Employer rate – Increase the employer's rate by a **percent** of the employee's decrease using the applicable refundability factor (found on Exhibits A and B):

EXAMPLE FOR COST GROUP #3 LEGACY MEMBERS:

If the subvention percent is 25%, and
the employee's rate is 6.00%,

Employee rates should be decreased by 1.50% ($25\% \times 6.00\%$)
The employer rate should be increased by 1.4382% ($1.50\% \times 0.9588$)

Please note that for PEPRA members, subvention is generally not permitted. The standard under Gov. Code §7522.30(a) is that employees pay at least 50 percent of normal costs and that employers not pay any of the required employee contribution, but there are some exceptions. Gov. Code §7522.30(f) allows the terms (regarding the employee's required contribution) of a contract, including a memorandum of understanding, that is in effect on January 1, 2013, to continue through the length of a contract. This means that it is possible that an employer will subvent a portion of a PEPRA member's required contribution until the expiration date of the current contract, so long as it has been determined that the contract has been impaired.

CAUTION – these rates are for employer **subvention** of up to one-half the member contribution under Gov. Code §31581.1, NOT employer **pick-up** of employee contribution rates. When an employer subvents, the contribution subvented is not placed in the member's account and is therefore not available to the member as a refund. For this reason, the employer pays the contribution at a discount (i.e. "Refundability Factor").

Employer **pick-ups** of employee contributions are those made under Gov. Code §31581.2 and Internal Revenue Code §414 (h)(2) for the sole purpose of deferring income tax. These contributions are added to the member's account, are available to the member as a refund and are considered by CCCERA as part of the member's compensation for retirement purposes.

EMPLOYEE PAYMENT OF EMPLOYER COST

There are several reasons why the attached contribution rates may need to be adjusted to increase the employee portion including the following:

Gov. Code §31631 allows for members to pay all or part of the employer contributions.

Gov. Code §31639.95 allows for Safety members to pay a portion of the employer cost for the "3% at 50" enhanced benefit.

Gov. Code §7522.30(c) requires that an employee's contribution rate be at least equal to that of similarly situated employees.

Gov. Code §7522.30(e) allows the employee contributions to be more than one-half of the normal cost rate if the increase has been agreed to through the collective bargaining process.

If you need to increase the employee contribution rate for any reason, you will need to adjust both employee and employer rates as follows:

Employee rate – Increase the employee’s rate by the desired percent of payroll.

Employer rate – Decrease the employer’s rate by a **percent** of the cost-sharing percent of payroll using the applicable refundability factor:

EXAMPLE FOR COST GROUP #11 LEGACY MEMBERS:

If the required increase in the employee rate is 8.0%,

Employee rates should be increased by 8.0%.

The employer rate should be decreased by 7.732% ($8.0\% \times 0.9665$)

PREPAYMENT DISCOUNT FACTOR FOR 2019-20

Employer Contribution Prepayment Program & Discount Factor for 2019-20 is **0.9696**

If you are currently participating in the prepayment program and wish to continue, you do not need to do anything other than prepay the July 1, 2019 through June 30, 2020 contributions on or before July 31, 2019. If you wish to start participating, please contact the Accounting Department at CCCERA by March 31, 2019.

The discount factor is calculated assuming the prepayment will be received on July 31 in accordance with Gov. Code §31582(b) in lieu of 12 equal payments due at the end of each month in accordance with Gov. Code §31582(a). The discount factor for the fiscal year July 1, 2019 through June 30, 2020 will be **0.9696** based on the interest assumption of 7.00% per annum. It is calculated by discounting each of the 12 equal payments back to the date that the prepayment is made and is the sum of the discount factors shown in the table below divided by 12. Each of the discount factors below is based on how many months early the payment is made.

Payment Number	Number of Months Payment is Made Early	Discount Factor
1	0	1.0000
2	1	0.9944
3	2	0.9888
4	3	0.9832
5	4	0.9777
6	5	0.9722
7	6	0.9667
8	7	0.9613
9	8	0.9559
10	9	0.9505
11	10	0.9452
12	11	0.9399
Sum of Discount Factors Divided by 12:		0.9696

Contra Costa County Employees' Retirement Association

**Actuarial Valuation and Review
As of December 31, 2017**



This report has been prepared at the request of the Board of Retirement to assist in administering the Fund. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Retirement and may only be provided to other parties in its entirety, unless expressly authorized by Segal. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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August 16, 2018

*Board of Retirement
Contra Costa County Employees' Retirement Association
1335 Willow Way, Suite 221
Concord, CA 94520*

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of December 31, 2017. It summarizes the actuarial data used in the valuation, establishes the funding requirements for the fiscal year beginning July 1, 2019 and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Plan. The census information on which our calculations were based was prepared by CCCERA and the financial information was provided by the Retirement Association. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.

The actuarial calculations were completed under the supervision of John Monroe, ASA, MAAA, Enrolled Actuary. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:

*Paul Angelo, FSA, EA, MAAA, FCA
Senior Vice President & Actuary*

*John Monroe, ASA, EA, MAAA
Vice President & Actuary*

EK/bbf

SECTION 1

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SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

PURPOSE AND SCOPE

This report has been prepared by Segal Consulting to present a valuation of the Contra Costa County Employees' Retirement Association (CCCERA) as of December 31, 2017. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution rate requirements presented in this report are based on:

- The benefit provisions of the Retirement Association, as administered by the Board;
- The characteristics of covered active members, terminated members, and retired members and beneficiaries as of December 31, 2017, provided by CCCERA;
- The assets of the Plan as of December 31, 2017, provided by CCCERA;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2017 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2017 valuation.

One of the general goals of an actuarial valuation is to establish contributions that fully fund the system's liabilities, and that, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the Association's assets, liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the Association's staff. This information has not been audited by us, but it has been reviewed and found to be reasonably consistent, both internally and with prior years' information.

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

Ref: Pgs. 71 - 84

The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both normal cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In 2008, the Board elected to amortize the remaining balance of the Association's unfunded actuarial accrued liability (UAAL) through December 31, 2007 over a decreasing 15-year period with 5 years remaining as of December 31, 2017. Any change in the UAAL that arises at each valuation after December 31, 2007 is amortized over its own separate declining 18-year period.

Ref: Pgs. 85 - 86

Effective with the December 31, 2013 valuation, any change in UAAL that arises due to plan amendments is amortized over its own declining 10-year period (with the exception of a change due to retirement incentives, which is to be funded in full upon adoption of the incentive). Note that a graphical projection of the UAAL amortization bases and payments has been included as a new Exhibit K.

We recommend that the rates calculated in this report be adopted by the Board for the fiscal year that extends from July 1, 2019 through June 30, 2020.

SIGNIFICANT ISSUES IN VALUATION YEAR

The following key findings were the result of this actuarial valuation:

*Ref: Pg. 36
Ref: Pg. 70*

➤ The ratio of the valuation value of assets to the actuarial accrued liability increased from 86.5% to 88.5% while the ratio of the market value of assets to the actuarial accrued liability also increased from 84.6% to 90.8%. The Association's UAAL (which is based on the valuation value of assets) has decreased from \$1.2 billion to \$1.1 billion. This decrease is due to an investment return on actuarial value (i.e. after smoothing) greater than the 7.00% assumed rate, actual contributions greater than expected, and a retirement gain on actives all offset to some degree by higher than expected individual salary increases, higher than expected COLA increases for retirees and beneficiaries, and a mortality loss on retirees and beneficiaries. A reconciliation of the Association's UAAL is provided in Section 3, Exhibit I.

Ref: Pg. 33

➤ The average employer rate calculated in this valuation (excluding any employer subvention of member rates or member subvention of employer rates) has decreased from 38.08% of payroll to 36.07% of payroll. This decrease is due to an investment return on actuarial value (i.e. after smoothing) greater than the 7.00% assumed rate, actual contributions greater than expected, amortizing the prior year's UAAL over a greater than expected projected total payroll and a retirement gain on actives all offset to some degree by higher than expected individual salary increases, a higher than expected COLA increases for retirees and beneficiaries and a mortality loss on retirees and beneficiaries. A complete reconciliation of the Association's aggregate employer rate is provided in Section 2, Subsection D (see Chart 15).

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

Ref: Pgs. 21 - 32

- Separate employer contribution rates are shown in Chart 14 for members with membership dates before January 1, 2013 (non-PEPRA members) and on or after January 1, 2013 (PEPRA members). However, the average employer contribution rates shown on page v are based on all members regardless of their membership date. A detailed schedule of the employer contribution rates is provided in Section 2, Subsection D, Chart 14.

Ref: Pg. 34

- The average member rate calculated in this valuation has decreased from 12.08% of payroll to 12.03% of payroll. A complete reconciliation of the Association's aggregate member rate is provided in Section 2, Subsection D (see Chart 16). The detailed member rates are provided in Appendix A and B of this report. They are shown by cost group.

Ref: Pg. 5

- The total unrecognized net investment gain as of December 31, 2017 is about \$195 million as compared to an unrecognized net investment loss of \$184 million in the previous valuation. The net investment gain of \$195 million will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years as shown in the footnote in Chart 7.
- The net deferred gains of \$195 million represent about 2.3% of the market value of assets. Unless offset by future investment losses or other unfavorable experience, the recognition of the \$195 million market gains is expected to have an impact on the Association's future funded ratio and contribution rate requirements. This potential impact may be illustrated as follows:
 - If the net deferred gains were recognized immediately in the valuation value of assets, the funded percentage would increase from 88.5% to 90.6%.

For comparison purposes, if all the deferred losses in the December 31, 2016 valuation had been recognized immediately in the December 31, 2016 valuation, the funded percentage would have decreased from 86.5% to 84.4%.
 - If the net deferred gains were recognized immediately in the valuation value of assets, the average employer contribution rate would decrease from 36.1% to about 34.3% of payroll.

For comparison purposes, if all the deferred losses in the December 31, 2016 valuation had been recognized immediately in the December 31, 2016 valuation, the average employer contribution rate would have increased from 38.1% to 39.9% of payroll.
- The actuarial valuation report as of December 31, 2017 is based on financial information as of that date. Changes in the assets subsequent to that date, to the extent that they exist, are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

- This valuation reflects the \$30,000 and \$294,000 additional contributions made by Local Agency Formation Commission (LAFCO) and San Ramon Valley Fire Department, respectively, towards their UAAL. Based on CCCERA's funding policy, these amounts will be amortized as a level percent of pay (credit) over a period of eighteen years beginning with the December 31, 2017 valuation to reduce their associated employer UAAL contributions.

Impact of Future Experience on Contribution Rates

Future contribution requirements may differ from those determined in the valuation because of:

- Differences between actual experience and anticipated experience;
- Changes in actuarial assumptions or methods;
- Changes in statutory provisions; and
- Differences between the contribution rates determined by the valuation and those adopted by the Board.

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

Summary of Key Valuation Results

	December 31, 2017		December 31, 2016	
Average Employer Contribution Rates ⁽¹⁾ :		Estimated		Estimated
General	Total Rate	Annual Amount	Total Rate	Annual Amount
Cost Group #1 – County and Small Districts (Tier 1 and 4)	31.10%	\$7,606,008	32.24%	\$7,255,727
Cost Group #2 – County and Small Districts (Tier 3 and 5)	26.36%	165,290,829	27.79%	158,011,177
Cost Group #3 – Central Contra Costa Sanitary District	49.57%	17,028,036	51.06%	16,647,933
Cost Group #4 – Contra Costa Housing Authority	41.91%	2,339,998	41.39%	2,292,585
Cost Group #5 – Contra Costa County Fire Protection District	31.82%	1,637,209	32.30%	1,373,964
Cost Group #6 – Small Districts (Non-Enhanced Tier 1 and 4)	16.59%	141,096	28.88%	231,953
Safety				
Cost Group #7 – County (Tier A and D)	71.94%	43,932,485	75.62%	45,850,943
Cost Group #8 – Contra Costa and East Fire Protection Districts	75.59%	26,986,544	77.06%	26,794,496
Cost Group #9 – County (Tier C and E)	62.56%	22,115,804	67.42%	17,836,505
Cost Group #10 – Moraga-Orinda Fire District	69.74%	5,127,677	70.26%	4,947,214
Cost Group #11 – San Ramon Valley Fire District	75.25%	16,211,133	80.73%	15,490,933
Cost Group #12 – Rodeo-Hercules Fire Protection District	92.28%	2,022,595	96.93%	2,012,833
All Employers combined	36.07%	\$310,439,414	38.08%	\$298,746,263
Average Member Contribution Rates ⁽¹⁾ :		Estimated		Estimated
General	Total Rate	Annual Amount	Total Rate	Annual Amount
Cost Group #1 – County and Small Districts (Tier 1 and 4)	10.89%	\$2,663,749	10.78%	\$2,425,734
Cost Group #2 – County and Small Districts (Tier 3 and 5)	10.76%	67,468,539	10.84%	61,630,010
Cost Group #3 – Central Contra Costa Sanitary District	11.45%	3,932,967	11.56%	3,769,197
Cost Group #4 – Contra Costa Housing Authority	11.70%	653,190	11.57%	640,888
Cost Group #5 – Contra Costa County Fire Protection District	11.08%	570,022	10.99%	467,521
Cost Group #6 – Small Districts (Non-Enhanced Tier 1 and 4)	13.31%	113,227	13.55%	108,839
Safety				
Cost Group #7 – County (Tier A and D)	17.92%	10,943,567	17.83%	10,810,732
Cost Group #8 – Contra Costa and East Fire Protection Districts	17.54%	6,261,431	17.12%	5,953,027
Cost Group #9 – County (Tier C and E)	16.20%	5,727,117	16.08%	4,253,979
Cost Group #10 – Moraga-Orinda Fire District	17.26%	1,269,068	17.14%	1,206,917
Cost Group #11 – San Ramon Valley Fire District	16.75%	3,608,279	16.63%	3,190,924
Cost Group #12 – Rodeo-Hercules Fire Protection District	15.52%	340,150	15.44%	320,617
All Categories Combined	12.03%	\$103,551,307	12.08%	\$94,778,385

⁽¹⁾ Based on projected payroll as of each valuation date shown. These rates *do not* include any employer subvention of member contributions or any member subvention of employer contributions. The rates shown are averages based on all members regardless of their membership date.

Note: Pages 19 and 20 contain a summary that shows which employers are in each cost group.

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

Summary of Key Valuation Results (continued)

	December 31, 2017	December 31, 2016
Funded Status:		
Actuarial accrued liability (AAL)	\$9,239,246,920	\$8,794,434,139
Valuation value of assets (VVA)	\$8,179,891,191	\$7,606,997,530
Market value of assets (MVA)	\$8,390,581,049	\$7,438,519,504
Funded percentage on VVA basis (VVA/AAL)	88.5%	86.5%
Funded percentage on MVA basis (MVA/AAL)	90.8%	84.6%
Unfunded Actuarial Accrued Liability (UAAL) on VVA basis	\$1,059,355,729	\$1,187,436,609
Unfunded Actuarial Accrued Liability (UAAL) on MVA basis	\$848,665,871	\$1,355,914,635
Summary of Financial Data:		
Market value of assets	\$8,390,581,049	\$7,438,519,504
Return on market value of assets	13.31%	7.10%
Actuarial value of assets	\$8,195,516,541	\$7,622,351,103
Return on actuarial value of assets	8.00%	7.04%
Valuation value of assets	\$8,179,891,191	\$7,606,997,530
Return on valuation value of assets	8.00%	7.04%
Key Assumptions:		
Interest rate	7.00%	7.00%
Inflation rate	2.75%	2.75%
Across the board salary increase	0.50%	0.50%

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

Summary of Key Valuation Demographic Data

	December 31, 2017	December 31, 2016	Change from Prior Year
Active Members:			
Number of members	10,038	9,848	1.9%
Average age	46.0	45.9	0.1
Average service	9.8	9.9	-0.1
Projected total payroll (compensation)	\$860,624,613	\$784,412,260	9.7%
Average projected payroll	\$85,737	\$79,652	7.6%
Retired Member and Beneficiaries:			
Number of members:			
Service retired	6,973	6,825	2.2%
Disability retired	896	905	-1.0%
Beneficiaries	1,398	1,370	2.0%
Total	9,267	9,100	1.8%
Average age	70.3	70.0	0.3
Average Monthly Benefit	\$3,892	\$3,799	2.4%
Vested Terminated Members:			
Number of terminated vested members ⁽¹⁾	3,327	3,089	7.7%
Average age	46.5	46.6	-0.1

⁽¹⁾ Includes 1,696 terminated members with member contributions on deposit as of December 31, 2017 and 1,543 as of December 31, 2016.

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare an actuarial valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the Association. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** This valuation is based on the market value of assets as of the valuation date, as provided by the Association.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

The user of Segal’s actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The valuation is prepared at the request of the CCCERA. Segal is not responsible for the use or misuse of its report, particularly by any other party.

SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If CCCERA is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

As Segal Consulting has no discretionary authority with respect to the management or assets of CCCERA, it is not a fiduciary in its capacity as actuaries and consultants with respect to CCCERA.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

A. MEMBER DATA

The Actuarial Valuation and Review considers the number and demographics of covered members, including active members, vested terminated members, retired members and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A, B, C and D.

A historical perspective of how the member population has changed over the past ten valuations can be seen in this chart.

CHART 1
Member Population: 2008 – 2017

Year Ended December 31	Active Members	Vested Terminated Members⁽¹⁾	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2008	9,385	2,153	7,012	0.98
2009	8,938	2,209	7,292	1.06
2010	8,811	2,231	7,559	1.11
2011	8,629	2,214	8,085	1.19
2012	8,640	2,288	8,517	1.25
2013	9,124	2,345	8,625	1.20
2014	9,159	2,647	8,871	1.26
2015	9,642	2,790	9,068	1.23
2016	9,848	3,089	9,100	1.24
2017	10,038	3,327	9,267	1.25

⁽¹⁾ Includes members who terminate and leave accumulated contributions on deposit.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Active Members

Plan costs are affected by the age, years of service and payroll of active members. In this year's valuation, there are 10,038 active members with an average age of 46.0, average years of service of 9.8 years and average payroll of \$85,737. The 9,848 active members in the prior valuation had an average age of 45.9, average service of 9.9 years and average payroll of \$79,652.

Among the active members, there were none with unknown age or service information.

Inactive Members

In this year's valuation, there were 3,327 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their employee contributions versus 3,089 in the prior valuation.

These graphs show a distribution of active members by age and by years of service.

CHART 2
Distribution of Active Members by Age as of December 31, 2017

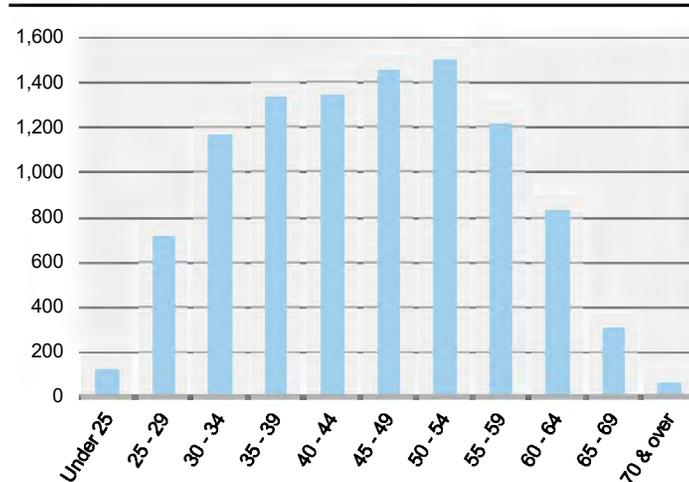
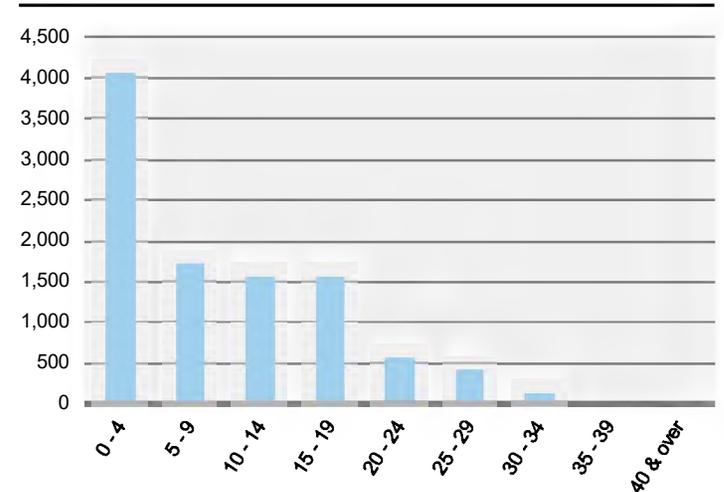


CHART 3
Distribution of Active Members by Years of Service as of December 31, 2017



SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Retired Members and Beneficiaries

As of December 31, 2017, 7,869 retired members and 1,398 beneficiaries were receiving total monthly benefits of \$36,067,626. For comparison, in the previous valuation, there were 7,730 retired members and 1,370 beneficiaries receiving monthly benefits of \$34,574,919.

These graphs show a distribution of the current retired members and beneficiaries based on their monthly amount and age, by type of pension.

CHART 4
Distribution of Retired Members and Beneficiaries by Type and by Monthly Amount as of December 31, 2017

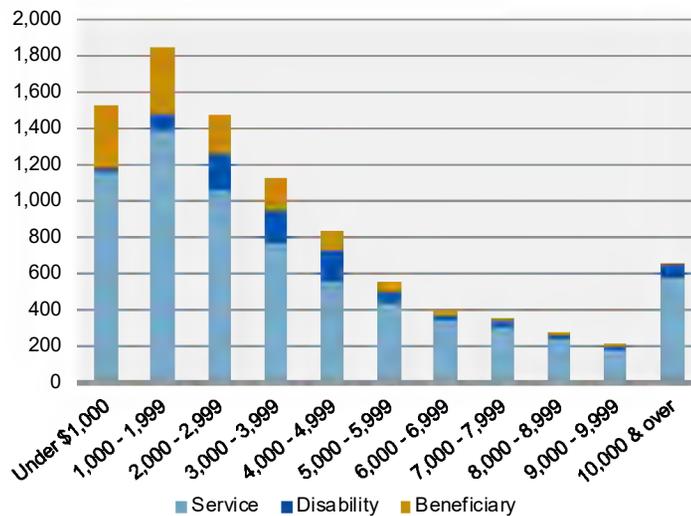
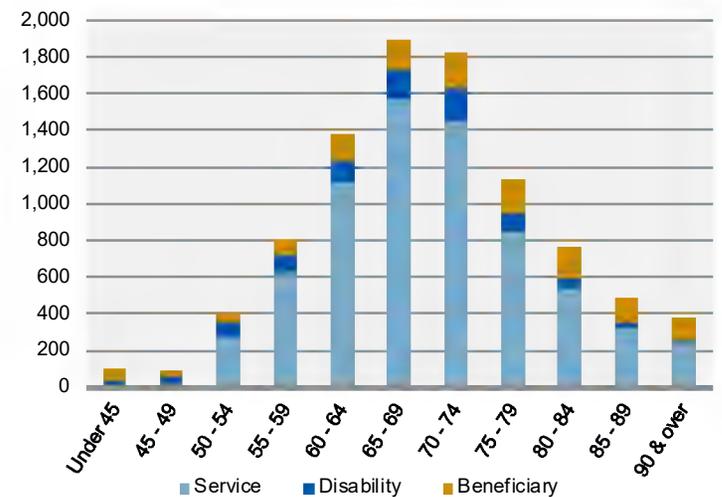


CHART 5
Distribution of Retired Members and Beneficiaries by Type and by Age as of December 31, 2017



SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

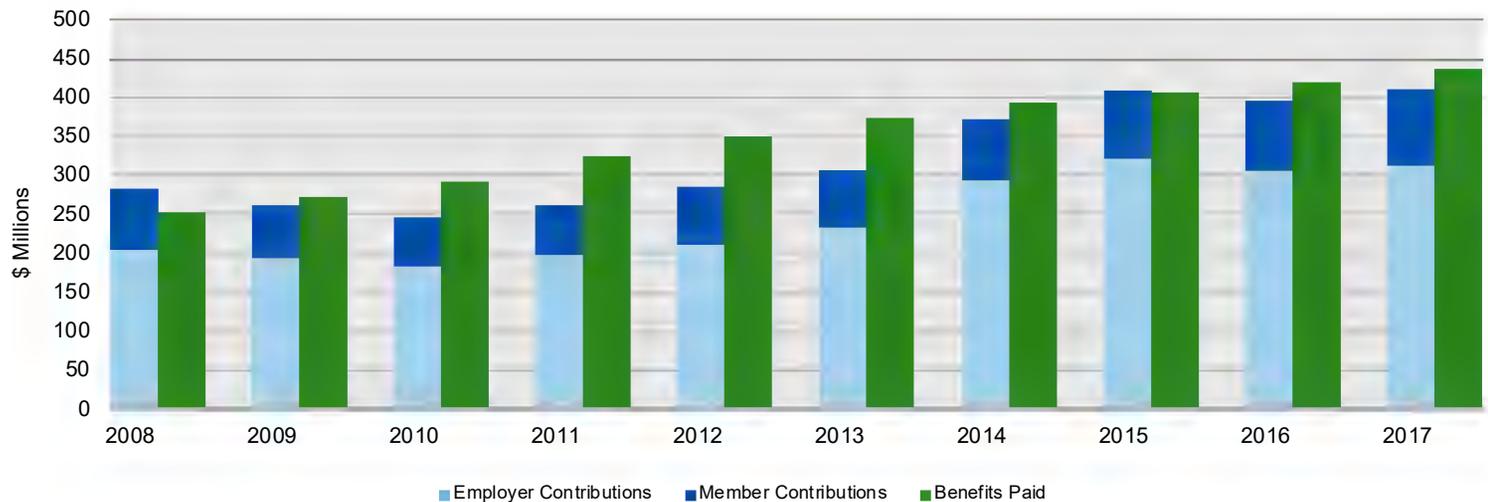
B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and investment earnings (less investment fees) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits E and F.

The chart depicts two components of changes in the actuarial value of assets over the last ten years. The first bar represents increases in assets due to contributions during each year while the second bar details the decreases due to benefit payments. UAAL prepayments of \$7.0 million are included for 2013, \$5.0 million for 2014, \$2.5 million for 2015 and \$0.3 million for 2017.

CHART 6
Comparison of Contributions with Benefits for Years Ended December 31, 2008 - 2017



SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 7

Determination of Actuarial and Valuation Value of Assets for Year Ended December 31, 2017

The chart shows the determination of the actuarial and valuation value of assets as of the valuation date.

Six Month Period		Total Actual Market	Expected Market	Investment	Deferred Factor	Deferred
From	To	Return (net)	Return (net)	Gain (Loss)		Return
7/2012	12/2012	371,057,645	205,350,894	165,706,751	0.0	\$0
1/2013	6/2013	281,608,945	218,386,047	63,222,898	0.0	0
7/2013	12/2013	588,758,958	227,909,702	360,849,256	0.1	36,084,926
1/2014	6/2014	347,257,106	249,636,410	97,620,696	0.2	19,524,139
7/2014	12/2014	125,727,585	241,361,743	(115,634,158)	0.3	(34,690,247)
1/2015	6/2015	207,439,920	246,283,585	(38,843,665)	0.4	(15,537,466)
7/2015	12/2015	(142,612,600)	253,672,471	(396,285,071)	0.5	(198,142,535)
1/2016	6/2016	297,615,324	239,907,822	57,707,502	0.6	34,624,501
7/2016	12/2016	196,258,919	249,584,567	(53,325,648)	0.7	(37,327,954)
1/2017	6/2017	488,764,245	255,728,819	233,035,426	0.8	186,428,341
7/2017	12/2017	498,651,736	271,873,066	226,778,670	0.9	<u>204,100,803</u>
1. Total Deferred Return ⁽¹⁾						\$195,064,508
2. Market Value of Assets						8,390,581,049
3. Actuarial Value of Assets (Item 2 – Item 1)						8,195,516,541
4. Actuarial Value as Percentage of Market Value (Item 3 / Item 2)						97.7%
5. Non-valuation Reserves and Designations:						
a. Post Retirement Death Benefit						\$15,625,350
b. Statutory Contingency						0
c. Additional One Percent Contingency						0
d. Unrestricted Designation						<u>0</u>
e. Total						\$15,625,350
6. Valuation Value of Assets (Item 3 – Item 5e)						<u>\$8,179,891,191</u>

⁽¹⁾ Deferred return recognized in each of the next 5 years:

(a) Amount recognized during 2018	\$38,295,677
(b) Amount recognized during 2019	(5,749,973)
(c) Amount recognized during 2020	53,210,683
(d) Amount recognized during 2021	86,630,254
(e) Amount recognized during 2022	<u>22,677,867</u>
(f) Subtotal	\$195,064,508

Note: Results may not add due to rounding.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 8

Allocation of Valuation Value of Assets as of December 31, 2017

The calculation of the valuation value of assets from December 31, 2016 to December 31, 2017 by cost groups is provided below.

		General					
		Cost Groups #1 and #2 General County and Small Districts	Cost Group #3 Central Contra Costa Sanitary District	Cost Group #4 Contra Costa Housing Authority	Cost Group #5 Contra Costa County Fire Protection District	Cost Group #6 Small Districts (General Non-Enhanced)	Terminated Employers
1	Allocated Valuation Value of Assets As of Beginning of Plan Year	\$4,254,074,626	\$291,526,301	\$49,792,725	\$45,956,528	\$6,316,233	\$56,628,197
2	Contributions: ⁽¹⁾						
a.	Total Member Contributions	64,742,096	3,888,695	561,028	504,943	101,870	1,114
b.	Employer Contributions - Excludes POB and other Special Contributions	172,954,953	17,880,152	2,150,337	1,415,239	205,766	0
c.	Employer Contributions - Special (POB, Termination, etc.)	30,000	0	0	0	0	1,089,680
d.	Total Contributions	237,727,049	21,768,847	2,711,365	1,920,182	307,636	1,090,794
3	Total Payments Excluding Post- Retirement Death	241,313,683	19,149,964	2,986,805	2,976,578	337,884	5,519,623
4	Administrative Expenses ⁽²⁾	6,891,481	380,175	64,586	49,602	9,366	0
5	Subtotal (Item 1 + 2d - 3 - 4)	4,243,596,511	293,765,009	49,452,699	44,850,530	6,276,619	52,199,368
6	Weighted Average Fund Balance	4,248,835,566	292,645,655	49,622,712	45,403,529	6,296,426	54,255,704
7	Earnings Allocated in Proportion to Item 6	340,082,517	23,423,752	3,971,869	3,634,160	503,974	4,342,700
8	Allocated Valuation Value of Assets As of End of Plan Year (Item 5 + 7)	\$4,583,679,028	\$317,188,761	\$53,424,568	\$48,484,690	\$6,780,593	\$56,542,068

⁽¹⁾ Employer contributions include "member subvention of employer contributions" and exclude "employer subvention of member contributions".

⁽²⁾ Allocated based on expected administrative expenses from the prior valuation.

Note: Results may not add due to rounding.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 8 (continued)

Allocation of Valuation Value of Assets as of December 31, 2017

		Safety					
		Cost Groups #7 & 9 Safety County	Cost Group #8 Contra Costa & East Fire Protection Districts	Cost Group #10 Moraga-Orinda Fire District	Cost Group #11 San Ramon Valley Fire District	Cost Group #12 Rodeo-Hercules Fire Protection District	Total
1	Allocated Valuation Value of Assets As of Beginning of Plan Year	\$1,555,112,518	\$835,842,053	\$151,638,626	\$330,679,992	\$29,429,731	\$7,606,997,530
2	Contributions: ⁽¹⁾						
a.	Total Member Contributions	15,980,753	6,039,791	1,248,975	3,081,669	315,972	96,466,906
b.	Employer Contributions - Excludes POB and other Special Contributions	67,344,168	27,412,834	5,058,510	16,915,097	2,085,825	313,422,881
c.	Employer Contributions – Special (POB, Termination, etc.)	0	0	0	294,000	0	1,413,680
d.	Total Contributions	83,324,921	33,452,625	6,307,485	20,290,766	2,401,797	411,303,467
3	Total Payments Excluding Post- Retirement Death	83,095,375	55,078,932	9,616,657	14,827,305	1,838,482	436,741,288
4	Administrative Expenses ⁽²⁾	1,015,424	405,440	82,103	223,726	24,212	9,146,115
5	Subtotal (Item 1 + 2d – 3 – 4)	1,554,326,640	813,810,306	148,247,351	335,919,727	29,968,834	7,572,413,594
6	Weighted Average Fund Balance	1,554,719,579	824,826,180	149,942,989	333,299,860	29,699,283	7,589,547,483
7	Earnings Allocated in Proportion to Item 6	124,441,848	66,020,198	12,001,639	26,677,769	2,377,171	607,477,597
8	Allocated Valuation Value of Assets As of End of Plan Year (Item 5 + 7)	\$1,678,768,488	\$879,830,504	\$160,248,990	\$362,597,496	\$32,346,005	\$8,179,891,191

⁽¹⁾ Employer contributions include "member subvention of employer contributions" and exclude "employer subvention of member contributions".

⁽²⁾ Allocated based on expected administrative expenses from the prior valuation.

Note: Results may not add due to rounding.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

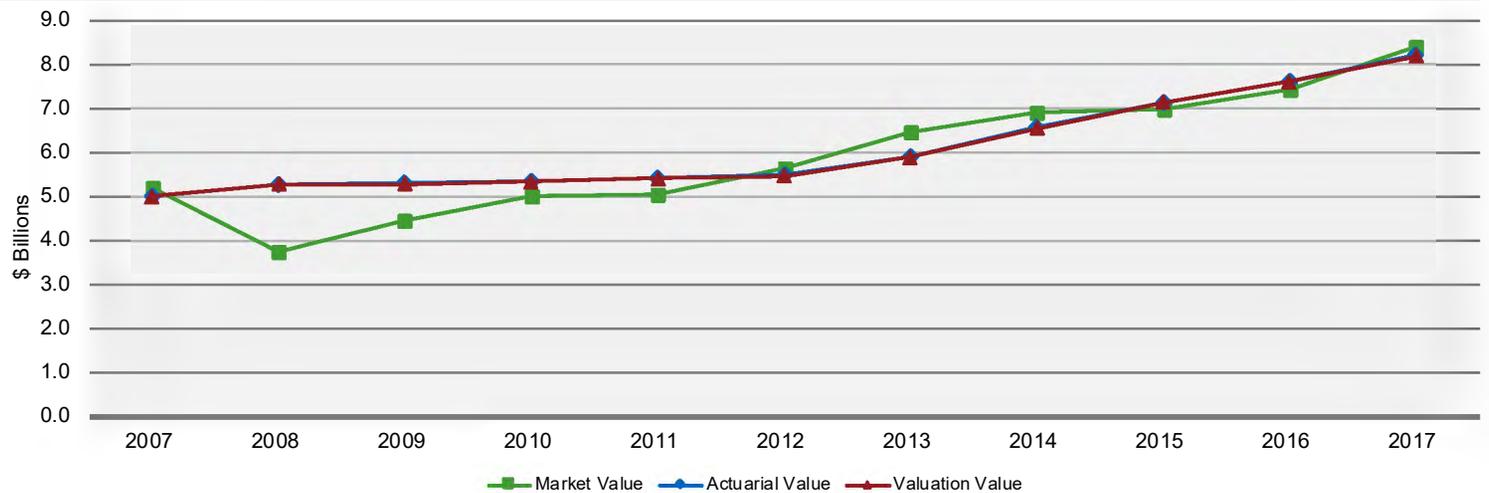
The market value, actuarial value and valuation value of assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets, but with less volatility. The valuation value of assets is the actuarial value, excluding any non-valuation reserves.

The valuation value of assets is significant because CCCERA's liabilities are compared to this measure of its assets to determine what portion, if any, remains unfunded. Amortization of the unfunded liability is an important element in determining the contribution requirement.

This chart shows the change in the relative values of market value, actuarial value and valuation value of assets over the past ten years.

CHART 9

Relative Values of Market Value, Actuarial Value and Valuation Value of Assets for Years Ended December 31, 2007 – 2017



SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

C. ACTUARIAL EXPERIENCE

To calculate the required contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will

return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total experience gain was \$40.6 million, a gain of \$76.2 million from investments, a gain of \$17.9 million from contribution experience and a loss of \$53.6 million from all other sources. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

CHART 10
Actuarial Experience for Year Ended December 31, 2017

1. Net gain/(loss) from investments ⁽¹⁾	\$76,209,273
2. Net gain/(loss) from contribution experience	17,933,150
3. Net gain/(loss) from other experience ⁽²⁾	<u>(53,561,701)</u>
4. Net experience gain/(loss): (1) + (2) + (3)	<u>\$40,580,722</u>

⁽¹⁾ Details in Chart 11

⁽²⁾ See Section 3, Exhibit I. Does not include the effect of plan or assumption changes, if any.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on CCCERA's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets during 2017 was 7.00% (based on the December 31, 2016 actuarial valuation). The actual rate of return on the actuarial value for the 2017 Plan Year was 8.00%.

The market value return reflects the entire impact of the investment performance during the current year and ignores returns from prior years.

The actuarial and valuation value returns reflect the fact that investment gains and losses are gradually taken into account. This is because these returns reflect only a portion of the investment gain or loss from the current year as well as portions of the gains and losses from prior years in accordance with the Board's asset valuation method.

Since the actual return for the year was greater than the assumed return, the Plan experienced an actuarial gain on the actuarial and valuation value of assets during the year ended December 31, 2017.

This chart shows the gain/(loss) due to investment experience.

CHART 11

Investment Experience for Year Ended December 31, 2017 – Market Value, Actuarial Value and Valuation Value of Assets

	Market Value	Actuarial Value	Valuation Value
1. Actual return	\$987,415,981	\$608,519,874	\$607,477,597
2. Average value of assets	7,420,684,208	7,604,515,807	7,589,547,483
3. Actual rate of return: (1) ÷ (2)	13.31%	8.00%	8.00%
4. Assumed rate of return	7.00%	7.00%	7.00%
5. Expected return: (2) x (4)	519,447,895	532,316,106	531,268,324
6. Actuarial gain/(loss): (1) – (5)	<u>\$467,968,086</u>	<u>\$76,203,768</u>	<u>\$76,209,273</u>

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rates of return on an actuarial, valuation and market value basis for the last ten years.

CHART 12

Investment Return – Valuation Value, Actuarial Value and Market Value: 2008 – 2017

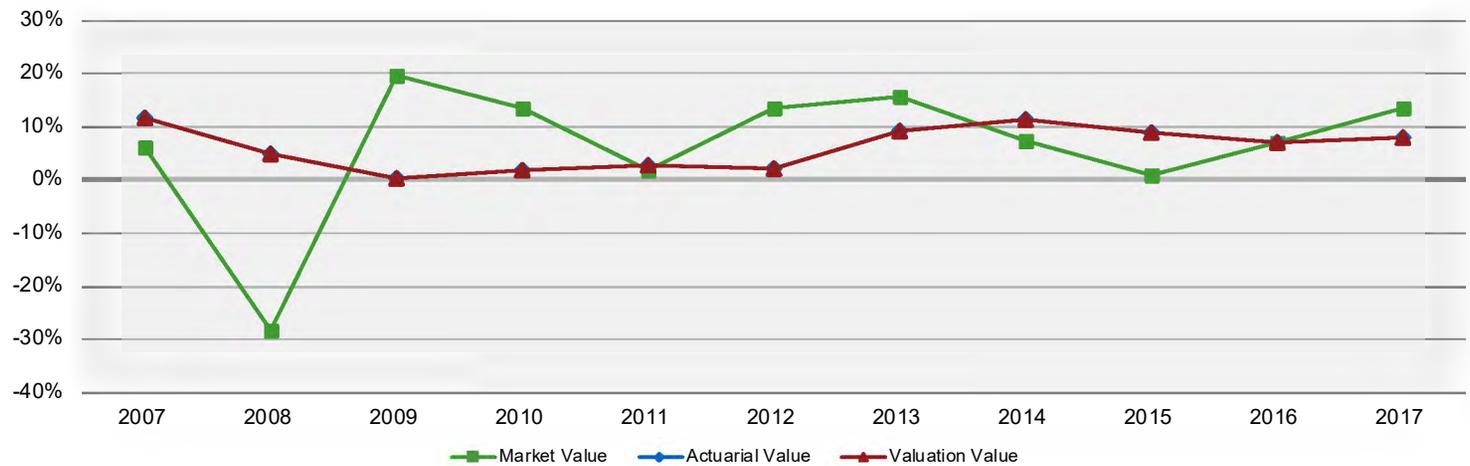
Year Ended December 31	Market Value Investment Return		Actuarial Value Investment Return		Valuation Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent
2008	\$(1,477,705,765)	(28.35%)	\$238,397,117	4.73%	\$237,402,129	4.72%
2009	736,956,891	19.68%	18,226,933	0.34%	17,021,116	0.32%
2010	594,637,090	13.35%	95,918,913	1.82%	94,835,030	1.80%
2011	88,042,268	1.76%	148,058,548	2.78%	146,988,614	2.77%
2012	668,138,997	13.31%	121,921,302	2.25%	120,826,177	2.24%
2013	870,984,744	15.50%	492,503,802	9.01%	491,324,308	9.02%
2014	473,522,261	7.35%	673,040,867	11.39%	671,957,212	11.40%
2015	65,495,657	0.95%	577,199,123	8.78%	576,151,245	8.79%
2016	493,874,242	7.10%	502,352,173	7.04%	501,328,149	7.04%
2017	987,415,981	13.31%	608,519,874	8.00%	607,477,597	8.00%
Five-Year Average Return		8.67%		8.73%		8.73%
Ten-Year Average Return		6.17%		5.88%		5.88%

Note: Each year's yield is weighted by the average asset value in that year.

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Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

CHART 13
Market, Actuarial and Valuation Value Rates of Return for Years Ended December 31, 2007 - 2017



SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation.

These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements,
- salary increases different than assumed, and
- COLA increases for retirees different than assumed.

The net loss from this other experience for the year ended December 31, 2017 amounted to \$53.6 million, which was 0.6% of the actuarial accrued liability. This loss is mainly the result of higher than expected individual salary increases and higher than expected COLA increases. See Exhibit I for a detailed development of the Unfunded Actuarial Accrued Liability.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

D. RECOMMENDED CONTRIBUTION

Employer contributions consist of two components:

Normal Cost

The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member's compensation.

Contribution to the Unfunded Actuarial Accrued Liability (UAAL)

The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Association) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the combined annual inflation and "across the board" salary increase rate of 3.25% along with expected payroll. The remaining balance of the December 31, 2007 UAAL is being amortized over a 5-year declining period as of December 31, 2017. Any change in the UAAL that arises at each valuation after December 31, 2007 is amortized over its own separate declining 18-year period. Effective with the December 31, 2013 valuation, any change in the UAAL that arises due to plan amendments is amortized over its own declining 10-year period (with the exception of a change due to retirement incentives, which is to be funded in full upon adoption of the incentive).

Employer Contribution Rates

The current and recommended employer contribution rates are shown in Chart 14. County contribution rates also include the Superior Court.

The PEPRA Tier 4 (2% COLA) in Cost Group #1 continues to not have any actual members as of December 31, 2017. The contribution rates for this cost group have been developed based on generally the same methodology used to estimate contribution rates for all of the PEPRA tiers in the December 31, 2012 valuation. We have assumed in this valuation that the demographic profiles (e.g., entry age, composition of male versus female, etc.) for this cost group can be approximated by the data profiles of current active members with membership dates on and after January 1, 2011.

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The amortization cost for the UAAL has been expressed as a percentage of total future payroll, including members with membership dates on or after January 1, 2013. This has been done in order to continue the open group level percent of payroll amortization methodology for the UAAL associated with members with membership dates before January 1, 2013. It is also consistent with the methodology applied when Safety Tier C was implemented.

The employer contribution rates shown in Chart 14 are the aggregate rates before reflecting the under and over \$350 of monthly compensation contribution provisions for members integrated with Social Security. The detailed contribution rates reflecting these provisions will be provided in the contribution rate packet that goes to the Board of Supervisors.

Member Contributions Non-PEPRA Members

Articles 6 and 6.8 of the 1937 Act define the methodology to be used in the calculation of member basic contribution rates for non-PEPRA General and Safety members, respectively. The basic contribution rate is determined as that percentage of compensation which if paid annually from a member's first year of membership through the prescribed retirement age would accumulate to the amount necessary to fund a prescribed annuity.

The annuity is equal to:

- 1/120 of one year Final Average Salary per year of service at age 55 for General Tier 1 and Tier 3 Non-enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Non-enhanced members
- 1/120 of one year Final Average Salary per year of service at age 60 for General Tier 1 and Tier 3 Enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Enhanced
- 1/100 of three year Final Average Salary per year of service at age 50 for Safety Tier C Enhanced members

Member contributions are accumulated at an annual interest rate adopted annually by the Board. Note that recently negotiated MOU's for County General members no longer include the 50% employer subvention of the members' basic contributions. Districts pay varying portions, of the members' basic contributions on a

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nonrefundable basis. Members also pay 50% of the cost-of-living benefit. For most Safety Tier A employers, Safety members also subvent a portion of the employer rate, currently up to 9% of compensation (depending on their MOU). Chart 14 does not include any employer subvention of member contributions or any member subvention of employer contributions.

Effective with the December 31, 2014 valuation, for determining the cost of the total benefit (i.e., basic and COLA components), the leave cashout assumptions are recognized in the valuation as an employer and member cost. Prior to the December 31, 2014 valuation, for determining the cost of the basic benefit (i.e., non-COLA component), the leave cashout assumptions were recognized in the valuation only as an employer cost and did not affect member contribution rates. In other words, the leave cashout assumptions were only used in establishing COLA member contribution rates.

As a result of including the leave cashout assumptions in the basic member rates for the members of each specific cost group, the COLA member rates are no longer pooled across all members of the same tier. This results in twelve different sets of member contribution rates for each specific cost group.

The age specific contribution rates are provided in Appendix A.

PEPRA Members

Pursuant to Section 7522.30(a) of the Government Code, PEPRA members are required to contribute at least 50% of the Normal Cost rate. We have assumed that exactly 50% of the Normal Cost would be paid by PEPRA members. In addition, we have calculated the total Normal Cost rate for the PEPRA tiers to the nearest one-fiftieth of one percent (i.e., the nearest even one-hundredth) as that will allow the Normal Cost rate to be shared exactly 50:50 without going beyond two decimal places.

Member contribution rates are provided in Appendix B.

Administrative Expense

The Board adopted an explicit administrative expense assumption effective with the December 31, 2015 actuarial valuation. The explicit administrative expense assumption is based on the prior year actual administration expenses, expressed as a percent of actual payroll for that year. For the 2017 calendar year the actual administrative expenses were \$9,146,115 and actual payroll was \$809,960,088. This results in an administrative expense load of 1.13% of payroll for the December 31,

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2017 valuation. This is an increase from the 1.12% assumption determined in the prior valuation.

The explicit assumption is allocated to both the employers and members based on the portions of the total Normal Cost rate (before expenses) for the employers and members. This results in an administrative expense load allocation as shown in the table below.

	Average Normal Cost Rates		
	<u>Before Administrative Expense</u>	<u>Weighting</u>	<u>Total Loading</u>
Employer	16.09%	58.19%	0.66%
Member	11.56%	<u>41.81%</u>	<u>0.47%</u>
		100.00%	1.13%

Under this approach, the employer Normal Cost rate is then increased by the same percent of payroll as the member rate with the remaining employer loading allocated to the employer UAAL rate. This is done to maintain a 50/50 sharing of Normal Cost for those in the PEPRA tiers. The table below shows this allocation.

<u>Allocation of Administrative Expense Load as % of Payroll</u>	
Addition to Employer Basic Normal Cost Rate	0.47%
Addition to Employer Basic UAAL Rate	0.19%
Addition to Member Basic Rate	<u>0.47%</u>
Total Addition to Contribution Rates	1.13%

The administrative expense load is added to the Basic rates for employers and members.

Cost Sharing Adjustments

Starting with the December 31, 2009 Actuarial Valuation, the Board took action to depool CCCERA's assets, liabilities and normal cost by employer when determining employer contribution rates. The Board action included a review of experience back to December 31, 2002. This did not involve recalculation of any employer rates prior to December 31, 2009. However, it did involve reflecting the separate experience of the employers in each individual cost group back from December 31, 2002 through December 31, 2009. The cost groups are detailed on pages 19 and 20. In addition, the Board action called for a discontinuation of certain cost sharing adjustments for both member and employer contribution rates for General Tier 1 and Safety Tier A. Even under the depooling structure, there are a few remaining cost sharing arrangements.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Here is a summary of the cost sharing arrangements that were implemented in the December 31, 2009 Actuarial Valuation:

- Smaller employers (less than 50 active members as of December 31, 2009) were pooled with the applicable County tier. Safety members from the East Contra Costa Fire Protection District were pooled with Safety members of the Contra Costa County Fire Protection District.
- Due to a statutory requirement, the Superior Court was pooled with the County regardless of how many members the Court has.
- UAAL costs are pooled between Cost Group #1 and Cost Group #2 which represent General County and Small Districts. UAAL costs are also pooled for Cost Groups #7 and #9 which are Safety County tiers.

Other Adjustments

Other adjustments made in the determination of rates are as follows:

- Adjustments are made to some UAAL amounts for the County, the Contra Costa County Fire Protection District (CCCFPD), the Moraga-Orinda Fire District (Moraga), First 5 – Children & Families Commission (First Five) and Local Agency Formation Commission (LAFCO) to account for Pension Obligation Bonds (POBs) and any other special contributions that they previously made. These adjustments serve to reduce the UAAL contribution rate for these employers. The outstanding balances of these adjustments as of December 31, 2017 are as follows:

	County General	Moraga General	First Five General	LAFCO General	CCCFPD Safety
Basic	\$144,963,375	\$255,285	\$561,613	\$22,405	\$41,609,731
COL	\$116,160,609	\$148,165	\$424,815	\$8,412	\$31,733,443

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Summary of Cost Groups and Employers

GENERAL

Cost Group	Employer Name	Benefit Structure	Special Adjustment
(1)	County General	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Local Agency Formation Commission	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Contra Costa Mosquito and Vector Control District	Tier 1 Enhanced/PEPRA Tier 4	
	Bethel Island Municipal District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	First 5-Children & Families Commission	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Contra Costa County Employees' Retirement Association	Tier 1 Enhanced/PEPRA Tier 4	
	Superior Court	Tier 1 Enhanced/PEPRA Tier 4	Yes
	East Contra Costa Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	Moraga-Orinda Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Rodeo-Hercules Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
San Ramon Valley Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4		
(2)	County General	Tier 3 Enhanced/PEPRA Tier 5	Yes
	In-Home Supportive Services Authority	Tier 3 Enhanced/PEPRA Tier 5	
	Contra Costa Mosquito and Vector Control District	Tier 3 Enhanced/PEPRA Tier 5	
	Superior Court	Tier 3 Enhanced/PEPRA Tier 5	Yes
(3)	Central Contra Costa Sanitary District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
(4)	Contra Costa Housing Authority	Tier 1 Enhanced/PEPRA Tier 4	
(5)	Contra Costa County Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
(6)	Rodeo Sanitary District	Tier 1 Non-Enhanced/PEPRA Tier 4	
	Byron Brentwood Cemetery	Tier 1 Non-Enhanced/PEPRA Tier 4	

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

Summary of Cost Groups and Employers (continued)

SAFETY

Cost Group	Employer Name	Benefit Structure	Special Adjustment
(7)	County Safety	Tier A Enhanced/PEPRA Tier D	
(8)	Contra Costa County Fire Protection District East Contra Costa Fire Protection District	Tier A Enhanced/PEPRA Tier D/E Tier A Enhanced/PEPRA Tier D	Yes
(9)	County Safety	Tier C Enhanced/PEPRA Tier E (Members hired on or after January 1, 2007)	
(10)	Moraga-Orinda Fire District	Tier A Enhanced/PEPRA Tier D	
(11)	San Ramon Valley Fire District	Tier A Enhanced/PEPRA Tier D	
(12)	Rodeo-Hercules Fire Protection District	Tier A Non-Enhanced/PEPRA Tier D	

A special adjustment is made for employers that have a remaining balance of a Pension Obligation Bond or any other special contributions as described on page 18.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14

Components of Current and Recommended Employer Contribution Rates

Cost Group #1	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
County General Tier 1 w/Courts								
Normal Cost	12.35%	3.55%	15.90%	\$1,874,629	12.35%	3.55%	15.90%	\$1,856,159
UAAL	<u>10.71%</u>	<u>1.65%</u>	<u>12.36%</u>	<u>1,457,259</u>	<u>11.44%</u>	<u>1.99%</u>	<u>13.43%</u>	<u>1,567,813</u>
Total Contributions	23.06%	5.20%	28.26%	\$3,331,888	23.79%	5.54%	29.33%	\$3,423,972
	Payroll = \$11,790,121				Payroll = \$11,673,958			
Cost Group #1								
District General Tier 1 w/o POB								
Normal Cost	12.35%	3.55%	15.90%	\$1,082,621	12.35%	3.55%	15.90%	\$1,024,719
UAAL	<u>15.79%</u>	<u>5.72%</u>	<u>21.51%</u>	<u>1,464,602</u>	<u>16.86%</u>	<u>6.33%</u>	<u>23.19%</u>	<u>1,494,543</u>
Total Contributions	28.14%	9.27%	37.41%	\$2,547,223	29.21%	9.88%	39.09%	\$2,519,262
	Payroll = \$6,808,935				Payroll = \$6,444,772			
Cost Group #1								
District General Tier 1 w/ POB (Moraga)								
Normal Cost	12.35%	3.55%	15.90%	\$89,206	12.35%	3.55%	15.90%	\$84,808
UAAL	<u>8.47%</u>	<u>1.48%</u>	<u>9.95%</u>	<u>55,824</u>	<u>7.73%</u>	<u>1.04%</u>	<u>8.77%</u>	<u>46,778</u>
Total Contributions	20.82%	5.03%	25.85%	\$145,030	20.08%	4.59%	24.67%	\$131,586
	Payroll = \$561,043				Payroll = \$533,382			
Cost Group #1								
District General Tier 1 w/ UAAL Prepayment (First Five)								
Normal Cost	12.35%	3.55%	15.90%	\$238,733	12.35%	3.55%	15.90%	\$277,000
UAAL	<u>10.56%</u>	<u>1.76%</u>	<u>12.32%</u>	<u>184,980</u>	<u>10.91%</u>	<u>1.82%</u>	<u>12.73%</u>	<u>221,775</u>
Total Contributions	22.91%	5.31%	28.22%	\$423,713	23.26%	5.37%	28.63%	\$498,775
	Payroll = \$1,501,463				Payroll = \$1,742,141			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #1	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
District General Tier 1 w/ UAAL Prepayment (LAFCO)								
Normal Cost	12.35%	3.55%	15.90%	\$36,570	12.35%	3.55%	15.90%	\$35,578
UAAL	<u>15.04%</u>	<u>5.44%</u>	<u>20.48%</u>	<u>47,104</u>	<u>16.86%</u>	<u>6.33%</u>	<u>23.19%</u>	<u>51,890</u>
Total Contributions	27.39%	8.99%	36.38%	\$83,674	29.21%	9.88%	39.09%	\$87,468
	Payroll = \$230,000				Payroll = \$223,762			
Cost Group #1								
County General Tier 4 (3% COLA) w/ Courts								
Normal Cost	8.95%	3.01%	11.96%	\$0	8.67%	2.94%	11.61%	\$0
UAAL	<u>10.71%</u>	<u>1.65%</u>	<u>12.36%</u>	<u>0</u>	<u>11.44%</u>	<u>1.99%</u>	<u>13.43%</u>	<u>0</u>
Total Contributions	19.66%	4.66%	24.32%	\$0	20.11%	4.93%	25.04%	\$0
	Payroll = \$0				Payroll = \$0			
Cost Group #1								
District General Tier 4 (3% COLA) w/o POB								
Normal Cost	8.95%	3.01%	11.96%	\$277,255	8.67%	2.94%	11.61%	\$154,073
UAAL	<u>15.79%</u>	<u>5.72%</u>	<u>21.51%</u>	<u>498,642</u>	<u>16.86%</u>	<u>6.33%</u>	<u>23.19%</u>	<u>307,749</u>
Total Contributions	24.74%	8.73%	33.47%	\$775,897	25.53%	9.27%	34.80%	\$461,822
	Payroll = \$2,318,188				Payroll = \$1,327,075			
Cost Group #1								
District General Tier 4 (3% COLA) w/ POB (Moraga)								
Normal Cost	8.95%	3.01%	11.96%	\$25,744	8.67%	2.94%	11.61%	\$8,062
UAAL	<u>8.47%</u>	<u>1.48%</u>	<u>9.95%</u>	<u>21,417</u>	<u>7.73%</u>	<u>1.04%</u>	<u>8.77%</u>	<u>6,090</u>
Total Contributions	17.42%	4.49%	21.91%	\$47,161	16.40%	3.98%	20.38%	\$14,152
	Payroll = \$215,247				Payroll = \$69,443			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #1	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
District General Tier 4 (3% COLA) with UAAL Prepayment (First Five)								
Normal Cost	8.95%	3.01%	11.96%	\$123,847	8.67%	2.94%	11.61%	\$56,614
UAAL	<u>10.56%</u>	<u>1.76%</u>	<u>12.32%</u>	<u>127,575</u>	<u>10.91%</u>	<u>1.82%</u>	<u>12.73%</u>	<u>62,076</u>
Total Contributions	19.51%	4.77%	24.28%	\$251,422	19.58%	4.76%	24.34%	\$118,690
	Payroll = \$1,035,511				Payroll = \$487,635			
Cost Group #1								
District General Tier 4 (3% COLA) with UAAL Prepayment (LAFCO)								
Normal Cost	8.95%	3.01%	11.96%	\$0	8.67%	2.94%	11.61%	\$0
UAAL	<u>15.04%</u>	<u>5.44%</u>	<u>20.48%</u>	<u>0</u>	<u>16.86%</u>	<u>6.33%</u>	<u>23.19%</u>	<u>0</u>
Total Contributions	23.99%	8.45%	32.44%	\$0	25.53%	9.27%	34.80%	\$0
	Payroll = \$0				Payroll = \$0			
Cost Group #1								
County General Tier 4 (2% COLA) w/ Courts								
Normal Cost	8.80%	2.02%	10.82%	\$0	8.83%	2.04%	10.87%	\$0
UAAL	<u>10.71%</u>	<u>1.65%</u>	<u>12.36%</u>	<u>0</u>	<u>11.44%</u>	<u>1.99%</u>	<u>13.43%</u>	<u>0</u>
Total Contributions	19.51%	3.67%	23.18%	\$0	20.27%	4.03%	24.30%	\$0
	Payroll = \$0				Payroll = \$0			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #2	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
County General Tier 3 w/ Courts								
Normal Cost	12.31%	3.43%	15.74%	\$65,050,705	12.28%	3.42%	15.70%	\$64,625,796
UAAL	<u>10.71%</u>	<u>1.65%</u>	<u>12.36%</u>	<u>51,081,748</u>	<u>11.44%</u>	<u>1.99%</u>	<u>13.43%</u>	<u>55,281,811</u>
Total Contributions	23.02%	5.08%	28.10%	\$116,132,453	23.72%	5.41%	29.13%	\$119,907,607
	Payroll = \$413,282,751				Payroll = \$411,629,272			
District General Tier 3 w/o POB								
Normal Cost	12.31%	3.43%	15.74%	\$508,194	12.28%	3.42%	15.70%	\$489,780
UAAL	<u>15.79%</u>	<u>5.72%</u>	<u>21.51%</u>	<u>694,489</u>	<u>16.86%</u>	<u>6.33%</u>	<u>23.19%</u>	<u>723,440</u>
Total Contributions	28.10%	9.15%	37.25%	\$1,202,683	29.14%	9.75%	38.89%	\$1,213,220
	Payroll = \$3,228,680				Payroll = \$3,119,619			
County General Tier 5 (3%/4% COLA) w/ Courts								
Normal Cost	8.42%	2.79%	11.21%	\$6,476,314	8.39%	2.78%	11.17%	\$6,430,765
UAAL	<u>10.71%</u>	<u>1.65%</u>	<u>12.36%</u>	<u>7,140,700</u>	<u>11.44%</u>	<u>1.99%</u>	<u>13.43%</u>	<u>7,731,887</u>
Total Contributions	19.13%	4.44%	23.57%	\$13,617,014	19.83%	4.77%	24.60%	\$14,162,652
	Payroll = \$57,772,653				Payroll = \$57,571,759			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #2	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
District General Tier 5 (3%/4% COLA) w/o POB								
Normal Cost	8.42%	2.79%	11.21%	\$58,359	8.39%	2.78%	11.17%	\$27,371
UAAL	<u>15.79%</u>	<u>5.72%</u>	<u>21.51%</u>	<u>111,980</u>	<u>16.86%</u>	<u>6.33%</u>	<u>23.19%</u>	<u>56,826</u>
Total Contributions	24.21%	8.51%	32.72%	\$170,339	25.25%	9.11%	34.36%	\$84,197
	Payroll = \$520,596				Payroll = \$245,044			
County General Tier 5 (2% COLA) w/ Courts								
Normal Cost	8.20%	1.87%	10.07%	\$15,302,813	8.25%	1.89%	10.14%	\$9,709,443
UAAL	<u>10.71%</u>	<u>1.65%</u>	<u>12.36%</u>	<u>18,782,797</u>	<u>11.44%</u>	<u>1.99%</u>	<u>13.43%</u>	<u>12,859,746</u>
Total Contributions	18.91%	3.52%	22.43%	\$34,085,610	19.69%	3.88%	23.57%	\$22,569,189
	Payroll = \$151,964,380				Payroll = \$95,753,877			
District General Tier 5 (2% COLA) w/o POB								
Normal Cost	8.20%	1.87%	10.07%	\$26,380	8.25%	1.89%	10.14%	\$22,608
UAAL	<u>15.79%</u>	<u>5.72%</u>	<u>21.51%</u>	<u>56,350</u>	<u>16.86%</u>	<u>6.33%</u>	<u>23.19%</u>	<u>51,704</u>
Total Contributions	23.99%	7.59%	31.58%	\$82,730	25.11%	8.22%	33.33%	\$74,312
	Payroll = \$261,971				Payroll = \$222,957			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #3	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
CCCSD General Tier 1								
Normal Cost	13.30%	3.88%	17.18%	\$4,947,250	13.45%	3.91%	17.36%	\$4,951,527
UAAL	<u>22.99%</u>	<u>10.43%</u>	<u>33.42%</u>	<u>9,623,812</u>	<u>23.91%</u>	<u>10.56%</u>	<u>34.47%</u>	<u>9,831,747</u>
Total Contributions	36.29%	14.31%	50.60%	\$14,571,062	37.36%	14.47%	51.83%	\$14,783,274
	Payroll = \$28,796,566				Payroll = \$28,522,620			
Cost Group #3								
CCCSD General Tier 4 (3% COLA)								
Normal Cost	8.03%	2.80%	10.83%	\$601,334	8.32%	2.88%	11.20%	\$457,284
UAAL	<u>22.99%</u>	<u>10.43%</u>	<u>33.42%</u>	<u>1,855,640</u>	<u>23.91%</u>	<u>10.56%</u>	<u>34.47%</u>	<u>1,407,375</u>
Total Contributions	31.02%	13.23%	44.25%	\$2,456,974	32.23%	13.44%	45.67%	\$1,864,659
	Payroll = \$5,552,483				Payroll = \$4,082,897			
Cost Group #4								
Contra Costa Housing Authority General Tier 1								
Normal Cost	13.24%	3.74%	16.98%	\$694,627	13.38%	3.76%	17.14%	\$723,575
UAAL	<u>16.36%</u>	<u>9.71%</u>	<u>26.07%</u>	<u>1,066,486</u>	<u>16.10%</u>	<u>9.29%</u>	<u>25.39%</u>	<u>1,071,854</u>
Total Contributions	29.60%	13.45%	43.05%	\$1,761,113	29.48%	13.05%	42.53%	\$1,795,429
	Payroll = \$4,090,854				Payroll = \$4,221,560			
Cost Group #4								
Contra Costa Housing Authority General Tier 4 (3% COLA)								
Normal Cost	9.49%	3.24%	12.73%	\$189,928	9.21%	3.13%	12.34%	\$162,600
UAAL	<u>16.36%</u>	<u>9.71%</u>	<u>26.07%</u>	<u>388,957</u>	<u>16.10%</u>	<u>9.29%</u>	<u>25.39%</u>	<u>334,556</u>
Total Contributions	25.85%	12.95%	38.80%	\$578,885	25.31%	12.42%	37.73%	\$497,156
	Payroll = \$1,491,972				Payroll = \$1,317,669			

(1) The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

(2) The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #5	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
CCCYPD General Tier 1								
Normal Cost	12.27%	3.52%	15.79%	\$606,975	12.25%	3.53%	15.78%	\$543,052
UAAL	<u>10.12%</u>	<u>6.84%</u>	<u>16.96%</u>	<u>651,951</u>	<u>10.77%</u>	<u>6.49%</u>	<u>17.26%</u>	<u>593,984</u>
Total Contributions	22.39%	10.36%	32.75%	\$1,258,926	23.02%	10.02%	33.04%	\$1,137,036
	Payroll = \$3,844,050				Payroll = \$3,441,393			
Cost Group #5								
CCCYPD General Tier 4 (3% COLA)								
Normal Cost	11.44%	3.90%	15.34%	\$25,753	11.24%	3.86%	15.10%	\$16,406
UAAL	<u>10.12%</u>	<u>6.84%</u>	<u>16.96%</u>	<u>28,473</u>	<u>10.77%</u>	<u>6.49%</u>	<u>17.26%</u>	<u>18,753</u>
Total Contributions	21.56%	10.74%	32.30%	\$54,226	22.01%	10.35%	32.36%	\$35,159
	Payroll = \$167,881				Payroll = \$108,649			
Cost Group #5								
CCCYPD General Tier 4 (2% COLA)								
Normal Cost	9.46%	2.19%	11.65%	\$131,956	9.25%	2.15%	11.40%	\$80,257
UAAL	<u>10.12%</u>	<u>6.84%</u>	<u>16.96%</u>	<u>192,101</u>	<u>10.77%</u>	<u>6.49%</u>	<u>17.26%</u>	<u>121,512</u>
Total Contributions	19.58%	9.03%	28.61%	\$324,057	20.02%	8.64%	28.66%	\$201,769
	Payroll = \$1,132,669				Payroll = \$704,009			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #6	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Non-Enhanced District General Tier 1								
Normal Cost	13.27%	3.95%	17.22%	\$114,214	12.82%	3.84%	16.66%	\$109,747
UAAL	<u>0.19%</u>	<u>0.00%</u>	<u>0.19%</u>	<u>1,260</u>	<u>12.43%</u>	<u>(0.06%)</u>	<u>12.37%</u>	<u>81,487</u>
Total Contributions	13.46%	3.95%	17.41%	\$115,474	25.25%	3.78%	29.03%	\$191,234
	Payroll = \$663,261				Payroll = \$658,747			
Cost Group #6								
Non-Enhanced District General Tier 4 (3% COLA)								
Normal Cost	10.01%	3.47%	13.48%	\$25,266	11.96%	3.85%	15.81%	\$22,845
UAAL	<u>0.19%</u>	<u>0.00%</u>	<u>0.19%</u>	<u>356</u>	<u>12.43%</u>	<u>(0.06%)</u>	<u>12.37%</u>	<u>17,874</u>
Total Contributions	10.20%	3.47%	13.67%	\$25,622	24.39%	3.79%	28.18%	\$40,719
	Payroll = \$187,433				Payroll = \$144,494			
Cost Group #7								
County Safety Tier A								
Normal Cost	23.00%	7.35%	30.35%	\$17,463,315	22.91%	7.31%	30.22%	\$17,367,909
UAAL	<u>22.59%</u>	<u>19.54%</u>	<u>42.13%</u>	<u>24,241,498</u>	<u>25.44%</u>	<u>20.43%</u>	<u>45.87%</u>	<u>26,362,210</u>
Total Contributions	45.59%	26.89%	72.48%	\$41,704,813	48.35%	27.74%	76.09%	\$43,730,119
	Payroll = \$57,539,752				Payroll = \$57,471,572			
Cost Group #7								
County Safety Tier D								
Normal Cost	14.86%	6.13%	20.99%	\$740,793	15.04%	6.19%	21.23%	\$671,015
UAAL	<u>22.59%</u>	<u>19.54%</u>	<u>42.13%</u>	<u>1,486,879</u>	<u>25.44%</u>	<u>20.43%</u>	<u>45.87%</u>	<u>1,449,809</u>
Total Contributions	37.45%	25.67%	63.12%	\$2,227,672	40.48%	26.62%	67.10%	\$2,120,824
	Payroll = \$3,529,264				Payroll = \$3,160,691			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #8	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
CCCFPD Safety Tier A								
Normal Cost	22.60%	7.30%	29.90%	\$8,634,767	22.01%	7.12%	29.13%	\$8,289,271
UAAL	<u>14.63%</u>	<u>28.36%</u>	<u>42.99%</u>	<u>12,415,004</u>	<u>17.31%</u>	<u>27.22%</u>	<u>44.53%</u>	<u>12,671,515</u>
Total Contributions	37.23%	35.66%	72.89%	\$21,049,771	39.32%	34.34%	73.66%	\$20,960,786
	Payroll = \$28,878,819				Payroll = \$28,456,131			
East CCCFPD Safety Tier A								
Normal Cost	22.60%	7.30%	29.90%	\$767,350	22.01%	7.12%	29.13%	\$825,079
UAAL	<u>42.84%</u>	<u>49.87%</u>	<u>92.71%</u>	<u>2,379,297</u>	<u>45.64%</u>	<u>48.83%</u>	<u>94.47%</u>	<u>2,675,770</u>
Total Contributions	65.44%	57.17%	122.61%	\$3,146,647	67.65%	55.95%	123.60%	\$3,500,849
	Payroll = \$2,566,387				Payroll = \$2,832,402			
CCCFPD Safety Tier D								
Normal Cost	14.28%	6.00%	20.28%	\$359,801	13.67%	5.77%	19.44%	\$329,369
UAAL	<u>14.63%</u>	<u>28.36%</u>	<u>42.99%</u>	<u>762,715</u>	<u>17.31%</u>	<u>27.22%</u>	<u>44.53%</u>	<u>754,465</u>
Total Contributions	28.91%	34.36%	63.27%	\$1,122,516	30.98%	32.99%	63.97%	\$1,083,834
	Payroll = \$1,774,169				Payroll = \$1,694,284			
East CCCFPD Safety Tier D								
Normal Cost	14.28%	6.00%	20.28%	\$62,491	13.67%	5.77%	19.44%	\$56,679
UAAL	<u>42.84%</u>	<u>49.87%</u>	<u>92.71%</u>	<u>285,676</u>	<u>45.64%</u>	<u>48.83%</u>	<u>94.47%</u>	<u>275,438</u>
Total Contributions	57.12%	55.87%	112.99%	\$348,167	59.31%	54.60%	113.91%	\$332,117
	Payroll = \$308,139				Payroll = \$291,561			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #8	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
CCCYPD Safety Tier E								
Normal Cost	13.90%	3.90%	17.80%	\$386,348	13.01%	3.67%	16.68%	\$249,862
UAAL	<u>14.63%</u>	<u>28.36%</u>	<u>42.99%</u>	<u>933,095</u>	<u>17.31%</u>	<u>27.22%</u>	<u>44.53%</u>	<u>667,048</u>
Total Contributions	28.53%	32.26%	60.79%	\$1,319,443	30.32%	30.89%	61.21%	\$916,910
	Payroll = \$2,170,493				Payroll = \$1,497,974			
Cost Group #9								
County Safety Tier C								
Normal Cost	21.06%	4.51%	25.57%	\$3,445,978	21.29%	4.55%	25.84%	\$3,308,435
UAAL	<u>22.59%</u>	<u>19.54%</u>	<u>42.13%</u>	<u>5,677,710</u>	<u>25.44%</u>	<u>20.43%</u>	<u>45.87%</u>	<u>5,872,984</u>
Total Contributions	43.65%	24.05%	67.70%	\$9,123,688	46.73%	24.98%	71.71%	\$9,181,419
	Payroll = \$13,476,643				Payroll = \$12,803,541			
Cost Group #9								
County Safety Tier E								
Normal Cost	13.50%	3.76%	17.26%	\$3,775,786	13.72%	3.81%	17.53%	\$2,393,118
UAAL	<u>22.59%</u>	<u>19.54%</u>	<u>42.13%</u>	<u>9,216,330</u>	<u>25.44%</u>	<u>20.43%</u>	<u>45.87%</u>	<u>6,261,968</u>
Total Contributions	36.09%	23.30%	59.39%	\$12,992,116	39.16%	24.24%	63.40%	\$8,655,086
	Payroll = \$21,875,931				Payroll = \$13,651,555			

(1) The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

(2) The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Cost Group #10								
Moraga-Orinda FD Safety Tier A								
Normal Cost	21.38%	7.06%	28.44%	\$1,825,642	20.96%	6.96%	27.92%	\$1,725,213
UAAL	<u>13.83%</u>	<u>28.67%</u>	<u>42.50%</u>	<u>2,728,192</u>	<u>15.98%</u>	<u>27.46%</u>	<u>43.44%</u>	<u>2,684,215</u>
Total Contributions	35.21%	35.73%	70.94%	\$4,553,834	36.94%	34.42%	71.36%	\$4,409,428
				Payroll = \$6,419,275				Payroll = \$6,179,131
Cost Group #10								
Moraga-Orinda FD Safety Tier D								
Normal Cost	13.33%	5.65%	18.98%	\$177,156	13.29%	5.63%	18.92%	\$163,164
UAAL	<u>13.83%</u>	<u>28.67%</u>	<u>42.50%</u>	<u>396,687</u>	<u>15.98%</u>	<u>27.46%</u>	<u>43.44%</u>	<u>374,622</u>
Total Contributions	27.16%	34.32%	61.48%	\$573,843	29.27%	33.09%	62.36%	\$537,786
				Payroll = \$933,381				Payroll = \$862,390
Cost Group #11								
San Ramon FD Safety Tier A								
Normal Cost	22.22%	7.08%	29.30%	\$5,421,031	21.86%	7.01%	28.87%	\$5,179,535
UAAL	<u>28.83%</u>	<u>18.71%</u>	<u>47.54%</u>	<u>8,795,761</u>	<u>32.19%</u>	<u>20.32%</u>	<u>52.51%</u>	<u>9,420,761</u>
Total Contributions	51.05%	25.79%	76.84%	\$14,216,792	54.05%	27.33%	81.38%	\$14,600,296
				Payroll = \$18,501,811				Payroll = \$17,940,890
Cost Group #11								
San Ramon FD Safety Tier D								
Normal Cost	12.66%	5.40%	18.06%	\$549,052	13.28%	5.64%	18.92%	\$235,907
UAAL	<u>28.83%</u>	<u>18.71%</u>	<u>47.54%</u>	<u>1,445,289</u>	<u>32.19%</u>	<u>20.32%</u>	<u>52.51%</u>	<u>654,730</u>
Total Contributions	41.49%	24.11%	65.60%	\$1,994,341	45.47%	25.96%	71.43%	\$890,637
				Payroll = \$3,040,153				Payroll = \$1,246,868

(1) The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

(2) The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 14 (continued)

Components of Current and Recommended Employer Contribution Rates

Cost Group #12	December 31, 2017 (Recommended Rates for FY 19-20) ⁽¹⁾				December 31, 2016 (Recommended Rates for FY 18-19) ⁽²⁾			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Non-Enhanced Rodeo-Hercules FPD Safety Tier A								
Normal Cost	14.89%	5.21%	20.10%	\$371,801	14.82%	5.20%	20.02%	\$363,887
UAAL	<u>42.63%</u>	<u>30.04%</u>	<u>72.67%</u> ⁽³⁾	<u>1,344,216</u>	<u>46.06%</u>	<u>31.23%</u>	<u>77.29%</u> ⁽⁴⁾	<u>1,404,835</u>
Total Contributions	57.52%	35.25%	92.77%	\$1,716,017	60.88%	36.43%	97.31%	\$1,768,722
	Payroll = \$1,849,754				Payroll = \$1,817,615			
Cost Group #12								
Non-Enhanced Rodeo-Hercules FPD Safety Tier D								
Normal Cost	11.92%	5.07%	16.99%	\$58,095	11.92%	5.07%	16.99%	\$43,991
UAAL	<u>42.63%</u>	<u>30.04%</u>	<u>72.67%</u> ⁽³⁾	<u>248,483</u>	<u>46.06%</u>	<u>31.23%</u>	<u>77.29%</u> ⁽⁴⁾	<u>200,120</u>
Total Contributions	54.55%	35.11%	89.66%	\$306,578	57.98%	36.30%	94.28%	\$244,111
	Payroll = \$341,934				Payroll = \$258,921			
Total All Employers Combined (Aggregate)								
Normal Cost	12.87%	3.69%	16.56%	\$142,548,079	13.16%	3.80%	16.96%	\$133,072,503
UAAL	<u>13.45%</u>	<u>6.06%</u>	<u>19.51%</u>	<u>167,891,335</u>	<u>14.63%</u>	<u>6.49%</u>	<u>21.12%</u>	<u>165,673,760</u>
Total Contributions	26.32%	9.75%	36.07%	\$310,439,414	27.79%	10.29%	38.08%	\$298,746,263
	Payroll = \$860,624,613				Payroll = \$784,412,260			

⁽¹⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.19% of payroll, respectively.

⁽²⁾ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.46% and 0.20% of payroll, respectively.

⁽³⁾ Total UAAL dollar contribution for Rodeo-Hercules FPD is \$1,670,971 for FY 19-20. It is based on the UAAL rate shown above multiplied by estimated payroll for FY 19-20. The estimated payroll for FY 19-20 was determined by increasing payroll amounts shown above for 2018 by 18-months of assumed wage inflation.

⁽⁴⁾ Total UAAL dollar contribution for Rodeo-Hercules FPD is \$1,683,829 for FY 18-19. It is based on the UAAL rate shown above multiplied by estimated payroll for FY 18-19. The estimated payroll for FY 18-19 was determined by increasing payroll amounts shown above for 2017 by 18-months of assumed wage inflation.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

The employer contribution rates as of December 31, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Employer Contribution Rate

The chart below details the changes in the recommended employer contribution rate from the prior valuation to the current year's valuation.

CHART 15

Reconciliation of Recommended Average Employer Contribution from December 31, 2016 to December 31, 2017 Valuation

	Contribution Rate ⁽¹⁾	Estimated Annual Dollar Cost ⁽²⁾
Recommended Average Employer Contribution Rate in December 31, 2016 Valuation	38.08%	\$298,746,263
Effect of investment gain ⁽³⁾	(0.68%)	\$(5,852,247)
Effect of difference in actual versus expected contributions due to delay in implementation of contribution rates calculated in 12/31/2016 valuation	(0.16%)	(1,376,999)
Effect of additional UAAL contributions	0.00%	(25,672)
Effect of higher than expected individual salary increases	0.53%	4,561,310
Effect of amortizing prior year's UAAL over a greater than expected projected total payroll	(1.24%)	5,333,219 ⁽⁴⁾
Effect of changes in member demographics on Normal Cost	(0.41%)	(3,528,561)
Effect of higher than expected COLA increases for retirees and beneficiaries	0.18%	1,549,124
Effect of mortality loss on retirees and beneficiaries (fewer deaths than expected)	0.07%	602,437
Effect of retirement experience gain on actives (later retirements than expected)	(0.23%)	(1,979,437)
Effect of net other experience gains ⁽⁵⁾	(0.07%)	12,409,977
Total change	(2.01%)	11,693,151
Recommended Average Employer Contribution Rate in December 31, 2017 Valuation	36.07%	\$310,439,414

⁽¹⁾ These rates do not include any employer subvention of member contributions, or member subvention of employer contributions.

⁽²⁾ Based on projected total payroll for each valuation date shown.

⁽³⁾ Return on the valuation value of assets of 8.00% was greater than the 7.00% assumed in the December 31, 2016 valuation.

⁽⁴⁾ Represents the dollar increase in UAAL amortization payments for amortization bases established prior to the December 31, 2017 valuation.

⁽⁵⁾ Other differences in actual versus expected experience including (but not limited to) disability, withdrawal and leave cashout experience. Estimated annual dollar cost also reflects change in payroll from prior valuation.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

The member contribution rates as of December 31, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Member Contribution Rate

The chart below details the changes in the recommended average member contribution rate from the prior valuation to the current year's valuation.

The chart reconciles the member contribution from the prior valuation to the amount determined in this valuation.

CHART 16

Reconciliation of Recommended Average Member Contribution from December 31, 2016 to December 31, 2017 Valuation

	Contribution Rate ⁽¹⁾	Estimated Annual Dollar Cost ⁽²⁾
Recommended Average Member Contribution Rate in December 31, 2016 Valuation	12.08%	\$94,778,385
Effect of change in administrative expense load	0.01%	\$86,062
Effect of changes in member demographics ⁽³⁾	<u>(0.06%)</u>	<u>8,686,859</u>
Total change	<u>(0.05%)</u>	<u>\$8,772,921</u>
Recommended Average Member Contribution Rate in December 31, 2017 Valuation	12.03%	\$103,551,307

⁽¹⁾ These rates do not include any employer subvention of member contributions, or member subvention of employer contributions.

⁽²⁾ Based on projected total payroll for each valuation date shown.

⁽³⁾ Includes changes in demographic profile of active membership. Estimated annual dollar cost also reflects change in payroll from prior valuation.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

E. FUNDED RATIO

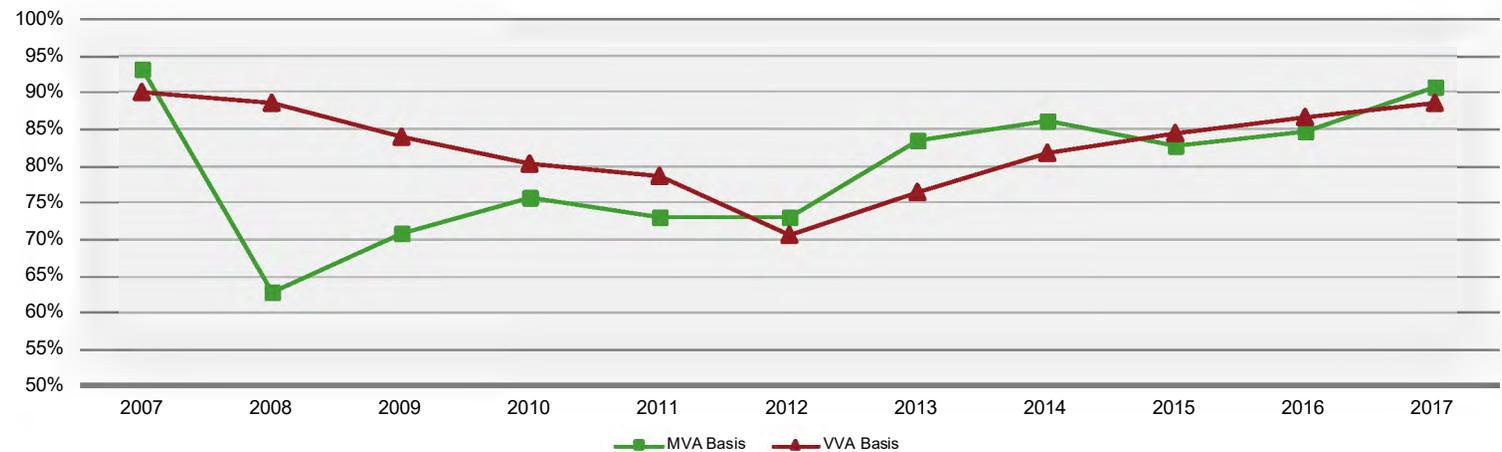
A critical piece of information regarding the Plan's financial status is the funded ratio. The ratios compare the valuation value of assets and market value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors. The chart below depicts a history of the funded ratio for this plan.

Chart 18 on the next page shows the Plan's schedule of funding progress for the last ten years.

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. As the chart below shows, the measures are different depending on whether the valuation or market value of assets is used.

CHART 17

Funded Ratio for Plan Years Ending December 31, 2007 – 2017



SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

CHART 18
Schedule of Funding Progress

Actuarial Valuation Date	Valuation Value of Assets⁽¹⁾ (a)	Actuarial Accrued Liability (AAL)⁽²⁾ (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) – (a)	Funded Ratio (a) / (b)	Projected Payroll (c)	UAAL as a Percentage of Projected Payroll [(b) – (a)] / (c)
12/31/2008	\$5,282,505,159	\$5,972,471,074	\$689,965,915	88.45%	\$704,947,668	97.87%
12/31/2009	5,290,114,102	6,314,787,187	1,024,673,085	83.77%	694,443,999	147.55%
12/31/2010	5,341,821,711	6,654,036,801	1,312,215,090	80.28%	687,443,206	190.88%
12/31/2011	5,426,719,066	6,915,311,649	1,488,592,583	78.47%	666,394,146	223.38%
12/31/2012	5,482,257,062	7,761,315,535	2,279,058,473	70.64%	652,312,180	349.38%
12/31/2013	5,907,416,432	7,731,097,407	1,823,680,975	76.41%	679,428,911	268.41%
12/31/2014	6,557,496,101	8,027,438,213	1,469,942,112	81.69%	697,831,837	210.64%
12/31/2015	7,136,801,380	8,448,624,096	1,311,822,716	84.47%	746,352,663	175.76%
12/31/2016	7,606,997,530	8,794,434,139	1,187,436,609	86.50%	784,412,260	151.38%
12/31/2017	8,179,891,191	9,239,246,920	1,059,355,729	88.53%	860,624,613	123.09%

⁽¹⁾ Excludes assets for non-valuation reserves.

⁽²⁾ Excludes liabilities for non-valuation reserves.

SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

F. VOLATILITY RATIOS

Retirement plans are subject to volatility in the level of required contributions. This volatility tends to increase as retirement plans become more mature.

The Asset Volatility Ratio (AVR), which is equal to the market value of assets divided by total payroll, provides an indication of the potential contribution volatility for any given level of investment volatility. A higher AVR indicates that the plan is subject to a greater level of contribution volatility. This is a current measure since it is based on the current level of assets.

For CCCERA, the current AVR is about 9.7. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 9.7% of one-year's payroll. Since CCCERA amortizes actuarial gains and losses over a 18-year period, there would be a 0.7% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The Liability Volatility Ratio (LVR), which is equal to the Actuarial Accrued Liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities. For example, if a plan is 50% funded on a market value basis, the liability volatility ratio would be double the asset volatility ratio and the plan sponsor should expect contribution volatility to increase over time as the plan becomes better funded.

The LVR also indicates how volatile contributions will be in response to changes in the Actuarial Accrued Liability due to actual experience or to changes in actuarial assumptions.

For CCCERA, the current LVR is about 10.7. This is about 10% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long-term.

This chart shows how the asset and liability volatility ratios have varied over time, both for the plan in total and separately for General and Safety.

CHART 19
Volatility Ratios for Years Ended December 31, 2009 – 2017

Year Ended December 31	Asset Volatility Ratios			Liability Volatility Ratios		
	General	Safety	Total	General	Safety	Total
2009	5.0	11.4	6.4	7.0	16.0	9.1
2010	5.6	13.1	7.3	7.5	17.2	9.7
2011	5.9	13.6	7.6	8.0	18.6	10.4
2012	6.7	16.2	8.7	9.0	22.5	11.9
2013	7.3	18.2	9.5	8.6	22.3	11.4
2014	7.5	19.7	9.9	8.6	23.5	11.5
2015	7.1	18.7	9.3	8.4	23.3	11.3
2016	7.2	19.0	9.5	8.3	23.1	11.1
2017	7.4	19.6	9.7	8.0	22.2	10.7

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

**EXHIBIT A
Table of Plan Coverage
i. General Tier 1**

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	529	559	-5.4%
Average age	50.5	49.9	0.6
Average service	16.5	15.8	0.7
Projected total payroll ⁽¹⁾	\$58,286,293	\$57,462,335	1.4%
Projected average payroll	\$110,182	\$102,795	7.2%
Account balances	\$66,823,081	\$61,775,547	8.2%
Total active members with at least five years of service	512	500	2.4%
Vested terminated members⁽²⁾	233	234	-0.4%
Retired members⁽²⁾			
Number in pay status	2,437	2,503	-2.6%
Average age	74.9	74.6	0.3
Average monthly benefit	\$4,247	\$4,087	3.9%
Disabled members⁽²⁾			
Number in pay status ⁽³⁾	255	265	-3.8%
Average age	71.7	71.6	0.1
Average monthly benefit	\$2,890	\$2,802	3.1%
Beneficiaries⁽²⁾			
Number in pay status	686	682	0.6%
Average age	78.0	77.4	0.6
Average monthly benefit	\$2,336	\$2,243	4.1%

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ Includes members from terminated employers.

⁽³⁾ For 2017, includes 187 members receiving a service-connected disability and 68 members receiving an ordinary disability.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)

Table of Plan Coverage

ii. General Tier 2

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number ⁽¹⁾	0	0	N/A
Average age	N/A	N/A	N/A
Average service	N/A	N/A	N/A
Projected total payroll	N/A	N/A	N/A
Projected average payroll	N/A	N/A	N/A
Account balances	N/A	N/A	N/A
Total active members with at least five years of service	0	0	N/A
Vested terminated members⁽²⁾			
	201	214	-6.1%
Retired members⁽²⁾			
Number in pay status	420	419	0.2%
Average age	75.2	74.6	0.6
Average monthly benefit	\$857	\$849	0.9%
Disabled members⁽²⁾			
Number in pay status ⁽³⁾	42	45	-6.7%
Average age	71.6	70.7	0.9
Average monthly benefit	\$2,323	\$2,309	0.6%
Beneficiaries⁽²⁾			
Number in pay status	102	106	-3.8%
Average age	68.7	68.4	0.3
Average monthly benefit	\$891	\$836	6.6%

⁽¹⁾ As of the December 31, 2005 valuation, there are no longer any Tier 2 Active Members since they have all transferred to Tier 3.

⁽²⁾ Includes members from terminated employers.

⁽³⁾ For 2017, includes 22 members receiving a service-connected disability and 20 members receiving an ordinary disability.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)
Table of Plan Coverage
iii. General Tier 3

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	4,738	5,053	-6.2%
Average age	50.7	50.0	0.7
Average service	13.9	13.3	0.6
Projected total payroll ⁽¹⁾	\$416,511,431	\$414,748,891	0.4%
Projected average payroll	\$87,909	\$82,080	7.1%
Account balances	\$523,594,120	\$487,288,911	7.5%
Total active members with at least five years of service	4,507	4,411	2.2%
Vested terminated members			
	1,743	1,687	3.3%
Retired members			
Number in pay status	2,878	2,695	6.8%
Average age	67.8	67.2	0.6
Average monthly benefit	\$2,778	\$2,716	2.3%
Disabled members			
Number in pay status ⁽²⁾	83	84	-1.2%
Average age	62.6	62.0	0.6
Average monthly benefit	\$2,390	\$2,341	2.1%
Beneficiaries			
Number in pay status	204	187	9.1%
Average age	61.0	62.0	-1.0
Average monthly benefit	\$1,556	\$1,612	-3.5%

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ For 2017, includes 26 members receiving a service-connected disability and 57 members receiving an ordinary disability.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)

Table of Plan Coverage

iv. General Tier 4 – 2% COLA

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	18	14	28.6%
Average age	43.1	42.6	0.5
Average service	1.5	1.2	0.3
Projected total payroll ⁽¹⁾	\$1,132,669	\$704,009	60.9%
Projected average payroll	\$62,926	\$50,286	25.1%
Account balances	\$147,903	\$98,401	50.3%
Total active members with at least five years of service	0	0	N/A
Vested terminated members			
	4	1	300.0%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)

Table of Plan Coverage

v. General Tier 4 – 3% COLA

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	129	103	25.2%
Average age	41.1	40.8	0.3
Average service	2.2	1.9	0.3
Projected total payroll ⁽¹⁾	\$10,968,716	\$7,537,862	45.5%
Projected average payroll	\$85,029	\$73,183	16.2%
Account balances	\$1,994,064	\$1,038,597	92.0%
Total active members with at least five years of service	2	1	100.0%
Vested terminated members			
	14	11	27.3%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the PEPRA formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)

Table of Plan Coverage

vi. General Tier 5 – 2% COLA

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	2,350	1,784	31.7%
Average age	39.9	39.2	0.7
Average service	1.5	1.1	0.4
Projected total payroll ⁽¹⁾	\$152,226,351	\$95,976,834	58.6%
Projected average payroll	\$64,777	\$53,799	20.4%
Account balances	\$20,015,213	\$9,678,004	106.8%
Total active members with at least five years of service	12	17	-29.4%
Vested terminated members	417	256	62.9%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)

Table of Plan Coverage

vii. General Tier 5 – 3% COLA

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	801	865	-7.4%
Average age	43.1	42.0	1.1
Average service	3.6	2.8	0.8
Projected total payroll ⁽¹⁾	\$58,293,249	\$57,816,803	0.8%
Projected average payroll	\$72,776	\$66,840	8.9%
Account balances	\$20,237,024	\$14,800,751	36.7%
Total active members with at least five years of service	3	12	-75.0%
Vested terminated members	274	243	12.8%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the PEPRA formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)
Table of Plan Coverage
viii. Safety Tier A

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	945	991	-4.6%
Average age	45.2	44.6	0.6
Average service	15.8	15.5	0.3
Projected total payroll ⁽¹⁾	\$115,755,798	\$114,697,741	0.9%
Projected average payroll	\$122,493	\$115,739	5.8%
Account balances	\$377,672,109	\$358,633,855	5.3%
Total active members with at least five years of service	935	953	-1.9%
Vested terminated members⁽²⁾			
	314	331	-5.1%
Retired members⁽²⁾			
Number in pay status	1,238	1,208	2.5%
Average age	66.2	65.9	0.3
Average monthly benefit	\$7,796	\$7,653	1.9%
Disabled members⁽²⁾			
Number in pay status ⁽³⁾	509	506	0.6%
Average age	63.9	63.5	0.4
Average monthly benefit	\$6,063	\$5,877	3.2%
Beneficiaries⁽²⁾			
Number in pay status	406	395	2.8%
Average age	69.2	68.3	0.9
Average monthly benefit	\$3,833	\$3,723	3.0%

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ Includes members from terminated employers.

⁽³⁾ For 2017, includes 488 members receiving a service-connected disability and 21 members receiving an ordinary disability.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)
Table of Plan Coverage
ix. Safety Tier C

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	128	136	-5.9%
Average age	37.4	36.6	0.8
Average service	7.6	6.7	0.9
Projected total payroll ⁽¹⁾	\$13,476,643	\$12,803,541	5.3%
Projected average payroll	\$105,286	\$94,144	11.8%
Account balances	\$12,548,377	\$10,676,664	17.5%
Total active members with at least five years of service	118	88	34.1%
Vested terminated members			
	74	72	2.8%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status ⁽²⁾	7	5	40.0%
Average age	43.1	43.8	-0.7
Average monthly benefit	\$3,758	\$3,704	1.5%
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ For 2017, includes 7 members receiving a service-connected disability.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)

Table of Plan Coverage

x. Safety Tier D

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	115	106	8.5%
Average age	33.6	33.0	0.6
Average service	2.8	2.0	0.8
Projected total payroll ⁽¹⁾	\$9,927,039	\$7,514,715	32.1%
Projected average payroll	\$86,322	\$70,894	21.8%
Account balances	\$4,701,883	\$2,916,657	61.2%
Total active members with at least five years of service	0	0	N/A
Vested terminated members			
	21	17	23.5%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT A (continued)

Table of Plan Coverage

xi. Safety Tier E

Category	Year Ended December 31		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	285	237	20.3%
Average age	31.9	31.4	0.5
Average service	2.2	1.6	0.6
Projected total payroll ⁽¹⁾	\$24,046,424	\$15,149,530	58.7%
Projected average payroll	\$84,373	\$63,922	32.0%
Account balances	\$7,288,339	\$3,886,353	87.5%
Total active members with at least five years of service	0	0	N/A
Vested terminated members			
	32	23	39.1%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the PEPPRA formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

i. General Tier 1 Non-Enhanced

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
35 - 39	1	1	--	--	--	--	--	--	--	--
40 - 44	\$11,256	\$11,256	--	--	--	--	--	--	--	--
45 - 49	3	--	--	2	1	--	--	--	--	--
50 - 54	115,253	--	--	\$133,769	\$78,222	--	--	--	--	--
55 - 59	4	--	3	1	--	--	--	--	--	--
60 - 64	76,561	--	\$71,055	93,081	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	8	1	3	3	1	--	--	--	--	--
	\$82,908	\$11,256	\$71,055	\$120,206	\$78,222	--	--	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

Members in Active Service and Projected Payroll as of December 31, 2017

By Age and Years of Service

ii. General Tier 1 Enhanced

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	8	--	8	--	--	--	--	--	--	--
30 - 34	20	3	15	2	--	--	--	--	--	--
35 - 39	52	7	26	13	6	--	--	--	--	--
40 - 44	65	8	17	17	19	4	--	--	--	--
45 - 49	79	4	18	13	31	11	2	--	--	--
50 - 54	120	3	12	31	41	12	17	4	--	--
55 - 59	92	5	17	12	25	11	14	4	3	1
60 - 64	60	3	12	7	13	9	10	1	4	1
65 - 69	23	--	4	4	10	1	2	--	--	2
70 & over	2	--	--	1	1	--	--	--	--	--
	85,624	--	--	79,669	91,579	--	--	--	--	--
Total	521	33	129	100	146	48	45	9	7	4
	\$110,601	\$118,797	\$111,975	\$106,498	\$113,713	\$98,765	\$111,863	\$139,115	\$79,516	\$105,691

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

iii. General Tier 3 Enhanced

Age	Total	Years of Service									
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over	
Under 25	--	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--	--
25 - 29	31	--	31	--	--	--	--	--	--	--	--
	\$65,935	--	\$65,935	--	--	--	--	--	--	--	--
30 - 34	239	43	157	37	2	--	--	--	--	--	--
	77,211	\$79,786	76,374	\$77,472	\$82,693	--	--	--	--	--	--
35 - 39	504	49	223	190	42	--	--	--	--	--	--
	88,549	90,428	91,238	87,974	74,681	--	--	--	--	--	--
40 - 44	621	55	202	193	158	13	--	--	--	--	--
	89,995	82,792	90,710	94,287	86,980	\$82,268	--	--	--	--	--
45 - 49	749	45	196	192	223	72	20	1	--	--	--
	90,076	86,845	87,694	89,504	92,834	95,941	\$74,865	\$79,128	--	--	--
50 - 54	921	42	182	199	252	124	100	22	--	--	--
	89,252	92,136	82,048	83,948	89,043	93,137	105,647	97,314	--	--	--
55 - 59	805	32	151	166	192	97	104	48	15	--	--
	88,680	81,755	82,698	85,877	85,056	98,246	101,995	93,718	\$70,777	--	--
60 - 64	586	11	124	130	154	62	54	33	18	--	--
	86,002	91,863	80,611	83,833	81,134	93,926	94,554	108,084	83,451	--	--
65 - 69	233	11	57	61	43	34	21	4	2	--	--
	87,593	65,226	81,785	87,359	91,247	107,311	78,770	80,120	77,157	--	--
70 & over	49	3	13	14	11	2	4	1	1	--	--
	74,210	120,959	80,101	67,388	68,606	79,810	57,251	101,592	43,793	--	--
Total	4,738	291	1,336	1,182	1,077	404	303	109	36	--	--
	\$87,909	\$85,567	\$84,589	\$87,221	\$86,991	\$95,761	\$97,883	\$98,233	\$76,719	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

iv. General Tier 4 – 2% COLA

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	1	1	--	--	--	--	--	--	--	--
	\$68,290	\$68,290	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
30 - 34	5	5	--	--	--	--	--	--	--	--
	60,257	60,257	--	--	--	--	--	--	--	--
35 - 39	1	1	--	--	--	--	--	--	--	--
	46,119	46,119	--	--	--	--	--	--	--	--
40 - 44	3	3	--	--	--	--	--	--	--	--
	63,425	63,425	--	--	--	--	--	--	--	--
45 - 49	2	2	--	--	--	--	--	--	--	--
	94,096	94,097	--	--	--	--	--	--	--	--
50 - 54	4	4	--	--	--	--	--	--	--	--
	62,712	62,712	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
	43,832	43,832	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	18	18	--	--	--	--	--	--	--	--
	\$62,926	\$62,926	--	--	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

v. General Tier 4 – 3% COLA

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	1	1	--	--	--	--	--	--	--	--
	\$71,937	\$71,937	--	--	--	--	--	--	--	--
25 - 29	19	19	--	--	--	--	--	--	--	--
	81,744	81,744	--	--	--	--	--	--	--	--
30 - 34	22	22	--	--	--	--	--	--	--	--
	83,901	83,901	--	--	--	--	--	--	--	--
35 - 39	22	22	--	--	--	--	--	--	--	--
	86,803	86,803	--	--	--	--	--	--	--	--
40 - 44	22	22	--	--	--	--	--	--	--	--
	84,811	84,811	--	--	--	--	--	--	--	--
45 - 49	12	12	--	--	--	--	--	--	--	--
	90,174	90,174	--	--	--	--	--	--	--	--
50 - 54	17	17	--	--	--	--	--	--	--	--
	89,977	89,977	--	--	--	--	--	--	--	--
55 - 59	11	11	--	--	--	--	--	--	--	--
	78,414	78,414	--	--	--	--	--	--	--	--
60 - 64	2	2	--	--	--	--	--	--	--	--
	85,943	85,943	--	--	--	--	--	--	--	--
65 - 69	1	1	--	--	--	--	--	--	--	--
	76,166	76,166	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	129	129	--	--	--	--	--	--	--	--
	\$85,029	\$85,029	--	--	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

vi. General Tier 5 – 2% COLA

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	87	87	--	--	--	--	--	--	--	--
	\$48,670	\$48,670	--	--	--	--	--	--	--	--
25 - 29	407	407	--	--	--	--	--	--	--	--
	57,851	57,851	--	--	--	--	--	--	--	--
30 - 34	498	497	1	--	--	--	--	--	--	--
	67,845	67,737	\$121,388	--	--	--	--	--	--	--
35 - 39	373	371	2	--	--	--	--	--	--	--
	68,306	68,234	81,589	--	--	--	--	--	--	--
40 - 44	258	258	--	--	--	--	--	--	--	--
	67,375	67,375	--	--	--	--	--	--	--	--
45 - 49	229	228	--	1	--	--	--	--	--	--
	66,784	66,673	--	\$92,135	--	--	--	--	--	--
50 - 54	198	198	--	--	--	--	--	--	--	--
	66,005	66,005	--	--	--	--	--	--	--	--
55 - 59	165	164	1	--	--	--	--	--	--	--
	64,640	64,716	52,180	--	--	--	--	--	--	--
60 - 64	102	98	4	--	--	--	--	--	--	--
	62,883	63,465	48,630	--	--	--	--	--	--	--
65 - 69	23	22	--	--	--	--	1	--	--	--
	76,863	74,839	--	--	--	--	\$121,388	--	--	--
70 & over	10	10	--	--	--	--	--	--	--	--
	58,891	58,891	--	--	--	--	--	--	--	--
Total	2,350	2,340	8	1	--	--	1	--	--	--
	\$64,777	\$64,736	\$66,408	\$92,135	--	--	\$121,388	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

vii. General Tier 5 – 3% COLA

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	5	5	--	--	--	--	--	--	--	--
	\$54,871	\$54,871	--	--	--	--	--	--	--	--
25 - 29	55	54	--	1	--	--	--	--	--	--
	60,396	60,562	--	\$51,458	--	--	--	--	--	--
30 - 34	157	156	1	--	--	--	--	--	--	--
	73,023	73,003	\$76,233	--	--	--	--	--	--	--
35 - 39	160	160	--	--	--	--	--	--	--	--
	74,752	74,752	--	--	--	--	--	--	--	--
40 - 44	115	115	--	--	--	--	--	--	--	--
	78,655	78,655	--	--	--	--	--	--	--	--
45 - 49	87	87	--	--	--	--	--	--	--	--
	74,028	74,028	--	--	--	--	--	--	--	--
50 - 54	76	74	2	--	--	--	--	--	--	--
	72,902	72,152	100,663	--	--	--	--	--	--	--
55 - 59	76	74	2	--	--	--	--	--	--	--
	68,691	68,887	61,422	--	--	--	--	--	--	--
60 - 64	51	49	2	--	--	--	--	--	--	--
	69,862	70,576	52,375	--	--	--	--	--	--	--
65 - 69	17	16	1	--	--	--	--	--	--	--
	77,533	78,998	54,092	--	--	--	--	--	--	--
70 & over	2	2	--	--	--	--	--	--	--	--
	72,188	72,189	--	--	--	--	--	--	--	--
Total	801	792	8	1	--	--	--	--	--	--
	\$72,776	\$72,832	\$69,906	\$51,458	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

Members in Active Service and Projected Payroll as of December 31, 2017

By Age and Years of Service

ix. Safety Tier A Enhanced

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	9	5	4	--	--	--	--	--	--	--
30 - 34	75	14	44	17	--	--	--	--	--	--
35 - 39	148	13	41	78	16	--	--	--	--	--
40 - 44	213	6	14	80	108	5	--	--	--	--
45 - 49	267	2	16	51	128	48	22	--	--	--
50 - 54	145	1	4	18	56	26	32	8	--	--
55 - 59	45	--	5	9	16	9	4	1	1	--
60 - 64	24	--	3	7	8	4	1	1	--	--
65 - 69	6	--	1	3	2	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	932	41	132	263	334	92	59	10	1	--
	\$122,217	\$105,053	\$112,519	\$119,455	\$120,344	\$130,968	\$158,853	\$161,681	\$96,636	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

x. Safety Tier C

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	15	2	13	--	--	--	--	--	--	--
	\$103,751	\$98,467	\$104,564	--	--	--	--	--	--	--
30 - 34	48	6	40	2	--	--	--	--	--	--
	103,395	88,267	105,448	\$107,719	--	--	--	--	--	--
35 - 39	29	2	24	3	--	--	--	--	--	--
	101,831	62,108	104,601	106,158	--	--	--	--	--	--
40 - 44	17	--	11	5	1	--	--	--	--	--
	107,155	--	106,682	107,746	\$109,403	--	--	--	--	--
45 - 49	10	--	7	3	--	--	--	--	--	--
	110,652	--	110,636	110,689	--	--	--	--	--	--
50 - 54	5	--	5	--	--	--	--	--	--	--
	132,831	--	132,831	--	--	--	--	--	--	--
55 - 59	1	--	1	--	--	--	--	--	--	--
	101,709	--	101,709	--	--	--	--	--	--	--
60 - 64	3	1	2	--	--	--	--	--	--	--
	103,423	99,888	105,191	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	128	11	103	13	1	--	--	--	--	--
	\$105,286	\$86,422	\$106,912	\$108,055	\$109,403	--	--	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

xi. Safety Tier D

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	7	7	--	--	--	--	--	--	--	--
	\$73,730	\$73,730	--	--	--	--	--	--	--	--
25 - 29	31	31	--	--	--	--	--	--	--	--
	80,304	80,304	--	--	--	--	--	--	--	--
30 - 34	46	46	--	--	--	--	--	--	--	--
	86,891	86,891	--	--	--	--	--	--	--	--
35 - 39	14	14	--	--	--	--	--	--	--	--
	92,526	92,526	--	--	--	--	--	--	--	--
40 - 44	8	8	--	--	--	--	--	--	--	--
	85,530	85,530	--	--	--	--	--	--	--	--
45 - 49	3	3	--	--	--	--	--	--	--	--
	102,924	102,924	--	--	--	--	--	--	--	--
50 - 54	3	3	--	--	--	--	--	--	--	--
	131,451	131,451	--	--	--	--	--	--	--	--
55 - 59	3	3	--	--	--	--	--	--	--	--
	80,601	80,601	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	115	115	--	--	--	--	--	--	--	--
	\$86,322	\$86,322	--	--	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT B (continued)

**Members in Active Service and Projected Payroll as of December 31, 2017
By Age and Years of Service**

xii. Safety Tier E

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	24	24	--	--	--	--	--	--	--	--
	\$80,890	\$80,890	--	--	--	--	--	--	--	--
25 - 29	137	137	--	--	--	--	--	--	--	--
	82,055	82,055	--	--	--	--	--	--	--	--
30 - 34	58	58	--	--	--	--	--	--	--	--
	84,342	84,342	--	--	--	--	--	--	--	--
35 - 39	28	28	--	--	--	--	--	--	--	--
	85,562	85,562	--	--	--	--	--	--	--	--
40 - 44	14	14	--	--	--	--	--	--	--	--
	79,342	79,342	--	--	--	--	--	--	--	--
45 - 49	9	9	--	--	--	--	--	--	--	--
	91,524	91,524	--	--	--	--	--	--	--	--
50 - 54	7	7	--	--	--	--	--	--	--	--
	108,360	108,360	--	--	--	--	--	--	--	--
55 - 59	7	7	--	--	--	--	--	--	--	--
	109,073	109,073	--	--	--	--	--	--	--	--
60 - 64	1	1	--	--	--	--	--	--	--	--
	119,347	119,347	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	285	285	--	--	--	--	--	--	--	--
	\$84,373	\$84,373	--	--	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT C

Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries

i. General Tier 1 as of December 31, 2017

Age	Total	Years of Retirement								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	2	--	1	--	--	1	--	--	--	--
30 - 34	5	--	2	--	--	3	--	--	--	--
35 - 39	1	--	--	--	--	1	--	--	--	--
40 - 44	6	1	--	1	--	2	1	1	--	--
45 - 49	8	3	1	--	1	2	1	--	--	--
50 - 54	32	20	2	1	3	3	2	1	--	--
55 - 59	119	62	38	6	4	4	2	3	--	--
60 - 64	351	79	175	53	15	11	8	6	1	3
65 - 69	585	51	218	184	82	19	19	3	6	3
70 - 74	658	10	89	277	158	71	24	14	7	8
75 - 80	494	--	11	76	180	117	72	20	12	6
80 - 84	449	1	1	14	99	133	109	69	13	10
85 - 89	348	--	--	3	17	67	112	95	40	14
90 & over	320	--	--	1	4	13	64	89	103	46
	2,738	--	--	1,266	3,091	2,889	3,570	2,687	2,457	2,271
Total	3,378	227	538	616	563	447	414	301	182	90
	\$3,756	\$2,978	\$5,246	\$4,753	\$4,236	\$3,127	\$2,917	\$2,198	\$2,333	\$2,066

Note: Includes members from terminated employers.

Note: Total retired benefit \$12,688,893, average age 75.3 and average years retired 19.0.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT C (continued)

Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries

ii. General Tier 2 as of December 31, 2017

Age	Total	Years of Retirement								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
30 - 34	2	--	--	--	2	--	--	--	--	--
35 - 39	\$827	--	--	--	\$827	--	--	--	--	--
40 - 44	8	--	--	--	3	3	2	--	--	--
45 - 49	859	--	--	--	900	\$628	\$1,145	--	--	--
50 - 54	10	--	--	--	2	5	3	--	--	--
55 - 59	1,031	--	--	--	434	1,427	768	--	--	--
60 - 64	7	3	--	1	--	2	1	--	--	--
65 - 69	946	\$198	--	\$644	--	1,698	1,986	--	--	--
70 - 74	27	14	9	1	2	1	--	--	--	--
75 - 80	447	324	\$254	180	2,068	932	--	--	--	--
80 - 84	53	9	9	17	9	8	1	--	--	--
85 - 89	967	514	764	578	1,986	1,152	2,854	--	--	--
90 & over	78	8	13	26	22	5	4	--	--	--
	867	574	834	792	705	1,916	1,624	--	--	--
	120	4	15	21	42	32	3	3	--	--
	915	746	829	661	953	970	1,835	\$1,293	--	--
	85	--	6	12	38	25	4	--	--	--
	1,090	--	479	1,065	1,350	939	566	--	--	--
	98	--	3	1	42	35	15	2	--	--
	1,103	--	1,341	747	1,178	1,084	910	1,109	--	--
	52	--	--	1	11	27	10	2	1	--
	1,100	--	--	60	911	1,302	1,065	451	\$405	--
	24	--	--	--	1	11	11	1	--	--
	1,016	--	--	--	1,032	853	1,218	577	--	--
Total	564	38	55	80	174	154	54	8	1	--
	\$973	\$456	\$715	\$734	\$1,118	\$1,098	\$1,137	\$947	\$405	--

Note: Includes members from terminated employers.

Note: Total retired benefit \$548,535, average age 73.7 and average years retired 17.3.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT C (continued)

Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries

iii. General Tier 3 as of December 31, 2017

Age	Total	Years of Retirement								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	6	4	2	--	--	--	--	--	--	--
	\$561	\$160	\$1,363	--	--	--	--	--	--	--
25 - 29	3	2	1	--	--	--	--	--	--	--
	414	161	922	--	--	--	--	--	--	--
30 - 34	8	4	--	1	2	1	--	--	--	--
	1,088	607	--	\$1,656	\$1,923	\$777	--	--	--	--
35 - 39	6	1	1	4	--	--	--	--	--	--
	847	494	1,920	667	--	--	--	--	--	--
40 - 44	8	3	3	2	--	--	--	--	--	--
	2,019	2,503	1,800	1,620	--	--	--	--	--	--
45 - 49	15	6	2	3	4	--	--	--	--	--
	1,300	1,425	1,729	1,144	1,014	--	--	--	--	--
50 - 54	108	91	7	6	4	--	--	--	--	--
	1,767	1,723	2,428	2,122	1,084	--	--	--	--	--
55 - 59	331	217	106	5	3	--	--	--	--	--
	2,147	2,358	1,734	2,444	930	--	--	--	--	--
60 - 64	649	291	279	74	5	--	--	--	--	--
	2,913	2,819	3,307	1,793	2,930	--	--	--	--	--
65 - 69	889	300	411	153	25	--	--	--	--	--
	2,938	2,495	3,519	2,547	1,104	--	--	--	--	--
70 - 74	693	103	327	225	37	1	--	--	--	--
	2,950	1,949	3,430	2,958	1,470	2,117	--	--	--	--
75 - 80	330	17	100	155	57	--	1	--	--	--
	2,387	1,508	2,567	2,616	1,726	--	\$1,513	--	--	--
80 - 84	107	3	19	48	37	--	--	--	--	--
	1,820	2,112	2,235	1,753	1,668	--	--	--	--	--
85 - 89	9	1	1	6	1	--	--	--	--	--
	1,767	760	3,162	1,196	4,811	--	--	--	--	--
90 & over	3	--	2	1	--	--	--	--	--	--
	3,433	--	1,915	6,468	--	--	--	--	--	--
Total	3,165	1,043	1,261	683	175	2	1	--	--	--
	\$2,689	\$2,388	\$3,182	\$2,529	\$1,581	\$1,447	\$1,513	--	--	--

Note: Total retired benefit \$8,510,824, average age 67.2 and average years retired 7.2.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT C (continued)

Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries

iv. Safety Tier A and Tier C as of December 31, 2017

Age	Total	Years of Retirement								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	6	--	--	3	--	--	2	--	1	--
	\$1,888	--	--	\$1,425	--	--	\$1,467	--	\$4,121	--
25 - 29	1	--	--	1	--	--	--	--	--	--
	891	--	--	891	--	--	--	--	--	--
30 - 34	2	2	--	--	--	--	--	--	--	--
	3,316	\$3,316	--	--	--	--	--	--	--	--
35 - 39	11	5	4	--	--	2	--	--	--	--
	3,750	4,476	\$4,102	--	--	\$1,233	--	--	--	--
40 - 44	22	8	7	6	--	--	1	--	--	--
	3,525	3,144	3,238	4,734	--	--	1,342	--	--	--
45 - 49	55	20	14	16	5	--	--	--	--	--
	4,138	4,312	3,773	4,403	\$3,620	--	--	--	--	--
50 - 54	254	162	50	18	15	6	3	--	--	--
	6,045	6,168	7,472	4,185	4,129	3,683	1,122	--	--	--
55 - 59	325	55	214	24	21	6	5	--	--	--
	7,002	6,229	7,946	4,000	4,480	4,299	3,356	--	--	--
60 - 64	330	20	122	134	26	12	8	6	1	1
	7,717	4,412	8,812	8,724	4,390	3,439	3,285	\$4,268	2,878	\$4,012
65 - 69	343	13	56	159	54	33	14	11	3	--
	7,283	4,009	8,138	9,204	5,609	3,668	3,816	3,445	3,829	--
70 - 74	356	6	17	84	149	39	19	26	13	3
	6,671	3,813	5,803	7,776	8,051	4,682	4,421	2,914	3,678	3,454
75 - 80	223	1	9	16	68	66	30	17	7	9
	6,531	1,376	2,920	5,027	8,281	7,542	5,552	3,347	3,994	4,000
80 - 84	116	--	2	--	7	30	45	17	12	3
	5,875	--	4,175	--	6,413	6,219	6,632	4,823	4,131	3,902
85 - 89	80	--	--	--	2	5	12	26	22	13
	4,867	--	--	--	5,188	5,936	5,162	5,262	4,506	3,955
90 & over	36	--	--	--	--	--	--	7	11	18
	5,454	--	--	--	--	--	--	6,429	6,889	4,198
Total	2,160	292	495	461	347	199	139	110	70	47
	\$6,629	\$5,640	\$7,737	\$7,899	\$6,943	\$5,574	\$5,144	\$4,182	\$4,553	\$4,023

Note: Includes members from terminated employers.

Note: Total retired benefit \$14,319,373, average age 66.2 and average years retired 15.2.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT D

Reconciliation of Member Data – December 31, 2016 to December 31, 2017

	Active Participants	Vested Terminated Members	Pensioners	Disableds	Beneficiaries	Total
Number as of December 31, 2016	9,848	3,089	6,825	905	1,370	22,037
New participants	977	67	0	0	83	1,127
Terminations – with vested rights	-396	396	0	0	0	0
Contribution refunds	-177	-124	0	0	0	-301
Retirements	-241	-54	295	0	0	0
New disabilities	-13	0	-5	18	0	0
Return to work	47	-43	-4	0	0	0
Died with or without beneficiary	-6	-1	-141	-25	-52	-225
Data adjustments	<u>-1</u>	<u>-3</u>	<u>3</u>	<u>-2</u>	<u>-3</u>	<u>-6</u>
Number as of December 31, 2017	10,038	3,327	6,973	896	1,398	22,632

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT E

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2017	Year Ended December 31, 2016
Contribution income:		
Employer contributions ⁽¹⁾	\$314,836,561	\$307,457,143
Employee contributions ⁽¹⁾	96,466,906	89,240,172
Administrative expenses	<u>(9,146,115)</u>	<u>(8,486,463)</u>
Net contribution income	\$402,157,352	\$388,210,852
Investment income:		
Interest, dividends and other income	\$216,736,117	\$163,255,934
Adjustment toward market value ⁽²⁾	434,648,740	385,424,070
Less investment expenses	<u>(42,864,983)</u>	<u>(46,327,831)</u>
Net investment income	<u>608,519,874</u>	<u>502,352,173</u>
Total income available for benefits	\$1,010,677,226	\$890,563,025
Less benefit payments:		
Benefits paid	\$(429,574,195)	\$(411,779,400)
Refunds of contributions	(5,980,405)	(7,448,304)
Adjustments/transfers/other expenses	<u>(1,957,188)</u>	<u>(920,314)</u>
Net benefit payments	\$(437,511,788)	\$(420,148,018)
Change in reserve for future benefits	\$573,165,438	\$470,415,007

⁽¹⁾ For the year ended December 31, 2017, employer contributions include "member subvention of employer contributions" and exclude "employer subvention of member contributions".

⁽²⁾ Equals the "non-cash" earnings on investments implicitly included in the Actuarial Value of Assets.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

**EXHIBIT F
Summary Statement of Assets**

	Year Ended December 31, 2017	Year Ended December 31, 2016
Cash equivalents	\$690,793,803	\$644,324,488
Other Assets	516,754	266,092
Accounts receivable:		
Investment trades	\$22,462,322	\$232,983,556
Investment income	20,293,645	18,879,074
Employee and employer contributions	9,805,486	8,834,817
Additional contributions ⁽¹⁾	<u>14,367,397</u>	<u>15,965,773</u>
Total accounts receivable	66,928,850	276,663,220
Investments:		
Stocks	\$3,899,074,060	\$2,948,533,927
Bonds	2,385,460,866	2,563,716,770
Real estate	652,385,617	701,599,169
Alternative investments and real assets	<u>1,216,666,285</u>	<u>977,913,714</u>
Total investments at market value	<u>8,153,586,828</u>	<u>7,191,763,580</u>
Total assets	<u>\$8,911,826,235</u>	<u>\$8,113,017,380</u>
Less accounts payable:		
Investment trades	\$(25,352,546)	\$(302,095,514)
Security lending	(294,005,415)	(204,196,090)
Employer contributions unearned	(155,492,320)	(149,089,010)
Other	<u>(46,394,905)</u>	<u>(19,117,262)</u>
Total accounts payable	\$(521,245,186)	\$(674,497,876)
Net assets at market value	<u>\$8,390,581,049</u>	<u>\$7,438,519,504</u>
Net assets at actuarial value	<u>\$8,195,516,541</u>	<u>\$7,622,351,103</u>
Net assets at valuation value	<u>\$8,179,891,191</u>	<u>\$7,606,997,530</u>

⁽¹⁾ Equals the sum of additional contribution receivables for the final Paulson Settlement.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT G

Actuarial Balance Sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, we first determine the amount and timing of all future payments that are projected/anticipated to be made by the Plan for current participants. We then discount these payments at the valuation interest rate to the date of the valuation, thereby determining their present value. We refer to this present value as the "liability" of the Plan.

Second, we determine how this liability will be met. These actuarial "assets" include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments.

Assets⁽¹⁾	Basic	COLA	Total
1. Total valuation value of assets	\$5,051,054,664	\$3,128,836,527	\$8,179,891,191
2. Present value of future contributions by members	528,135,237	229,557,863	757,693,100
3. Present value of future employer contributions for:			
(a) entry age normal cost	735,945,571	218,878,311	954,823,882
(b) unfunded actuarial accrued liability	763,637,018	295,718,711	1,059,355,729
4. Total actuarial assets	<u>\$7,078,772,490</u>	<u>\$3,872,991,412</u>	<u>\$10,951,763,902</u>
Liabilities⁽¹⁾			
5. Present value of benefits for retirees and beneficiaries	\$3,363,692,416	\$2,509,325,115	\$5,873,017,531
6. Present value of benefits for vested terminated members ⁽²⁾	218,940,106	76,751,231	295,691,337
7. Present value of benefits for active members	3,496,139,968	1,286,915,066	4,783,055,034
8. Total present value of benefits	<u>\$7,078,772,490</u>	<u>\$3,872,991,412</u>	<u>\$10,951,763,902</u>

⁽¹⁾ *Assets and liabilities exclude administrative expenses.*

⁽²⁾ *Includes nonvested terminated members.*

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT H

Summary of Total Allocated Reserves

Reserves	December 31, 2017	December 31, 2016
Member Deposits ⁽¹⁾	\$795,727,498	\$729,442,554
Member Cost of Living ⁽¹⁾	420,388,707	387,381,328
Employer Advance ⁽¹⁾⁽²⁾	2,063,002,259	1,834,547,821
Employer Cost of Living ⁽¹⁾⁽²⁾	928,964,628	824,863,184
Retired Members ⁽¹⁾⁽²⁾	3,363,343,722	3,292,924,578
Retired Cost of Living ⁽¹⁾⁽²⁾	2,444,582,495	2,333,427,992
Dollar Power Cost of Living Supplement Pre-Funding ⁽¹⁾	3,946,603	5,348,040
Post Retirement Death Benefit ⁽³⁾	15,625,350	15,353,573
Statutory Contingency (one percent) ⁽³⁾	0	0
Additional One Percent Contingency Designation ⁽³⁾	0	0
Contra Tracking Account ⁽¹⁾	(1,840,064,721)	(1,800,937,967)
Total Allocated Reserves	8,195,516,541	7,622,351,103
Total Deferred Return	195,064,508	(183,831,599)
Net Market Value	\$8,390,581,049	\$7,438,519,504

Note: Results may not add due to rounding.

⁽¹⁾ *Included in valuation value of assets.*

⁽²⁾ *Both December 31, 2017 and December 31, 2016 information reflect a "true-up" of retired reserves.*

⁽³⁾ *Not included in valuation value of assets.*

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT I

Development of Unfunded Actuarial Accrued Liability

	Year Ended December 31, 2017
1. Unfunded actuarial accrued liability at beginning of year	\$1,187,436,609
2. Total Normal Cost at middle of year ⁽¹⁾	220,685,740
3. Expected administrative expenses	8,785,414
4. Expected employer and member contributions	(394,614,328)
5. Interest (whole year on (1) plus half year on (2) + (3) + (4))	<u>77,643,016</u>
6. Expected unfunded actuarial accrued liability at end of year	\$1,099,936,451
7. Actuarial (gain)/loss due to all changes:	
(a) Investment return more than expected	\$(76,209,273)
(b) Actual contributions greater than expected due to delay in implementation of rates	(17,598,527)
(c) Gain from additional UAAL contributions	(334,623)
(d) Higher than expected individual salary increases	59,574,068
(e) Higher than expected COLA increases for retirees and beneficiaries	19,930,011
(f) Mortality loss on retirees and beneficiaries (fewer deaths than expected)	8,816,238
(g) Retirement experience gain on actives (later retirements than expected)	(25,633,003)
(h) Other experience gain ⁽²⁾	<u>(9,125,613)</u>
(i) Total changes	<u>\$(40,580,722)</u>
8. Unfunded actuarial accrued liability at end of year	\$1,059,355,729

Note: The "net loss from other experience" of \$53,561,701 shown in Section 2, Chart 10 is equal to the sum of items 7(d) through 7(h).

⁽¹⁾ *Excludes administrative expense load.*

⁽²⁾ *Other differences in actual versus expected experience including (but not limited to) disability, withdrawal and leave cashout experience.*

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Groups #1 and #2	December 31, 2007	Restart of Amortization	\$785,069,153	\$451,570,768	5	\$100,481,011
General County and	December 31, 2008	Actuarial Loss	80,033,199	65,014,920	9	8,605,931
Small Districts	December 31, 2009	Actuarial Loss	165,041,323	140,650,587	10	17,040,368
	December 31, 2009	Assumption Change ⁽²⁾	39,563,826	33,716,861	10	4,084,929
	December 31, 2009	Depooling Implementation	(74,701,913)	(63,662,043)	10	(7,712,905)
	December 31, 2010	Actuarial Loss	153,070,543	135,519,666	11	15,177,890
	December 31, 2011	Actuarial Loss	94,750,078	86,434,514	12	9,022,488
	December 31, 2012	Actuarial Loss	117,029,116	109,247,412	13	10,701,907
	December 31, 2012	Assumption Change ⁽²⁾	288,802,882	269,599,297	13	26,410,022
	December 31, 2013	Actuarial Gain	(134,810,112)	(128,453,911)	14	(11,877,911)
	December 31, 2013	Assumption Change ⁽³⁾	(107,553,289)	(102,482,228)	14	(9,476,355)
	December 31, 2014	Actuarial Gain	(171,898,812)	(166,348,135)	15	(14,592,489)
	December 31, 2015	Actuarial Gain	(105,003,533)	(102,746,884)	16	(8,587,918)
	December 31, 2015	Assumption Change ⁽²⁾	39,814,884	38,959,215	16	3,256,338
	December 31, 2016	Actuarial Gain	(28,579,026)	(28,317,823)	17	(2,263,817)
	December 31, 2017	Actuarial Gain	(17,937,638)	<u>(17,937,638)</u>	18	<u>(1,376,161)</u>
Total for Cost Groups #1 and #2				\$720,764,577		\$138,893,328

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #3	December 31, 2007	Restart of Amortization	\$36,185,000	\$20,813,566	5	\$4,631,319
Central Contra Costa	December 31, 2008	Actuarial Loss	3,709,835	3,013,682	9	398,917
Sanitary District	December 31, 2009	Actuarial Loss	10,118,261	8,622,927	10	1,044,701
	December 31, 2009	Assumption Change ⁽²⁾	2,003,000	1,706,985	10	206,808
	December 31, 2009	Depooling Implementation	20,037,235	17,076,020	10	2,068,826
	December 31, 2010	Actuarial Loss	18,178,489	16,094,167	11	1,802,510
	December 31, 2010	Assumption Change ⁽³⁾	11,479,648	10,163,406	11	1,138,278
	December 31, 2011	Actuarial Loss	10,514,535	9,591,747	12	1,001,237
	December 31, 2012	Actuarial Loss	12,564,241	11,728,798	13	1,148,956
	December 31, 2012	Assumption Change ⁽²⁾	22,455,342	20,962,202	13	2,053,463
	December 31, 2012	UAAL Prepayment	(4,666,477)	(4,356,185)	13	(426,733)
	December 31, 2013	Actuarial Loss	582,962	555,476	14	51,364
	December 31, 2013	Assumption Change ⁽³⁾	(14,950,866)	(14,245,943)	14	(1,317,298)
	December 31, 2013	UAAL Prepayment	(4,662,899)	(4,443,047)	14	(410,841)
	December 31, 2014	Actuarial Gain	(11,848,823)	(11,466,221)	15	(1,005,846)
	December 31, 2014	UAAL Prepayment	(2,331,896)	(2,256,598)	15	(197,955)
	December 31, 2015	Actuarial Gain	(6,504,510)	(6,364,720)	16	(531,984)
	December 31, 2015	Assumption Change ⁽²⁾	44,220	43,270	16	3,617
	December 31, 2016	Actuarial Gain	(1,522,932)	(1,509,013)	17	(120,635)
	December 31, 2017	Actuarial Gain	(1,621,926)	<u>(1,621,926)</u>	18	<u>(124,433)</u>
Total for Cost Group #3				\$74,108,590		\$11,414,271

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #4	December 31, 2007	Restart of Amortization	\$7,770,000	\$4,469,294	5	\$994,482
Contra Costa Housing Authority	December 31, 2008	Actuarial Loss	1,573,513	1,278,242	9	169,199
	December 31, 2009	Actuarial Loss	1,277,079	1,088,345	10	131,857
	December 31, 2009	Assumption Change ⁽²⁾	425,000	362,191	10	43,881
	December 31, 2009	Depooling Implementation	(189,275)	(161,303)	10	(19,542)
	December 31, 2010	Actuarial Loss	619,697	548,643	11	61,447
	December 31, 2010	Assumption Change ⁽³⁾	(920,656)	(815,095)	11	(91,289)
	December 31, 2011	Actuarial Loss	1,059,328	966,358	12	100,874
	December 31, 2012	Actuarial Loss	1,912,999	1,785,796	13	174,937
	December 31, 2012	Assumption Change ⁽²⁾	3,722,862	3,475,315	13	340,443
	December 31, 2013	Actuarial Gain	(2,220,704)	(2,115,999)	14	(195,663)
	December 31, 2013	Assumption Change ⁽³⁾	(1,077,289)	(1,026,496)	14	(94,918)
	December 31, 2014	Actuarial Gain	(1,360,021)	(1,316,105)	15	(115,452)
	December 31, 2015	Actuarial Gain	(875,294)	(856,483)	16	(71,588)
	December 31, 2015	Assumption Change ⁽²⁾	432,801	423,500	16	35,397
	December 31, 2016	Actuarial Gain	(297,092)	(294,376)	17	(23,533)
	December 31, 2017	Actuarial Loss	53,895	<u>53,895</u>	18	<u>4,135</u>
Total for Cost Group #4				\$7,865,723		\$1,444,667

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #5	December 31, 2007	Restart of Amortization	\$(1,011,000)	\$(581,526)	5	\$(129,398)
Contra Costa County Fire Protection District	December 31, 2008	Actuarial Loss	45,963	37,338	9	4,942
	December 31, 2009	Actuarial Loss	1,614,180	1,375,627	10	166,663
	December 31, 2009	Assumption Change ⁽²⁾	336,000	286,344	10	34,692
	December 31, 2009	Depooling Implementation	2,142,538	1,825,902	10	221,215
	December 31, 2010	Actuarial Loss	2,722,306	2,410,170	11	269,933
	December 31, 2011	Actuarial Loss	1,350,620	1,232,085	12	128,612
	December 31, 2012	Actuarial Loss	1,787,426	1,668,573	13	163,454
	December 31, 2012	Assumption Change ⁽²⁾	3,184,172	2,972,444	13	291,181
	December 31, 2013	Actuarial Gain	(2,500,665)	(2,382,761)	14	(220,330)
	December 31, 2013	Assumption Change ⁽³⁾	(985,653)	(939,180)	14	(86,844)
	December 31, 2014	Actuarial Gain	(2,215,758)	(2,144,210)	15	(188,096)
	December 31, 2015	Actuarial Gain	(756,551)	(740,292)	16	(61,876)
	December 31, 2015	Assumption Change ⁽²⁾	355,946	348,296	16	29,112
	December 31, 2016	Actuarial Loss	1,591,375	1,576,830	17	126,057
	December 31, 2017	Actuarial Loss	1,476,313	<u>1,476,313</u>	18	<u>113,262</u>
Total for Cost Group #5				\$8,421,955		\$862,579

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #6						
Small Districts (General Non-enhanced)						
	December 31, 2017	Actuarial Surplus	\$(111,682)	<u>\$(111,682)</u>	N/A	<u>\$0⁽⁶⁾</u>
Total for Cost Group #6				\$(111,682)		\$0

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Groups #7 and #9	December 31, 2007	Restart of Amortization	\$127,662,439	\$73,431,271	5	\$16,339,517
County Safety	December 31, 2008	Actuarial Loss	25,619,265	20,811,794	9	2,754,827
	December 31, 2009	Actuarial Loss	55,134,940	46,986,788	10	5,692,633
	December 31, 2009	Assumption Change ⁽²⁾	11,076,665	9,439,693	10	1,143,656
	December 31, 2009	Depooling Implementation	23,852,078	20,327,083	10	2,462,706
	December 31, 2010	Actuarial Loss	57,287,975	50,719,408	11	5,680,457
	December 31, 2011	Actuarial Loss	45,209,350	41,241,636	12	4,305,018
	December 31, 2012	Actuarial Loss	53,258,503	49,717,146	13	4,870,305
	December 31, 2012	Assumption Change ⁽²⁾	138,353,562	129,153,916	13	12,651,954
	December 31, 2013	Actuarial Gain	(35,024,912)	(33,373,513)	14	(3,085,991)
	December 31, 2013	Assumption Change ⁽³⁾	(43,771,706)	(41,707,901)	14	(3,856,658)
	December 31, 2014	Actuarial Gain	(61,815,393)	(59,819,350)	15	(5,247,509)
	December 31, 2014	Assumption Change ⁽⁴⁾	(51,701)	(50,031)	15	(4,389)
	December 31, 2015	Actuarial Gain	(58,489,966)	(57,232,948)	16	(4,783,715)
	December 31, 2015	Assumption Change ⁽²⁾	39,291,409	38,446,990	16	3,213,524
	December 31, 2016	Actuarial Gain	(13,557,811)	(13,433,897)	17	(1,073,949)
	December 31, 2017	Actuarial Gain	(8,178,240)	<u>(8,178,240)</u>	18	<u>(627,428)</u>
Total for Cost Groups #7 and #9				\$266,479,844		\$40,434,958

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #8	December 31, 2007	Restart of Amortization	\$124,138,710	\$71,404,427	5	\$15,888,515
Contra Costa and East Fire	December 31, 2008	Actuarial Loss	6,780,436	5,508,083	9	729,097
Protection Districts	December 31, 2009	Actuarial Loss	27,018,706	23,025,730	10	2,789,657
	December 31, 2009	Assumption Change ⁽²⁾	4,945,000	4,214,200	10	510,567
	December 31, 2009	Depooling Implementation	47,818,666	40,751,754	10	4,937,234
	December 31, 2010	Actuarial Loss	38,165,445	33,789,443	11	3,784,340
	December 31, 2010	Assumption Change ⁽³⁾	(1,599,051)	(1,415,706)	11	(158,556)
	December 31, 2011	Actuarial Loss	26,533,166	24,204,533	12	2,526,596
	December 31, 2012	Actuarial Loss	31,501,440	29,406,791	13	2,880,697
	December 31, 2012	Assumption Change ⁽²⁾	68,193,356	63,658,924	13	6,236,046
	December 31, 2013	Actuarial Gain	(22,661,640)	(21,593,160)	14	(1,996,682)
	December 31, 2013	Assumption Change ⁽³⁾	(17,910,676)	(17,066,200)	14	(1,578,082)
	December 31, 2014	Actuarial Gain	(29,217,962)	(28,274,503)	15	(2,480,312)
	December 31, 2015	Actuarial Gain	(19,005,510)	(18,597,059)	16	(1,554,403)
	December 31, 2015	Assumption Change ⁽²⁾	24,296,846	23,774,678	16	1,987,165
	December 31, 2016	Actuarial Gain	(8,297,685)	(8,221,847)	17	(657,281)
	December 31, 2017	Actuarial Gain	(10,658,502)	<u>(10,658,502)</u>	18	<u>(817,711)</u>
Total for Cost Group #8				\$213,911,585		\$33,026,887

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment ⁽¹⁾
Cost Group #10	December 31, 2007	Restart of Amortization	\$(2,591,000)	\$(1,490,340)	5	\$(331,622)
Moraga-Orinda	December 31, 2008	Actuarial Loss	2,002,150	1,626,446	9	215,290
Fire District	December 31, 2009	Actuarial Loss	5,671,684	4,833,491	10	585,596
	December 31, 2009	Assumption Change ⁽²⁾	1,012,000	862,441	10	104,488
	December 31, 2009	Depooling Implementation	4,873,631	4,153,378	10	503,198
	December 31, 2010	Actuarial Loss	5,334,964	4,723,264	11	528,995
	December 31, 2010	Assumption Change ⁽³⁾	806,018	713,601	11	79,922
	December 31, 2011	Actuarial Loss	6,791,005	6,195,005	12	646,667
	December 31, 2012	Actuarial Loss	8,924,598	8,331,168	13	816,124
	December 31, 2012	Assumption Change ⁽²⁾	12,149,892	11,342,000	13	1,111,065
	December 31, 2013	Actuarial Gain	(1,027,440)	(978,997)	14	(90,526)
	December 31, 2013	Assumption Change ⁽³⁾	(3,613,981)	(3,443,584)	14	(318,422)
	December 31, 2014	Actuarial Gain	(4,813,045)	(4,657,630)	15	(408,579)
	December 31, 2015	Actuarial Gain	(8,490,806)	(8,308,329)	16	(694,437)
	December 31, 2015	Assumption Change ⁽²⁾	3,844,347	3,761,727	16	314,417
	December 31, 2016	Actuarial Loss	1,028,690	1,019,288	17	81,485
	December 31, 2017	Actuarial Gain	(422,995)	<u>(422,995)</u>	18	<u>(32,452)</u>
Total for Cost Group #10				\$28,259,935		\$3,111,209

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #11	December 31, 2007	Restart of Amortization	\$58,766,000	\$33,802,128	5	\$7,521,461
San Ramon Valley	December 31, 2008	Actuarial Loss	10,216,694	8,299,526	9	1,098,596
Fire District	December 31, 2009	Actuarial Loss	9,262,105	7,893,299	10	956,304
	December 31, 2009	Assumption Change ⁽²⁾	2,453,000	2,090,482	10	253,270
	December 31, 2009	Depooling Implementation	(20,174,500)	(17,192,999)	10	(2,082,999)
	December 31, 2010	Actuarial Loss	6,585,812	5,830,691	11	653,024
	December 31, 2010	Assumption Change ⁽³⁾	5,093,420	4,509,415	11	505,044
	December 31, 2011	Actuarial Loss	5,513,071	5,029,227	12	524,977
	December 31, 2012	Actuarial Loss	14,600,741	13,629,883	13	1,335,187
	December 31, 2012	Assumption Change ⁽²⁾	26,672,143	24,898,612	13	2,439,075
	December 31, 2013	Actuarial Gain	(4,492,900)	(4,281,063)	14	(395,862)
	December 31, 2013	Assumption Change ⁽³⁾	(12,984,002)	(12,371,816)	14	(1,144,000)
	December 31, 2014	Actuarial Gain	(13,850,852)	(13,403,603)	15	(1,175,799)
	December 31, 2015	Actuarial Gain	(9,008,582)	(8,814,977)	16	(736,784)
	December 31, 2015	Assumption Change ⁽²⁾	5,533,144	5,414,230	16	452,539
	December 31, 2016	Actuarial Loss	2,020,042	2,001,580	17	160,013
	December 31, 2017	UAAL Prepayment	(303,806)	(303,806)	18	(23,308)
	December 31, 2017	Actuarial Gain	(1,837,378)	<u>(1,837,378)</u>	18	<u>(140,962)</u>
Total for Cost Group #11				\$55,193,431		\$10,199,776

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #12	December 31, 2007	Restart of Amortization	\$3,960,000	\$2,277,787	5	\$506,840
Rodeo-Hercules Fire	December 31, 2008	Actuarial Loss	957,150	777,540	9	102,922
Protection District	December 31, 2009	Actuarial Loss	2,872,360	2,447,867	10	296,569
	December 31, 2009	Assumption Change ⁽²⁾	1,154,000	983,455	10	119,149
	December 31, 2009	Depooling Implementation	(1,809,374)	(1,541,975)	10	(186,816)
	December 31, 2010	Actuarial Loss	1,502,503	1,330,228	11	148,982
	December 31, 2010	Assumption Change ⁽³⁾	662,085	586,171	11	65,650
	December 31, 2011	Actuarial Loss	2,067,217	1,885,792	12	196,849
	December 31, 2012	Actuarial Loss	2,246,131	2,096,777	13	205,401
	December 31, 2012	Assumption Change ⁽²⁾	3,018,796	2,818,065	13	276,058
	December 31, 2013	Actuarial Loss	413,088	393,611	14	36,397
	December 31, 2013	Assumption Change ⁽³⁾	(1,169,821)	(1,114,665)	14	(103,071)
	December 31, 2014	Actuarial Loss	315,937	305,735	15	26,820
	December 31, 2015	Actuarial Gain	(990,379)	(969,095)	16	(81,000)
	December 31, 2015	Assumption Change ⁽²⁾	775,874	759,200	16	63,456
	December 31, 2016	Actuarial Gain	(270,731)	(268,257)	17	(21,445)
	December 31, 2017	Actuarial Gain	(836,969)	<u>(836,969)</u>	18	<u>(64,212)</u>
Total for Cost Group #12				\$11,931,268		\$1,588,549

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Special Adjustments⁽⁵⁾	December 31, 2007	County General POBs	\$(453,973,319)	\$(261,123,984)	5	\$(58,103,854)
	December 31, 2007	Moraga General POBs	(701,412)	(403,450)	5	(89,773)
	December 31, 2007	CCCFPD Safety POBs	(127,509,711)	(73,343,174)	5	(16,319,914)
	December 31, 2011	First Five UAAL Prepayment	(1,794,205)	(986,428)	5	(233,191)
	December 31, 2017	LAFCO UAAL Prepayment	(30,817)	<u>(30,817)</u>	18	<u>(2,364)</u>
Total for Special Adjustments				\$(335,887,854)		\$(74,749,096)
Terminated Employers⁽⁷⁾				\$8,418,356		

Note: Results may not add due to rounding.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
All Cost Groups Combined	December 31, 2007	Restart of Amortization	\$1,139,949,302	\$655,697,374	5	\$145,902,125
	December 31, 2007	County General POBs ⁽⁵⁾	(453,973,319)	(261,123,984)	5	(58,103,854)
	December 31, 2007	Moraga General POBs ⁽⁵⁾	(701,412)	(403,450)	5	(89,773)
	December 31, 2007	CCCFPD Safety POBs ⁽⁵⁾	(127,509,711)	(73,343,174)	5	(16,319,914)
	December 31, 2008	Actuarial Loss	130,938,206	106,367,571	9	14,079,721
	December 31, 2009	Actuarial Loss	278,010,637	236,924,660	10	28,704,348
	December 31, 2009	Assumption Change ⁽²⁾	62,968,491	53,662,653	10	6,501,440
	December 31, 2009	Depooling Implementation	1,849,086	1,575,817	10	190,917
	December 31, 2010	Actuarial Loss	283,467,735	250,965,679	11	28,107,578
	December 31, 2010	Assumption Change ⁽³⁾	15,521,464	13,741,792	11	1,539,049
	December 31, 2011	Actuarial Loss	193,788,371	176,780,896	12	18,453,318
	December 31, 2011	First Five UAAL Prepayment ⁽⁵⁾	(1,794,205)	(986,428)	5	(233,191)
	December 31, 2012	Actuarial Loss	243,825,195	227,612,345	13	22,296,968
	December 31, 2012	Assumption Change ⁽²⁾	566,553,007	528,880,776	13	51,809,307
	December 31, 2012	Sanitary UAAL Prepayment	(4,666,477)	(4,356,185)	13	(426,733)
	December 31, 2013	Actuarial Gain	(201,742,323)	(192,230,317)	14	(17,775,204)
	December 31, 2013	Assumption Change ⁽³⁾	(204,017,283)	(194,398,013)	14	(17,975,648)
	December 31, 2013	Sanitary UAAL Prepayment	(4,662,899)	(4,443,047)	14	(410,841)
	December 31, 2014	Actuarial Gain	(296,704,729)	(287,124,022)	15	(25,187,262)
	December 31, 2014	Assumption Change ⁽⁴⁾	(51,701)	(50,031)	15	(4,389)
	December 31, 2014	Sanitary UAAL Prepayment	(2,331,896)	(2,256,598)	15	(197,955)

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment ⁽¹⁾
All Cost Groups Combined	December 31, 2015	Actuarial Gain	\$(209,125,132)	\$(204,630,787)	16	\$(17,103,705)
(continued)	December 31, 2015	Assumption Change ⁽²⁾	114,389,471	111,931,107	16	9,355,565
	December 31, 2016	Actuarial Gain	(47,885,171)	(47,447,516)	17	(3,793,105)
	December 31, 2017	San Ramon UAAL Prepayment	(303,806)	(303,806)	18	(23,308)
	December 31, 2017	LAFCO UAAL Prepayment ⁽⁵⁾	(30,817)	(30,817)	18	(2,364)
	December 31, 2017	Actuarial Gain	(39,963,440)	(39,963,440)	18	(3,065,962)
	December 31, 2017	CG #6 Actuarial Surplus	(111,682)	<u>(111,682)</u>	N/A	<u>0</u> ⁽⁶⁾
Total for All Cost Groups				\$1,050,937,373		\$166,227,128
Terminated Employers⁽⁷⁾				<u>8,418,356</u>		
Total CCCERA				\$1,059,355,729		

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT J (continued)

Table of Amortization Bases

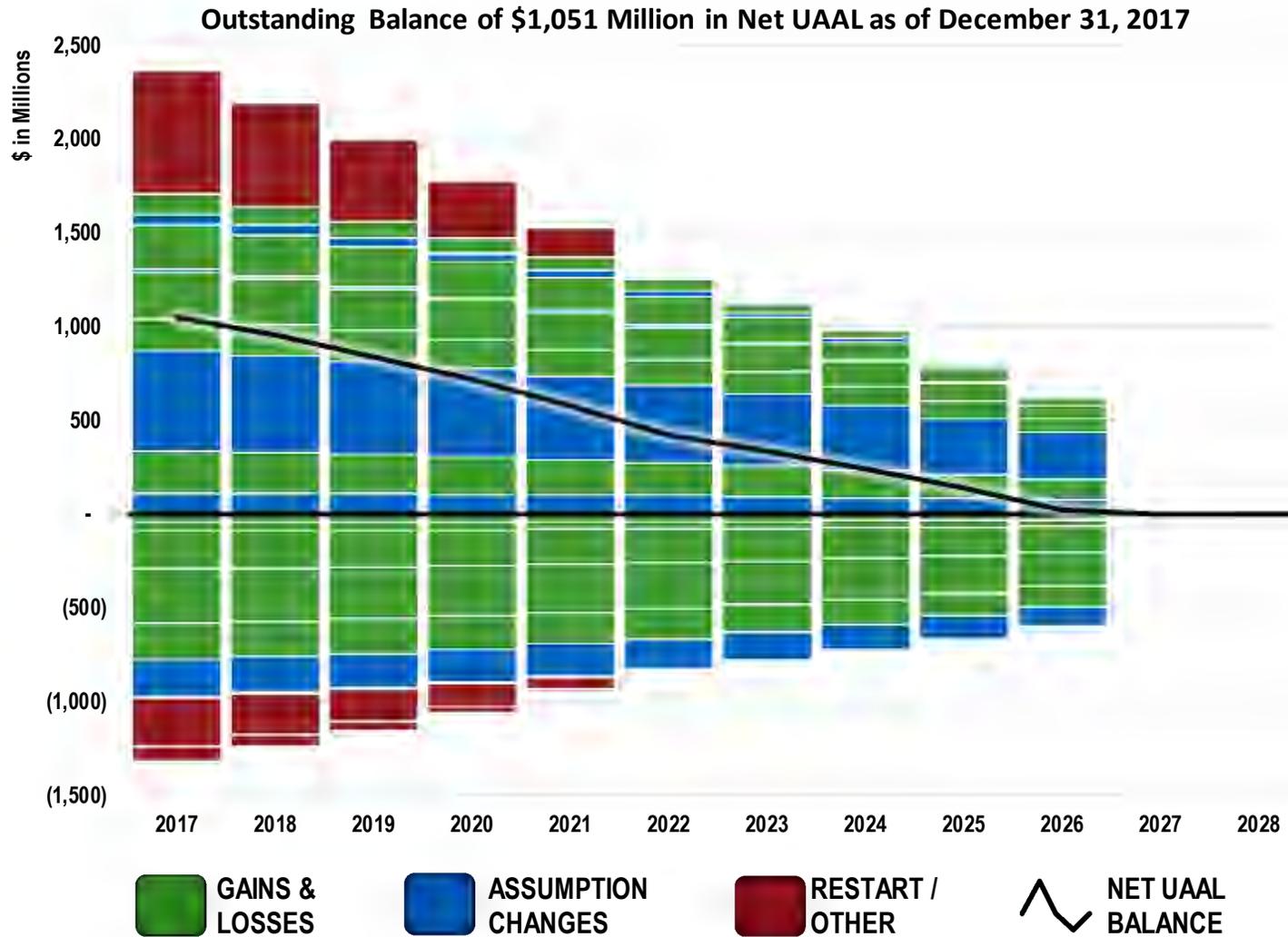
Note: Results may not add due to rounding.

- (1) As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.*
- (2) Changes in actuarial assumptions and methods from actuarial experience study.*
- (3) The Board approved changes in actuarial assumptions. Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.*
- (4) The Board approved changes in actuarial assumptions. Effective with the December 31, 2014 valuation, leave cashout (terminal pay) assumptions were eliminated for Cost Group #9.*
- (5) Includes remaining balance of POBs and any other special contributions made by the County (including Courts), First 5 – Children & Families Commission, Local Agency Formation Commission, or Moraga-Orinda Fire District that have been allocated to the County General cost groups or for Contra Costa Fire Protection District that have been allocated to their Safety cost group.*
- (6) Consistent with CCCERA's Actuarial Funding Policy, all prior UAAL layers are considered fully amortized due to surplus.*
- (7) Starting with the December 31, 2016 valuation, the three terminated employers (i.e., Diablo Water District, Delta Diablo Sanitation District and City of Pittsburg) have been moved from Cost Groups #1, #2 and #7 to their own Terminated Employers Cost Group.*

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT K

Projection of UAAL Outstanding Balances and Payments (Excludes Terminated Employers)

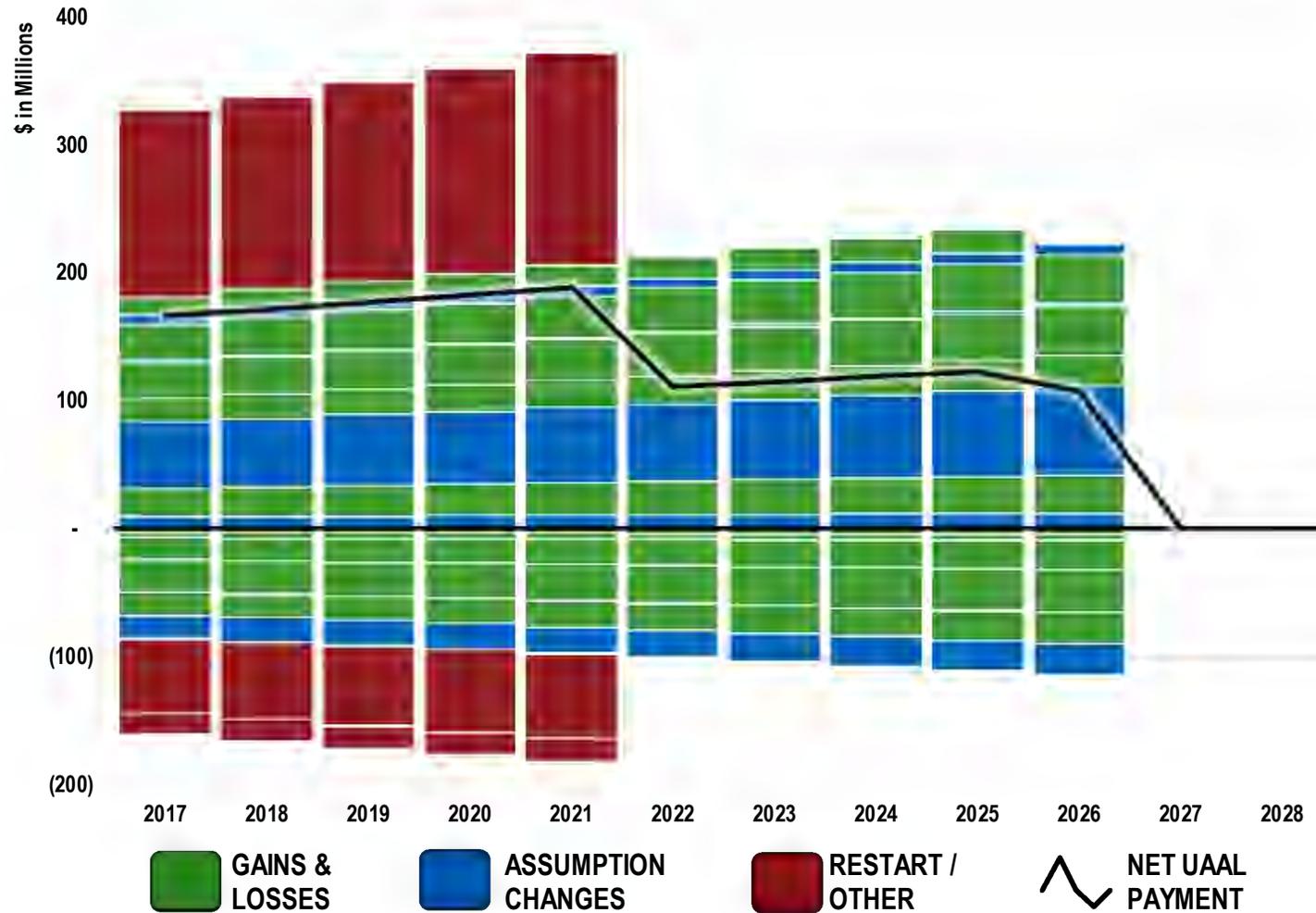


SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT K (continued)

Projection of UAAL Outstanding Balances and Payments (Excludes Terminated Employers)

Annual Payments Required to Amortize \$1,051 Million in Net UAAL as of December 31, 2017



SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT L

Section 415 Limitations

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of \$160,000 indexed for inflation. That limit is \$220,000 for 2018. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must generally be adjusted based on each participant's circumstances, for such things as age at

retirement, form of benefits chosen and after tax contributions. Limits are also affected by the "grandfather" election under Section 415(b)(10).

For non-PEPRA members, benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

Contribution rates determined in this valuation have not been reduced for the Section 415 limitations. However, it is anticipated that PEPRA members will not be limited in the future due to the PEPRA compensation limit applied in the determination of their benefit. Actual limitations will result in actuarial gains as they occur.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

EXHIBIT M

Definitions of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial Assumptions:

The estimates on which the cost of the Plan is calculated including:

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age; and
- (d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost:

The amount of contributions required to fund the level cost allocated to the current year of service.

Actuarial Accrued Liability For Actives:

The equivalent of the accumulated normal costs allocated to the years before the valuation date.

Actuarial Accrued Liability For Pensioners:

The single sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and of the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded Actuarial Accrued Liability:

The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan.

Amortization of the Unfunded Actuarial Accrued Liability:

Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.

SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

Investment Return:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the market gains and losses to avoid significant swings in the value of assets from one year to the next.
Payroll or Compensation:	Payroll for pension purposes expected to be paid to active members during the twelve months following the valuation date. Only pay that would possibly go into the determination of retirement benefits is included.
Asset Volatility Ratio:	Equal to the market value of assets divided by total projected payroll. This provides an indication of the potential contribution volatility for any given level of investment volatility.
Liability Volatility Ratio:	Equal to the Actuarial Accrued Liability divided by total projected payroll. This provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. It also indicates how volatile contributions will be in response to changes in the Actuarial Accrued Liability due to actual experience or to changes in actuarial assumptions.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:

1. Retired members as of the valuation date (including 1,398 beneficiaries in pay status)	9,267
2. Members inactive during year ended December 31, 2017 with vested rights	3,327
3. Members active during the year ended December 31, 2017	10,038

The actuarial factors as of the valuation date are as follows (amounts in 000s):

1. Normal cost ⁽¹⁾	\$246,099
2. Present value of future benefits	10,951,764
3. Present value of future normal costs	1,712,517
4. Actuarial accrued liability ⁽²⁾	9,239,247
Retired members and beneficiaries	\$5,873,018
Inactive members with vested rights	295,691
Active members	3,070,538
5. Valuation value of assets ⁽³⁾ (\$8,390,581 at market value as reported by CCCERA)	8,179,891
6. Unfunded actuarial accrued liability	\$1,059,356

⁽¹⁾ *Includes administrative expense load*

⁽²⁾ *Excludes liabilities for non-valuation reserves*

⁽³⁾ *Excludes assets for non-valuation reserves*

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

The determination of the recommended average employer contribution is as follows
(amounts in 000s):

	Dollar Amount	% of Payroll
1. Total normal cost	\$246,099	28.59%
2. Expected employee contributions	<u>(103,551)</u>	<u>(12.03%)</u>
3. Employer normal cost: (1) + (2)	\$142,548	16.56%
4. Amortization of unfunded actuarial accrued liability	<u>167,891</u>	<u>19.51%</u>
5. Total recommended average employer contribution: (3) + (4)	\$310,439	36.07%
6. Projected payroll	\$860,625	

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

EXHIBIT II

Actuarial Assumptions and Methods

Rationale for Assumptions:

The information and analysis used in selecting each demographic (non-economic) assumption that has a significant effect on this actuarial valuation is shown in the January 1, 2012 through December 31, 2014 Actuarial Experience Study dated June 1, 2016. The information and analysis used in selecting each economic assumption is shown in our Review of Economic Actuarial Assumptions dated April 19, 2016. Unless otherwise noted, all actuarial assumptions and methods shown below apply to both PEPRA and Non-PEPRA members.

Economic Assumptions

Net Investment Return:

7.00%, net of investment expenses

Administrative Expenses:

1.13% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member. This assumption changes each year based on the actual administrative expenses as a percent of actual compensation during the calendar year leading up to the valuation date.

Employee Contribution Crediting Rate:

7.00%, compounded semi-annually

Consumer Price Index:

Increase of 2.75% per year; retiree COLA increases due to CPI subject to a 3.00% maximum change per year (valued as a 2.75% increase) except for Tier 3 and PEPRA Tier 5 disability benefits and Tier 2 benefits which are subject to a 4.00% maximum change per year (valued as a 2.75% increase). Safety Tier C benefits, Safety PEPRA Tier E benefits and benefits for PEPRA Tier 4 and Tier 5 members covered under certain memoranda of understanding are subject to a 2.00% maximum change per year. For members that have COLA banks, they are reflected in projected future COLAs.

The actual COLA granted by CCCERA on April 1, 2018 has been reflected for nonactive members in the December 31, 2017 valuation.

Payroll Growth:

Inflation of 2.75% per year plus "across the board" real salary increases of 0.50% per year.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Increase in Internal Revenue

Code Section 401(a)(17)

Compensation Limit:

Increase of 2.75% per year from the valuation date.

Increase in Section 7522.10

Compensation Limit:

Increase of 2.75% per year from the valuation date.

Individual Salary Increases:

Annual Rate of Compensation Increase

Inflation: 2.75% per year, plus “across the board” salary increases of 0.50% per year, plus the following merit and promotional increases:

Years of Service	General	Safety
Less than 1	10.00%	10.50%
1	7.25	7.25
2	5.25	5.75
3	3.75	4.50
4	2.75	3.00
5	2.25	1.75
6	1.75	1.25
7	1.50	1.20
8	1.25	1.15
9	1.20	1.10
10	1.15	1.05
11	1.10	1.00
12	1.00	0.95
13	0.90	0.85
14	0.80	0.80
15	0.75	0.75
16	0.75	0.75
17	0.75	0.75
18	0.75	0.75
19	0.75	0.75
20 or more	0.75	0.75

The average total assumed salary increase for active members in the December 31, 2017 actuarial valuation is 5.4%.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Demographic Assumptions

Post – Retirement Mortality Rates:

Healthy: For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected generationally with the two-dimensional MP-2015 projection scale.
For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set back three years, projected generationally with the two-dimensional MP-2015 projection scale.

Disabled: For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set forward eight years, projected generationally with the two-dimensional MP-2015 projection scale.
For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set forward three years, projected generationally with the two-dimensional MP-2015 projection scale.

Beneficiaries: Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who has taken a service (non-disability) retirement.

The RP-2014 mortality tables and adjustments as shown above reflect the mortality experience as of the measurement date. The generational projection is a provision for future mortality improvement.

Member Contribution Rates: For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.
For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

Pre – Retirement Mortality Rates: Headcount-Weighted RP-2014 Employee Mortality Table times 75%, projected generationally with the two-dimensional MP-2015 projection scale.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Termination Rates Before Retirement:

Age	Rate (%)	
	Mortality⁽¹⁾	
	Male	Female
25	0.05	0.02
30	0.05	0.02
35	0.05	0.03
40	0.06	0.04
45	0.09	0.06
50	0.16	0.10
55	0.26	0.16
60	0.42	0.23
65	0.73	0.33

⁽¹⁾ All pre-retirement deaths are assumed to be non-service connected. Note that generational projections beyond the base year (2014) are not reflected in the above mortality rates.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Termination Rates Before Retirement (continued):

Age	Rate (%) Disability		
	General Tier 1 and Tier 4 ⁽¹⁾	General Tier 3 and Tier 5 ⁽²⁾	Safety ⁽³⁾
20	0.01	0.01	0.02
25	0.02	0.02	0.22
30	0.04	0.03	0.42
35	0.08	0.05	0.56
40	0.22	0.08	0.66
45	0.36	0.13	1.00
50	0.52	0.16	2.88
55	0.60	0.20	4.60
60	0.60	0.28	5.00
65	0.60	0.32	5.00
70	0.60	0.32	5.00

⁽¹⁾ 65% of General Tier 1 and Tier 4 disabilities are assumed to be duty disabilities. The other 35% are assumed to be ordinary disabilities.

⁽²⁾ 30% of General Tier 3 and Tier 5 disabilities are assumed to be duty disabilities. The other 70% are assumed to be ordinary disabilities.

⁽³⁾ 100% of Safety disabilities are assumed to be duty disabilities.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Termination Rates Before Retirement (continued):

Years of Service	Rate (%)	
	Withdrawal ⁽¹⁾	
	General	Safety
Less than 1	13.50	13.00
1	9.25	8.00
2	9.00	7.00
3	6.00	5.50
4	4.50	3.75
5	4.25	3.25
6	3.75	3.00
7	3.50	2.75
8	3.25	2.50
9	3.00	2.25
10	2.75	2.00
11	2.50	1.90
12	2.40	1.80
13	2.30	1.70
14	2.20	1.60
15	2.10	1.50
16	2.00	1.40
17	2.00	1.30
18	2.00	1.20
19	1.75	1.10
20 or more	1.50	1.00

⁽¹⁾ The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No withdrawal is assumed after a member is first assumed to retire.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Retirement Rates (General):

Age	Rates (%)			
	General Tier 1 (Enhanced)	General Tier 3 (Enhanced)	General Tier 1 (Non-enhanced)	PEPRA General Tiers 4 and 5
50	5.00	4.00	3.00	0.00
51	4.00	3.00	3.00	0.00
52	5.00	3.00	3.00	2.00
53	5.00	5.00	3.00	3.00
54	14.00	6.00	3.00	3.00
55	20.00	10.00	10.00	5.00
56	20.00	10.00	10.00	5.00
57	20.00	10.00	10.00	6.00
58	20.00	12.00	10.00	8.00
59	25.00	13.00	10.00	9.00
60	28.00	15.00	25.00	10.00
61	35.00	20.00	15.00	14.00
62	35.00	25.00	40.00	20.00
63	30.00	25.00	35.00	20.00
64	30.00	30.00	30.00	20.00
65	35.00	35.00	40.00	25.00
66	40.00	35.00	35.00	30.00
67	40.00	35.00	35.00	30.00
68	40.00	35.00	35.00	30.00
69	40.00	35.00	35.00	30.00
70	50.00	40.00	50.00	50.00
71	50.00	40.00	50.00	50.00
72	50.00	40.00	50.00	50.00
73	50.00	40.00	50.00	50.00
74	50.00	40.00	50.00	50.00
75	100.00	100.00	100.00	100.00

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Retirement Rates (Safety):

Age	Rates (%)			
	Safety Tier A (Enhanced)	Safety Tier C (Enhanced)	Safety Tier A (Non-enhanced)	PEPRA Safety Tiers D and E
45	4.00	2.00	0.00	0.00
46	3.00	1.00	0.00	0.00
47	10.00	4.00	0.00	0.00
48	10.00	4.00	0.00	0.00
49	25.00	12.00	0.00	0.00
50	30.00	18.00	5.00	5.00
51	30.00	18.00	4.00	4.00
52	25.00	15.00	4.00	4.00
53	25.00	15.00	5.00	5.00
54	25.00	15.00	8.00	6.00
55	28.00	18.00	10.00	10.00
56	25.00	15.00	10.00	10.00
57	25.00	15.00	12.00	18.00
58	35.00	25.00	18.00	18.00
59	35.00	25.00	20.00	18.00
60	35.00	30.00	20.00	18.00
61	35.00	30.00	20.00	20.00
62	35.00	30.00	20.00	20.00
63	35.00	30.00	20.00	20.00
64	50.00	40.00	100.00	30.00
65	100.00	100.00	100.00	30.00
66	100.00	100.00	100.00	100.00

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

**Retirement Age and Benefit for
Deferred Vested Members:**

For deferred vested benefits, we make the following retirement assumption:

General: Age 59

Safety: Age 54

We assume that 40% and 65% of future General and Safety deferred vested members, respectively, will continue to work for a reciprocal employer. For reciprocals, we assume 4.75% compensation increases per annum.

Future Benefit Accruals:

1.0 year of service per year for full-time employees. Continuation of current partial service accrual for part-time employees.

Unknown Data for Members:

Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.

Percent Married:

75% of male members and 50% of female members are assumed to be married at pre-retirement death or retirement. There is no explicit assumption for children's benefits.

Age of Spouse:

Males are 3 years older than their spouses, and females are 2 years younger than their spouses.

**Offsets by Other Plans of the
Employer for Disability Benefits:**

The Plan requires members who retire because of disability from General Tier 3 and PEPRA General Tier 5 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Leave Cashout Assumptions:

The following assumptions for leave cashouts as a percentage of final average pay are used:

*General Tiers 1, 2 and 3
Safety Tiers A and C*

Cost Group 1:	1.25%
Cost Group 2:	0.50% for Tier 2 1.00% for Tier 3
Cost Group 3:	5.50%
Cost Group 4:	0.50%
Cost Group 5:	1.00%
Cost Group 6:	0.75%
Cost Group 7:	1.00%
Cost Group 8:	0.75%
Cost Group 9:	0.00%
Cost Group 10:	1.00%
Cost Group 11:	2.50%
Cost Group 12:	2.50%

The cost of this pay element is recognized in the valuation as an employer and member cost in both basic and COLA components.

*PEPRA General Tiers 4 and 5
PEPRA Safety Tiers D and E*

None

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Service From Accumulated Sick Leave Conversion:

The following assumptions for additional service converted from accumulated sick leave as a percentage of service at retirement are used:

Service Retirements:

General:	1.20%
Safety:	1.90%

Disability Retirements:

General:	0.08%
Safety:	1.30%

Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.

Actuarial Methods

Actuarial Cost Method:

Entry Age Actuarial Cost Method. Entry Age is calculated as age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percent of compensation, as if the current benefit formulas have always been in effect (i.e., “replacement life”).

Actuarial Value of Assets:

Market value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized semi-annually over a five-year period.

Valuation Value of Assets:

Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.

Amortization Policy:

The UAAL (i.e., the difference between the AAL and the Valuation Value of Assets) as of December 31, 2014 will continue to be amortized over separate amortization layers based on the valuations during which each separate layer was previously established.

Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of December 31 will be amortized over a period of 18 years.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years.

Unless the Board adopts an alternative amortization period after receiving an actuarial analysis:

- i. With the exception noted in ii., below, the increase in UAAL as a result of any plan amendments will be amortized over a period of 10 years;
- ii. The entire increase in UAAL resulting from a temporary retirement incentive will be funded in full upon adoption of the incentive. If the increase in UAAL is due to the impact of benefits resulting from additional service permitted in Section 31641.04 of the 1937 CERL (Golden Handshake), the entire increase in UAAL will be funded in full upon adoption of the Golden Handshake.

The UAAL will be amortized over “closed” amortization periods so that the amortization period for each layer decreases by one year with each actuarial valuation.

The UAAL will be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase (i.e., wage inflation).

If an overfunding or “surplus” exists (i.e., the Valuation Value of Assets exceeds the AAL, so that the total of all UAAL amortization layers become negative), any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized as the first of a new series of amortization layers, using the above amortization periods.

If the surplus exceeds 20% of the AAL per Section 7522.52 of the Government Code, then the amount of surplus in excess of 20% of the AAL (and any subsequent surpluses in excess of that amount) will be amortized over an “open” amortization period of 30 years, but only if the other conditions of Section 7522.52 have also been met. If those conditions are not met, then the surplus will not be amortized and the full Normal Cost will be contributed.

These amortization policy components will generally apply separately to each of CCCERA's UAAL cost groups with the exception that the conditions of Section 7522.52 apply to the total plan.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

**Changes in Actuarial Assumptions
and Methods:**

The following assumption was changed. Previously, this assumption was as follows:

Administrative Expenses:

1.12% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member. This assumption changes each year based on the actual administrative expenses as a percent of actual compensation during the calendar year leading up to the valuation date.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

EXHIBIT III

Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Membership Eligibility:

<i>General Tier 1</i>	General members hired before July 1, 1980 and electing not to transfer to Tier 2 Plan. Certain General members with membership dates before January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 1.
<i>General Tier 2</i>	Most General members hired on or after August 1, 1980 and all General members hired before July 1, 1980 electing to transfer to the Tier 2 Plan. Effective October 1, 2002, for the County, Tier 2 was eliminated and all County employees (excluding CNA employees) in Tier 2 were placed in Tier 3. Effective January 1, 2005, all CNA employees in Tier 2 were placed in Tier 3.
<i>General Tier 3</i>	General members with membership dates before January 1, 2013 who are not placed in Tier 1 are placed in Tier 3.
<i>PEPRA General Tier 4</i>	General members with membership dates on or after January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 4.
<i>PEPRA General Tier 5</i>	General members with membership dates on or after January 1, 2013 who are not placed in Tier 4 are placed in Tier 5.
<i>Safety Tiers A and C</i>	Safety members with membership dates before January 1, 2013. County Sheriff's Department Safety members hired on or after January 1, 2007, but before January 1, 2013 are placed in Safety Tier C Enhanced.
<i>PEPRA Safety Tiers D and E</i>	Safety members with membership dates on or after January 1, 2013. Safety members from certain bargaining units are placed in Safety Tier E.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Final Compensation for Benefit Determination:

<i>General Tier 1, Tier 3 (non-disability), and Safety Tier A</i>	Highest consecutive twelve months of compensation earnable. (FAS1) (§31462.1)
<i>General Tier 2, Tier 3 (disability), and Safety Tier C</i>	Highest consecutive thirty-six months of compensation earnable. (FAS3) (§31462)
<i>PEPRA General Tiers 4 and 5 PEPRA Safety Tiers D and E</i>	Highest consecutive thirty-six months of pensionable compensation. (FAS3) (§7522.10(c), §7522.32 and §7522.34)

Compensation Limit:

<i>Non-PEPRA Tiers</i>	For members with membership dates on or after January 1, 1996, Compensation Earnable is limited to Internal Revenue Code Section 401(a)(17). The limit is \$275,000 for calendar year 2018. The limit is indexed for inflation on an annual basis.
<i>PEPRA Tiers</i>	Pensionable Compensation is limited to \$121,388 for 2018 (\$145,666, if not enrolled in Social Security). The limit is indexed for inflation on an annual basis.

Social Security Primary Insurance Amount:

<i>General Tier 2</i>	Estimated Social Security award at age 62 assuming level future earnings. (PIA)
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Service:

<i>All tiers</i>	Years of service*. (Yrs)
<i>General Tier 2</i>	Years of service up to a maximum of 30 years*. (Yrs30)

* Includes accumulated sick leave as of the date of retirement (§31641.01).

Service Retirement Eligibility:

<i>General Tiers 1, 2 and 3</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years of service, regardless of age. (§31672)
<i>PEPRA General Tiers 4 and 5</i>	Age 52 with 5 years of service, or age 70 regardless of service. (§7522.20(a) and §31672.3)
<i>Safety Tiers A and C</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 20 years of service, regardless of age. (§31663.25)

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

PEPRA Safety Tiers D and E Age 50 with 5 years of service, or age 70 regardless of service. (§7522.25(a) and §31672.3)

Benefit Formula:

General Tiers 1 and 3 (Non-enhanced) (§31676.11)

Retirement Age	Benefit Formula
50	$(1.24\% \times \text{FAS1} - 1/3 \times 1.24\% \times \$350 \times 12) \times \text{Yrs}$
55	$(1.67\% \times \text{FAS1} - 1/3 \times 1.67\% \times \$350 \times 12) \times \text{Yrs}$
60	$(2.18\% \times \text{FAS1} - 1/3 \times 2.18\% \times \$350 \times 12) \times \text{Yrs}$
62	$(2.35\% \times \text{FAS1} - 1/3 \times 2.35\% \times \$350 \times 12) \times \text{Yrs}$
65 or later	$(2.61\% \times \text{FAS1} - 1/3 \times 2.61\% \times \$350 \times 12) \times \text{Yrs}$

General Tier 1 and Tier 3 (Enhanced) (§31676.16)

50	$(1.43\% \times \text{FAS1} - 1/3 \times 1.43\% \times \$350 \times 12) \times \text{Yrs}$
55	$(2.00\% \times \text{FAS1} - 1/3 \times 2.00\% \times \$350 \times 12) \times \text{Yrs}$
60	$(2.26\% \times \text{FAS1} - 1/3 \times 2.26\% \times \$350 \times 12) \times \text{Yrs}$
62	$(2.37\% \times \text{FAS1} - 1/3 \times 2.37\% \times \$350 \times 12) \times \text{Yrs}$
65 or later	$(2.42\% \times \text{FAS1} - 1/3 \times 2.42\% \times \$350 \times 12) \times \text{Yrs}$

For members previously covered under the non-enhanced §31676.11 formula, they are entitled to at least the benefits they could have received under §31676.11.

<i>General Tier 2 (§31752)</i>	50	$0.83\% \times \text{FAS3} \times \text{Yrs} - 0.57\% \times \text{Yrs} \times 30 \times \text{PIA}$
	55	$1.13\% \times \text{FAS3} \times \text{Yrs} - 0.87\% \times \text{Yrs} \times 30 \times \text{PIA}$
	60	$1.43\% \times \text{FAS3} \times \text{Yrs} - 1.37\% \times \text{Yrs} \times 30 \times \text{PIA}$
	62	$1.55\% \times \text{FAS3} \times \text{Yrs} - 1.67\% \times \text{Yrs} \times 30 \times \text{PIA}$
	65 or later	$1.73\% \times \text{FAS3} \times \text{Yrs} - 1.67\% \times \text{Yrs} \times 30 \times \text{PIA}$

The offsets shown in all of the above formulas only apply to members integrated with Social Security.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Benefit Formula:

<i>PEPRA General Tiers 4 and 5</i> (§7522.20(a))	Retirement Age	Benefit Formula
	52	1.00%xFAS3xYrs
	55	1.30%xFAS3xYrs
	60	1.80%xFAS3xYrs
	62	2.00%xFAS3xYrs
	65	2.30%xFAS3xYrs
	67 or later	2.50%xFAS3xYrs
 <i>Safety Tier A (Non-enhanced)(§31664)</i>	50	2.00%xFAS1xYrs
	55 or later	2.62%xFAS1xYrs
 <i>Safety Tier A (Enhanced)(§31664.1)</i>	50 or later	3.00%xFAS1xYrs
 <i>Safety Tier C (Enhanced)(§31664.1)</i>	50 or later	3.00%xFAS3xYrs
 <i>PEPRA Safety Tiers D and E</i> (§7522.25(d))	50	2.00%xFAS3xYrs
	55	2.50%xFAS3xYrs
	57 or later	2.70%xFAS3xYrs

Maximum Benefit:

<i>General Tiers 1 and 3</i> <i>Safety Tiers A and C</i>	100% of Final Compensation (§31676.11, §31676.16, §31664, §31664.1)
 <i>General Tier 2</i> <i>PEPRA General Tiers 4 and 5</i> <i>PEPRA Safety Tiers D and E</i>	None

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Ordinary Disability:

General Tiers 1 and 4

Eligibility

Five years of service (§31720).

Benefit Formula

1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but total benefit cannot be more than one-third of Final Compensation (§31727).

General Tiers 2, 3 and 5

Eligibility

Ten years of service (definition of disability is more strict than Tier 1 Plan) (§31720.1).

Benefit Formula

40% of Final Compensation plus 10% of Final Compensation used in the benefit determination for each minor child (maximum of three) (§31727.01).

Offset

Disability benefits are offset by other plans of the employer except Workers Compensation and Social Security.

Safety

Eligibility

Five years of service (§31720).

Benefit Formula

1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but total benefit cannot be more than one-third of Final Compensation (§31727.2).

Line-of-Duty Disability:

General Tiers 1 and 4, and Safety

Eligibility

No age or service requirements (§31720).

Benefit Formula

50% of the Final Compensation (§31727.4).

General Tiers 2, 3 and 5

Eligibility

No age or service requirements (§31720).

Benefit Formula

40% of Final Compensation plus 10% of Final Compensation for each minor child (maximum of three) (§31727.01).

Offset

Disability benefits are offset by other plans of the Employer except Workers Compensation and Social Security.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Pre-Retirement Death:

Non-General Tier 2

Eligibility - A

None

Benefit - A

Refund of employee contributions with interest plus one month's compensation for each year of service to a maximum of six month's compensation (§31781); 50% of Final Compensation payable to spouse if Line of Duty death (§31787).

OR

Eligibility - B

Five years of service (Ten years for Tiers 3 and 5).

Benefit - B

Option 2 (100% continuation) of Service Retirement or Ordinary Disability benefit payable to designated beneficiary.

Death in line of duty

50% of Final compensation.

General Tier 2

Eligibility - A

None

Benefit - A

Refund of employee contributions with interest plus \$2,000 lump sum benefit offset by any Social Security payment. (§31781.01); If a Line of Duty death, then 60% of Service or Disability Retirement Benefit (minimum benefit is 24% of Final Compensation) plus, for each minor child, 10% of the allowance otherwise paid to the member. Minimum family benefit is 60% of the member's allowance. Maximum family benefit is 100% of member's allowance.

OR

Eligibility - B

Ten years of service.

Benefit - B

Option 2 (100% continuation) of Service Retirement or Ordinary Disability benefit payable to designated beneficiary.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Death After Retirement:

Non-General Tier 2

Service or

Ordinary Disability Retirement

60% of member's unmodified allowance continued to eligible spouse. An eligible spouse is a surviving spouse who was married to the member one year prior to member's retirement or at least two years prior to the date of death and has attained age 55 on or prior to the date of death (§31760.2). An additional lump sum benefit of \$5,000 is payable to the member's beneficiary (§31789.5).

Line-of-Duty Disability

100% of members allowance continued to eligible spouse (§31786). An additional lump sum benefit of \$5,000 is payable to the member's beneficiary (§31789.5).

General Tier 2

Service or

Disability Retirement

60% of member's unmodified allowance continued to eligible spouse plus 20% of allowance to each minor child (§31789.11). Minimum benefit is 60% of allowance. Maximum benefit is 100% of allowance. \$5,000 lump sum death benefit (§31789.5) plus \$2,000 less any Social Security Lump sum payment (§31789.01) are payable to member's beneficiary.

Withdrawal Benefits:

Less than Five Years of Service

Refund of accumulated employee contributions with interest, or earned benefit at age 70 (§31628).

Five or More Years of Service

If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire (§31700).

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Post-Retirement

Cost-of-Living Benefits:

*General Tiers 1, 3, 4 and 5
Safety Tiers A and D*

Future changes based on Consumer Price Index to a maximum of 3% per year, excess "banked." Tier 3 and PEPRA Tier 5 disability benefits have a maximum of 4% per year, excess "banked." Benefits for PEPRA Tier 4 and Tier 5 members covered under certain memoranda of understanding have a maximum of 2% per year, excess "banked".

General Tier 2

Future changes based on Consumer Price Index to a maximum of 4% per year, excess "banked."

Safety Tiers C and E

Future changes based on Consumer Price Index to a maximum of 2% per year, excess "banked."

Member Contributions:

Please refer to Appendices A and B for the specific rates.

General Tiers 1 and 3 (Non-enhanced)

Basic

Provide for one-half of the \$31676.11 benefit payable at age 55.

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

General Tiers 1 and 3 (Enhanced)

Basic

Provide for an average annuity at age 60 equal to 1/120 of FAS1.

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

PEPRA General Tiers 4 and 5

50% of the total Normal Cost rate.

Safety Tier A (Non-enhanced)

Basic

Provide for one-half of the \$31664 benefit payable at age 50.

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Member Contributions (continued):

Safety Tier A (Enhanced)

Basic

Provide for an average annuity at age 50 equal to 1/100 of FAS1.

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

Safety Tier C (Enhanced)

Basic

Provide for an average annuity at age 50 equal to 1/100 of FAS3.

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

PEPRA Safety Tiers D and E

50% of the total Normal Cost rate.

Other Information:

Transfers from the Tier 1 Plan to the Tier 2 Plan were made on an individual voluntary irrevocable basis. Credit is given under the Tier 2 Plan for future service only. The Cost-of-Living maximum is 4% only for the credit under the Tier 2 Plan. Transferred Tier 2 Plan members keep the five-year requirement for nonservice-connected disability. Those who were members on or before March 7, 1973 and Safety members under the enhanced benefit formula with membership dates on or before January 1, 2013 will be exempt from paying member contributions after 30 years of service.

Plan Provisions Not Valued:

Additional \$5,000 lump sum post-retirement death benefit (except for \$2,000 for General Tier 2 members paid out of the Valuation Value of Assets) payable to a member's beneficiary. This benefit is paid from a reserve that is not included in the Valuation Value of Assets and is subject at all times to the availability of funds.

Plan Changes:

There have been no changes in plan provisions since the previous actuarial valuation.

NOTE: The summary of major plan provisions is designed to outline principal plan benefits as interpreted for purposes of the actuarial valuation. If the Association should find the plan summary not in accordance with the actual provisions, the Association should alert the actuary so that both can be sure the proper provisions are valued.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #1 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.76%	5.41%	1.79%	2.69%	5.55%	8.10%
16	3.82%	5.50%	1.83%	2.74%	5.65%	8.24%
17	3.88%	5.59%	1.86%	2.79%	5.74%	8.38%
18	3.94%	5.68%	1.89%	2.84%	5.83%	8.52%
19	4.00%	5.77%	1.93%	2.89%	5.93%	8.66%
20	4.06%	5.86%	1.96%	2.94%	6.02%	8.80%
21	4.13%	5.96%	1.99%	2.99%	6.12%	8.95%
22	4.19%	6.05%	2.03%	3.04%	6.22%	9.09%
23	4.26%	6.15%	2.07%	3.10%	6.33%	9.25%
24	4.32%	6.25%	2.10%	3.15%	6.42%	9.40%
25	4.39%	6.35%	2.14%	3.21%	6.53%	9.56%
26	4.46%	6.45%	2.17%	3.26%	6.63%	9.71%
27	4.53%	6.56%	2.21%	3.32%	6.74%	9.88%
28	4.60%	6.66%	2.25%	3.37%	6.85%	10.03%
29	4.67%	6.77%	2.29%	3.43%	6.96%	10.20%
30	4.74%	6.88%	2.33%	3.49%	7.07%	10.37%
31	4.82%	6.99%	2.37%	3.55%	7.19%	10.54%
32	4.89%	7.10%	2.41%	3.61%	7.30%	10.71%
33	4.96%	7.21%	2.45%	3.67%	7.41%	10.88%
34	5.04%	7.33%	2.49%	3.74%	7.53%	11.07%
35	5.12%	7.45%	2.53%	3.80%	7.65%	11.25%
36	5.20%	7.57%	2.58%	3.87%	7.78%	11.44%
37	5.28%	7.69%	2.63%	3.94%	7.91%	11.63%
38	5.37%	7.82%	2.67%	4.01%	8.04%	11.83%
39	5.46%	7.95%	2.72%	4.08%	8.18%	12.03%
40	5.54%	8.08%	2.77%	4.15%	8.31%	12.23%
41	5.64%	8.22%	2.81%	4.22%	8.45%	12.44%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #1 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
42	5.73%	8.36%	2.87%	4.30%	8.60%	12.66%
43	5.82%	8.50%	2.92%	4.38%	8.74%	12.88%
44	5.92%	8.65%	2.97%	4.46%	8.89%	13.11%
45	6.03%	8.81%	3.03%	4.55%	9.06%	13.36%
46	6.12%	8.95%	3.08%	4.62%	9.20%	13.57%
47	6.22%	9.10%	3.13%	4.70%	9.35%	13.80%
48	6.32%	9.25%	3.19%	4.79%	9.51%	14.04%
49	6.43%	9.41%	3.25%	4.87%	9.68%	14.28%
50	6.54%	9.57%	3.31%	4.96%	9.85%	14.53%
51	6.64%	9.73%	3.37%	5.05%	10.01%	14.78%
52	6.76%	9.90%	3.43%	5.14%	10.19%	15.04%
53	6.86%	10.06%	3.49%	5.23%	10.35%	15.29%
54	6.94%	10.18%	3.53%	5.29%	10.47%	15.47%
55	7.04%	10.32%	3.58%	5.37%	10.62%	15.69%
56	7.09%	10.40%	3.61%	5.41%	10.70%	15.81%
57	7.08%	10.39%	3.61%	5.41%	10.69%	15.80%
58	7.02%	10.29%	3.57%	5.35%	10.59%	15.64%
59	6.84%	10.02%	3.47%	5.21%	10.31%	15.23%
60	6.84%	10.02%	3.47%	5.21%	10.31%	15.23%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 1.25%

COLA Loading: 54.51% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #2 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.76%	5.40%	1.65%	2.47%	5.41%	7.87%
16	3.82%	5.49%	1.67%	2.51%	5.49%	8.00%
17	3.88%	5.58%	1.71%	2.56%	5.59%	8.14%
18	3.94%	5.67%	1.73%	2.60%	5.67%	8.27%
19	4.00%	5.76%	1.77%	2.65%	5.77%	8.41%
20	4.06%	5.85%	1.79%	2.69%	5.85%	8.54%
21	4.12%	5.94%	1.83%	2.74%	5.95%	8.68%
22	4.18%	6.04%	1.86%	2.79%	6.04%	8.83%
23	4.25%	6.14%	1.89%	2.84%	6.14%	8.98%
24	4.32%	6.24%	1.93%	2.89%	6.25%	9.13%
25	4.38%	6.34%	1.96%	2.94%	6.34%	9.28%
26	4.45%	6.44%	1.99%	2.99%	6.44%	9.43%
27	4.52%	6.54%	2.03%	3.04%	6.55%	9.58%
28	4.58%	6.64%	2.06%	3.09%	6.64%	9.73%
29	4.66%	6.75%	2.09%	3.14%	6.75%	9.89%
30	4.73%	6.86%	2.13%	3.20%	6.86%	10.06%
31	4.80%	6.97%	2.17%	3.25%	6.97%	10.22%
32	4.88%	7.08%	2.21%	3.31%	7.09%	10.39%
33	4.96%	7.20%	2.25%	3.37%	7.21%	10.57%
34	5.03%	7.31%	2.28%	3.42%	7.31%	10.73%
35	5.11%	7.43%	2.32%	3.48%	7.43%	10.91%
36	5.19%	7.55%	2.36%	3.54%	7.55%	11.09%
37	5.28%	7.68%	2.41%	3.61%	7.69%	11.29%
38	5.36%	7.80%	2.45%	3.67%	7.81%	11.47%
39	5.44%	7.93%	2.49%	3.73%	7.93%	11.66%
40	5.54%	8.07%	2.53%	3.80%	8.07%	11.87%
41	5.62%	8.20%	2.58%	3.87%	8.20%	12.07%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #2 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
42	5.72%	8.34%	2.63%	3.94%	8.35%	12.28%
43	5.82%	8.49%	2.67%	4.01%	8.49%	12.50%
44	5.91%	8.63%	2.72%	4.08%	8.63%	12.71%
45	6.01%	8.78%	2.77%	4.16%	8.78%	12.94%
46	6.12%	8.94%	2.83%	4.24%	8.95%	13.18%
47	6.22%	9.09%	2.87%	4.31%	9.09%	13.40%
48	6.31%	9.23%	2.92%	4.38%	9.23%	13.61%
49	6.41%	9.38%	2.97%	4.46%	9.38%	13.84%
50	6.52%	9.54%	3.03%	4.54%	9.55%	14.08%
51	6.64%	9.72%	3.09%	4.63%	9.73%	14.35%
52	6.74%	9.88%	3.14%	4.71%	9.88%	14.59%
53	6.84%	10.03%	3.19%	4.78%	10.03%	14.81%
54	6.94%	10.18%	3.24%	4.86%	10.18%	15.04%
55	7.01%	10.28%	3.27%	4.91%	10.28%	15.19%
56	7.06%	10.35%	3.29%	4.94%	10.35%	15.29%
57	7.04%	10.32%	3.29%	4.93%	10.33%	15.25%
58	6.93%	10.16%	3.23%	4.85%	10.16%	15.01%
59	6.85%	10.04%	3.19%	4.79%	10.04%	14.83%
60	6.85%	10.04%	3.19%	4.79%	10.04%	14.83%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 0.50% for Tier 2 and 1.00% for Tier 3

COLA Loading: 50.01% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #3 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.90%	5.62%	1.90%	2.85%	5.80%	8.47%
16	3.96%	5.71%	1.93%	2.90%	5.89%	8.61%
17	4.02%	5.80%	1.97%	2.95%	5.99%	8.75%
18	4.09%	5.90%	2.00%	3.00%	6.09%	8.90%
19	4.15%	5.99%	2.03%	3.05%	6.18%	9.04%
20	4.22%	6.09%	2.07%	3.11%	6.29%	9.20%
21	4.28%	6.18%	2.11%	3.16%	6.39%	9.34%
22	4.34%	6.28%	2.14%	3.21%	6.48%	9.49%
23	4.42%	6.39%	2.18%	3.27%	6.60%	9.66%
24	4.48%	6.49%	2.22%	3.33%	6.70%	9.82%
25	4.55%	6.59%	2.26%	3.39%	6.81%	9.98%
26	4.62%	6.70%	2.30%	3.45%	6.92%	10.15%
27	4.70%	6.81%	2.34%	3.51%	7.04%	10.32%
28	4.76%	6.91%	2.37%	3.56%	7.13%	10.47%
29	4.84%	7.03%	2.42%	3.63%	7.26%	10.66%
30	4.92%	7.14%	2.46%	3.69%	7.38%	10.83%
31	4.99%	7.25%	2.50%	3.75%	7.49%	11.00%
32	5.07%	7.37%	2.55%	3.82%	7.62%	11.19%
33	5.15%	7.49%	2.59%	3.88%	7.74%	11.37%
34	5.23%	7.61%	2.63%	3.95%	7.86%	11.56%
35	5.31%	7.73%	2.68%	4.02%	7.99%	11.75%
36	5.40%	7.86%	2.73%	4.09%	8.13%	11.95%
37	5.48%	7.99%	2.77%	4.16%	8.25%	12.15%
38	5.57%	8.12%	2.82%	4.23%	8.39%	12.35%
39	5.66%	8.25%	2.87%	4.30%	8.53%	12.55%
40	5.75%	8.39%	2.92%	4.38%	8.67%	12.77%
41	5.84%	8.53%	2.97%	4.46%	8.81%	12.99%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #3 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
42	5.94%	8.68%	3.03%	4.54%	8.97%	13.22%
43	6.04%	8.82%	3.08%	4.62%	9.12%	13.44%
44	6.14%	8.98%	3.14%	4.71%	9.28%	13.69%
45	6.24%	9.13%	3.19%	4.79%	9.43%	13.92%
46	6.34%	9.28%	3.25%	4.87%	9.59%	14.15%
47	6.45%	9.44%	3.31%	4.96%	9.76%	14.40%
48	6.56%	9.60%	3.37%	5.05%	9.93%	14.65%
49	6.65%	9.74%	3.42%	5.13%	10.07%	14.87%
50	6.76%	9.91%	3.48%	5.22%	10.24%	15.13%
51	6.87%	10.07%	3.54%	5.31%	10.41%	15.38%
52	6.98%	10.24%	3.60%	5.40%	10.58%	15.64%
53	7.09%	10.40%	3.66%	5.49%	10.75%	15.89%
54	7.18%	10.54%	3.71%	5.57%	10.89%	16.11%
55	7.24%	10.62%	3.74%	5.61%	10.98%	16.23%
56	7.28%	10.69%	3.77%	5.65%	11.05%	16.34%
57	7.26%	10.66%	3.76%	5.64%	11.02%	16.30%
58	7.14%	10.48%	3.69%	5.54%	10.83%	16.02%
59	6.77%	9.92%	3.49%	5.23%	10.26%	15.15%
60	6.77%	9.92%	3.49%	5.23%	10.26%	15.15%

Interest: 7.00%
 Salary Increase: See Exhibit II.
 Administrative Expense: 0.47% of payroll added to Basic rates
 Leave Cashout: 5.50%
 COLA Loading: 55.32% applied to Basic rates prior to adjustment for administrative expenses.
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #4 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.74%	5.38%	1.78%	2.67%	5.52%	8.05%
16	3.80%	5.46%	1.81%	2.71%	5.61%	8.17%
17	3.86%	5.55%	1.84%	2.76%	5.70%	8.31%
18	3.92%	5.64%	1.87%	2.81%	5.79%	8.45%
19	3.98%	5.73%	1.91%	2.86%	5.89%	8.59%
20	4.04%	5.82%	1.94%	2.91%	5.98%	8.73%
21	4.10%	5.92%	1.97%	2.96%	6.07%	8.88%
22	4.16%	6.01%	2.01%	3.01%	6.17%	9.02%
23	4.23%	6.11%	2.04%	3.06%	6.27%	9.17%
24	4.30%	6.21%	2.08%	3.12%	6.38%	9.33%
25	4.36%	6.31%	2.11%	3.17%	6.47%	9.48%
26	4.43%	6.41%	2.15%	3.23%	6.58%	9.64%
27	4.50%	6.51%	2.19%	3.28%	6.69%	9.79%
28	4.57%	6.62%	2.23%	3.34%	6.80%	9.96%
29	4.64%	6.72%	2.27%	3.40%	6.91%	10.12%
30	4.71%	6.83%	2.31%	3.46%	7.02%	10.29%
31	4.78%	6.94%	2.35%	3.52%	7.13%	10.46%
32	4.86%	7.05%	2.39%	3.58%	7.25%	10.63%
33	4.94%	7.17%	2.43%	3.64%	7.37%	10.81%
34	5.01%	7.28%	2.47%	3.70%	7.48%	10.98%
35	5.09%	7.40%	2.51%	3.77%	7.60%	11.17%
36	5.17%	7.52%	2.55%	3.83%	7.72%	11.35%
37	5.25%	7.64%	2.60%	3.90%	7.85%	11.54%
38	5.34%	7.77%	2.65%	3.97%	7.99%	11.74%
39	5.42%	7.90%	2.69%	4.04%	8.11%	11.94%
40	5.51%	8.03%	2.74%	4.11%	8.25%	12.14%
41	5.60%	8.16%	2.79%	4.18%	8.39%	12.34%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #4 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
42	5.69%	8.30%	2.83%	4.25%	8.52%	12.55%
43	5.79%	8.45%	2.89%	4.34%	8.68%	12.79%
44	5.88%	8.59%	2.94%	4.41%	8.82%	13.00%
45	5.99%	8.75%	3.00%	4.50%	8.99%	13.25%
46	6.09%	8.90%	3.05%	4.58%	9.14%	13.48%
47	6.19%	9.05%	3.11%	4.66%	9.30%	13.71%
48	6.28%	9.19%	3.16%	4.74%	9.44%	13.93%
49	6.39%	9.35%	3.22%	4.83%	9.61%	14.18%
50	6.49%	9.50%	3.27%	4.91%	9.76%	14.41%
51	6.60%	9.67%	3.33%	5.00%	9.93%	14.67%
52	6.72%	9.84%	3.39%	5.09%	10.11%	14.93%
53	6.82%	9.99%	3.45%	5.17%	10.27%	15.16%
54	6.91%	10.13%	3.50%	5.25%	10.41%	15.38%
55	6.99%	10.25%	3.54%	5.31%	10.53%	15.56%
56	7.06%	10.36%	3.58%	5.37%	10.64%	15.73%
57	7.05%	10.34%	3.57%	5.36%	10.62%	15.70%
58	6.95%	10.19%	3.52%	5.28%	10.47%	15.47%
59	6.68%	9.79%	3.37%	5.06%	10.05%	14.85%
60	6.68%	9.79%	3.37%	5.06%	10.05%	14.85%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 0.50%

COLA Loading: 54.34% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #5 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.76%	5.40%	1.77%	2.66%	5.53%	8.06%
16	3.82%	5.49%	1.80%	2.70%	5.62%	8.19%
17	3.88%	5.58%	1.83%	2.75%	5.71%	8.33%
18	3.94%	5.67%	1.87%	2.80%	5.81%	8.47%
19	4.00%	5.76%	1.90%	2.85%	5.90%	8.61%
20	4.06%	5.85%	1.93%	2.90%	5.99%	8.75%
21	4.12%	5.94%	1.97%	2.95%	6.09%	8.89%
22	4.18%	6.04%	2.00%	3.00%	6.18%	9.04%
23	4.25%	6.14%	2.03%	3.05%	6.28%	9.19%
24	4.32%	6.24%	2.07%	3.11%	6.39%	9.35%
25	4.38%	6.34%	2.11%	3.16%	6.49%	9.50%
26	4.45%	6.44%	2.15%	3.22%	6.60%	9.66%
27	4.52%	6.54%	2.18%	3.27%	6.70%	9.81%
28	4.58%	6.64%	2.21%	3.32%	6.79%	9.96%
29	4.66%	6.75%	2.25%	3.38%	6.91%	10.13%
30	4.73%	6.86%	2.29%	3.44%	7.02%	10.30%
31	4.80%	6.97%	2.33%	3.50%	7.13%	10.47%
32	4.88%	7.08%	2.37%	3.56%	7.25%	10.64%
33	4.96%	7.20%	2.42%	3.63%	7.38%	10.83%
34	5.03%	7.31%	2.46%	3.69%	7.49%	11.00%
35	5.11%	7.43%	2.50%	3.75%	7.61%	11.18%
36	5.19%	7.55%	2.54%	3.81%	7.73%	11.36%
37	5.28%	7.68%	2.59%	3.88%	7.87%	11.56%
38	5.36%	7.80%	2.63%	3.95%	7.99%	11.75%
39	5.44%	7.93%	2.68%	4.02%	8.12%	11.95%
40	5.54%	8.07%	2.73%	4.09%	8.27%	12.16%
41	5.62%	8.20%	2.77%	4.16%	8.39%	12.36%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #5 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
42	5.72%	8.34%	2.83%	4.24%	8.55%	12.58%
43	5.82%	8.49%	2.88%	4.32%	8.70%	12.81%
44	5.91%	8.63%	2.93%	4.40%	8.84%	13.03%
45	6.01%	8.78%	2.99%	4.48%	9.00%	13.26%
46	6.12%	8.94%	3.04%	4.56%	9.16%	13.50%
47	6.22%	9.09%	3.09%	4.64%	9.31%	13.73%
48	6.31%	9.23%	3.15%	4.72%	9.46%	13.95%
49	6.41%	9.38%	3.20%	4.80%	9.61%	14.18%
50	6.52%	9.54%	3.26%	4.89%	9.78%	14.43%
51	6.64%	9.72%	3.32%	4.98%	9.96%	14.70%
52	6.74%	9.88%	3.38%	5.07%	10.12%	14.95%
53	6.84%	10.03%	3.43%	5.15%	10.27%	15.18%
54	6.94%	10.18%	3.49%	5.23%	10.43%	15.41%
55	7.01%	10.28%	3.53%	5.29%	10.54%	15.57%
56	7.06%	10.35%	3.55%	5.32%	10.61%	15.67%
57	7.04%	10.32%	3.54%	5.31%	10.58%	15.63%
58	6.93%	10.16%	3.48%	5.22%	10.41%	15.38%
59	6.85%	10.04%	3.44%	5.16%	10.29%	15.20%
60	6.85%	10.04%	3.44%	5.16%	10.29%	15.20%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 1.00%

COLA Loading: 53.88% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #6 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	4.24%	6.13%	1.74%	2.61%	5.98%	8.74%
16	4.31%	6.23%	1.77%	2.66%	6.08%	8.89%
17	4.38%	6.33%	1.81%	2.71%	6.19%	9.04%
18	4.44%	6.43%	1.83%	2.75%	6.27%	9.18%
19	4.52%	6.54%	1.87%	2.80%	6.39%	9.34%
20	4.58%	6.64%	1.90%	2.85%	6.48%	9.49%
21	4.66%	6.75%	1.93%	2.90%	6.59%	9.65%
22	4.73%	6.86%	1.97%	2.95%	6.70%	9.81%
23	4.80%	6.97%	2.00%	3.00%	6.80%	9.97%
24	4.88%	7.08%	2.03%	3.05%	6.91%	10.13%
25	4.96%	7.20%	2.07%	3.11%	7.03%	10.31%
26	5.03%	7.31%	2.11%	3.16%	7.14%	10.47%
27	5.11%	7.43%	2.14%	3.21%	7.25%	10.64%
28	5.19%	7.55%	2.18%	3.27%	7.37%	10.82%
29	5.27%	7.67%	2.22%	3.33%	7.49%	11.00%
30	5.36%	7.80%	2.26%	3.39%	7.62%	11.19%
31	5.44%	7.93%	2.30%	3.45%	7.74%	11.38%
32	5.53%	8.06%	2.34%	3.51%	7.87%	11.57%
33	5.62%	8.19%	2.38%	3.57%	8.00%	11.76%
34	5.70%	8.32%	2.42%	3.63%	8.12%	11.95%
35	5.80%	8.46%	2.46%	3.69%	8.26%	12.15%
36	5.90%	8.61%	2.51%	3.76%	8.41%	12.37%
37	5.99%	8.75%	2.55%	3.82%	8.54%	12.57%
38	6.09%	8.90%	2.59%	3.89%	8.68%	12.79%
39	6.20%	9.06%	2.65%	3.97%	8.85%	13.03%
40	6.31%	9.23%	2.70%	4.05%	9.01%	13.28%
41	6.41%	9.38%	2.75%	4.12%	9.16%	13.50%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**General Cost Group #6 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
42	6.52%	9.54%	2.79%	4.19%	9.31%	13.73%
43	6.62%	9.69%	2.84%	4.26%	9.46%	13.95%
44	6.73%	9.86%	2.89%	4.34%	9.62%	14.20%
45	6.84%	10.02%	2.94%	4.41%	9.78%	14.43%
46	6.95%	10.19%	2.99%	4.49%	9.94%	14.68%
47	7.08%	10.38%	3.05%	4.58%	10.13%	14.96%
48	7.18%	10.53%	3.10%	4.65%	10.28%	15.18%
49	7.28%	10.69%	3.15%	4.72%	10.43%	15.41%
50	7.38%	10.83%	3.19%	4.79%	10.57%	15.62%
51	7.42%	10.90%	3.21%	4.82%	10.63%	15.72%
52	7.40%	10.87%	3.20%	4.80%	10.60%	15.67%
53	7.30%	10.71%	3.15%	4.73%	10.45%	15.44%
54	7.01%	10.28%	3.02%	4.53%	10.03%	14.81%
55	7.01%	10.28%	3.02%	4.53%	10.03%	14.81%
56	7.01%	10.28%	3.02%	4.53%	10.03%	14.81%
57	7.01%	10.28%	3.02%	4.53%	10.03%	14.81%
58	7.01%	10.28%	3.02%	4.53%	10.03%	14.81%
59	7.01%	10.28%	3.02%	4.53%	10.03%	14.81%
60	7.01%	10.28%	3.02%	4.53%	10.03%	14.81%

Interest: 7.00%
 Salary Increase: See Exhibit II.
 Administrative Expense: 0.47% of payroll added to Basic rates
 Leave Cashout: 0.75%
 COLA Loading: 46.19% applied to Basic rates prior to adjustment for administrative expenses.
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #7 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
15	9.05%	6.42%	15.47%
16	9.05%	6.42%	15.47%
17	9.05%	6.42%	15.47%
18	9.05%	6.42%	15.47%
19	9.05%	6.42%	15.47%
20	9.05%	6.42%	15.47%
21	9.05%	6.42%	15.47%
22	9.19%	6.52%	15.71%
23	9.34%	6.63%	15.97%
24	9.50%	6.75%	16.25%
25	9.65%	6.87%	16.52%
26	9.81%	6.99%	16.80%
27	9.97%	7.11%	17.08%
28	10.14%	7.23%	17.37%
29	10.31%	7.36%	17.67%
30	10.48%	7.49%	17.97%
31	10.65%	7.61%	18.26%
32	10.84%	7.76%	18.60%
33	11.03%	7.90%	18.93%
34	11.22%	8.04%	19.26%
35	11.42%	8.19%	19.61%
36	11.62%	8.34%	19.96%
37	11.81%	8.48%	20.29%
38	12.01%	8.63%	20.64%
39	12.22%	8.79%	21.01%
40	12.44%	8.95%	21.39%
41	12.67%	9.13%	21.80%
42	12.90%	9.30%	22.20%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #7 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
43	13.19%	9.51%	22.70%
44	13.42%	9.69%	23.11%
45	13.62%	9.84%	23.46%
46	13.66%	9.87%	23.53%
47	13.60%	9.82%	23.42%
48	13.39%	9.66%	23.05%
49	13.01%	9.38%	22.39%
50	13.01%	9.38%	22.39%
51	13.01%	9.38%	22.39%
52	13.01%	9.38%	22.39%
53	13.01%	9.38%	22.39%
54	13.01%	9.38%	22.39%
55	13.01%	9.38%	22.39%
56	13.01%	9.38%	22.39%
57	13.01%	9.38%	22.39%
58	13.01%	9.38%	22.39%
59	13.01%	9.38%	22.39%
60	13.01%	9.38%	22.39%

Interest: 7.00%
 Salary Increase: See Exhibit II.
 Administrative Expense: 0.47% of payroll added to Basic rates
 Leave Cashout: 1.00%
 COLA Loading: 74.80% applied to Basic rates prior to adjustment for administrative expenses.
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #8 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
15	9.03%	6.56%	15.59%
16	9.03%	6.56%	15.59%
17	9.03%	6.56%	15.59%
18	9.03%	6.56%	15.59%
19	9.03%	6.56%	15.59%
20	9.03%	6.56%	15.59%
21	9.03%	6.56%	15.59%
22	9.17%	6.66%	15.83%
23	9.32%	6.78%	16.10%
24	9.48%	6.90%	16.38%
25	9.63%	7.01%	16.64%
26	9.79%	7.14%	16.93%
27	9.95%	7.26%	17.21%
28	10.12%	7.39%	17.51%
29	10.28%	7.51%	17.79%
30	10.46%	7.65%	18.11%
31	10.64%	7.79%	18.43%
32	10.82%	7.93%	18.75%
33	11.00%	8.06%	19.06%
34	11.20%	8.22%	19.42%
35	11.39%	8.36%	19.75%
36	11.59%	8.52%	20.11%
37	11.79%	8.67%	20.46%
38	11.99%	8.82%	20.81%
39	12.20%	8.98%	21.18%
40	12.41%	9.14%	21.55%
41	12.63%	9.31%	21.94%
42	12.88%	9.50%	22.38%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #8 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
43	13.16%	9.72%	22.88%
44	13.42%	9.92%	23.34%
45	13.58%	10.04%	23.62%
46	13.61%	10.06%	23.67%
47	13.52%	9.99%	23.51%
48	13.41%	9.91%	23.32%
49	13.04%	9.63%	22.67%
50	13.04%	9.63%	22.67%
51	13.04%	9.63%	22.67%
52	13.04%	9.63%	22.67%
53	13.04%	9.63%	22.67%
54	13.04%	9.63%	22.67%
55	13.04%	9.63%	22.67%
56	13.04%	9.63%	22.67%
57	13.04%	9.63%	22.67%
58	13.04%	9.63%	22.67%
59	13.04%	9.63%	22.67%
60	13.04%	9.63%	22.67%

Interest: 7.00%
 Salary Increase: See Exhibit II.
 Administrative Expense: 0.47% of payroll added to Basic rates
 Leave Cashout: 0.75%
 COLA Loading: 76.58% applied to Basic rates prior to adjustment for administrative expenses.
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #9 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
15	8.64%	3.90%	12.54%
16	8.64%	3.90%	12.54%
17	8.64%	3.90%	12.54%
18	8.64%	3.90%	12.54%
19	8.64%	3.90%	12.54%
20	8.64%	3.90%	12.54%
21	8.64%	3.90%	12.54%
22	8.78%	3.97%	12.75%
23	8.92%	4.04%	12.96%
24	9.07%	4.11%	13.18%
25	9.22%	4.18%	13.40%
26	9.37%	4.25%	13.62%
27	9.52%	4.32%	13.84%
28	9.68%	4.40%	14.08%
29	9.84%	4.48%	14.32%
30	10.01%	4.56%	14.57%
31	10.18%	4.64%	14.82%
32	10.35%	4.72%	15.07%
33	10.53%	4.81%	15.34%
34	10.71%	4.89%	15.60%
35	10.89%	4.98%	15.87%
36	11.07%	5.06%	16.13%
37	11.25%	5.15%	16.40%
38	11.45%	5.25%	16.70%
39	11.64%	5.34%	16.98%
40	11.83%	5.43%	17.26%
41	12.05%	5.53%	17.58%
42	12.27%	5.64%	17.91%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #9 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
43	12.45%	5.72%	18.17%
44	12.53%	5.76%	18.29%
45	12.51%	5.75%	18.26%
46	12.43%	5.71%	18.14%
47	12.17%	5.59%	17.76%
48	12.55%	5.77%	18.32%
49	13.14%	6.05%	19.19%
50	13.14%	6.05%	19.19%
51	13.14%	6.05%	19.19%
52	13.14%	6.05%	19.19%
53	13.14%	6.05%	19.19%
54	13.14%	6.05%	19.19%
55	13.14%	6.05%	19.19%
56	13.14%	6.05%	19.19%
57	13.14%	6.05%	19.19%
58	13.14%	6.05%	19.19%
59	13.14%	6.05%	19.19%
60	13.14%	6.05%	19.19%

Interest: 7.00%
 Salary Increase: See Exhibit II.
 Administrative Expense: 0.47% of payroll added to Basic rates
 Leave Cashout: 0.00%
 COLA Loading: 47.78% applied to Basic rates prior to adjustment for administrative expenses.
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #10 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
15	9.05%	6.39%	15.44%
16	9.05%	6.39%	15.44%
17	9.05%	6.39%	15.44%
18	9.05%	6.39%	15.44%
19	9.05%	6.39%	15.44%
20	9.05%	6.39%	15.44%
21	9.05%	6.39%	15.44%
22	9.19%	6.50%	15.69%
23	9.34%	6.61%	15.95%
24	9.50%	6.73%	16.23%
25	9.65%	6.84%	16.49%
26	9.81%	6.96%	16.77%
27	9.97%	7.08%	17.05%
28	10.14%	7.20%	17.34%
29	10.31%	7.33%	17.64%
30	10.48%	7.46%	17.94%
31	10.65%	7.58%	18.23%
32	10.84%	7.73%	18.57%
33	11.03%	7.87%	18.90%
34	11.22%	8.01%	19.23%
35	11.42%	8.16%	19.58%
36	11.62%	8.31%	19.93%
37	11.81%	8.45%	20.26%
38	12.01%	8.60%	20.61%
39	12.22%	8.75%	20.97%
40	12.44%	8.92%	21.36%
41	12.67%	9.09%	21.76%
42	12.90%	9.26%	22.16%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #10 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
43	13.19%	9.48%	22.67%
44	13.42%	9.65%	23.07%
45	13.62%	9.80%	23.42%
46	13.66%	9.83%	23.49%
47	13.60%	9.78%	23.38%
48	13.39%	9.63%	23.02%
49	13.01%	9.34%	22.35%
50	13.01%	9.34%	22.35%
51	13.01%	9.34%	22.35%
52	13.01%	9.34%	22.35%
53	13.01%	9.34%	22.35%
54	13.01%	9.34%	22.35%
55	13.01%	9.34%	22.35%
56	13.01%	9.34%	22.35%
57	13.01%	9.34%	22.35%
58	13.01%	9.34%	22.35%
59	13.01%	9.34%	22.35%
60	13.01%	9.34%	22.35%

Interest: 7.00%
 Salary Increase: See Exhibit II.
 Administrative Expense: 0.47% of payroll added to Basic rates
 Leave Cashout: 1.00%
 COLA Loading: 74.50% applied to Basic rates prior to adjustment for administrative expenses.
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #11 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
15	9.17%	6.88%	16.05%
16	9.17%	6.88%	16.05%
17	9.17%	6.88%	16.05%
18	9.17%	6.88%	16.05%
19	9.17%	6.88%	16.05%
20	9.17%	6.88%	16.05%
21	9.17%	6.88%	16.05%
22	9.32%	7.00%	16.32%
23	9.47%	7.12%	16.59%
24	9.63%	7.25%	16.88%
25	9.78%	7.37%	17.15%
26	9.94%	7.49%	17.43%
27	10.11%	7.63%	17.74%
28	10.28%	7.76%	18.04%
29	10.45%	7.90%	18.35%
30	10.62%	8.03%	18.65%
31	10.80%	8.17%	18.97%
32	10.99%	8.32%	19.31%
33	11.17%	8.47%	19.64%
34	11.37%	8.62%	19.99%
35	11.57%	8.78%	20.35%
36	11.77%	8.94%	20.71%
37	11.97%	9.10%	21.07%
38	12.17%	9.26%	21.43%
39	12.38%	9.42%	21.80%
40	12.59%	9.59%	22.18%
41	12.83%	9.78%	22.61%
42	13.07%	9.97%	23.04%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #11 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
43	13.34%	10.18%	23.52%
44	13.60%	10.39%	23.99%
45	13.76%	10.52%	24.28%
46	13.80%	10.55%	24.35%
47	13.71%	10.48%	24.19%
48	13.44%	10.26%	23.70%
49	12.83%	9.78%	22.61%
50	12.83%	9.78%	22.61%
51	12.83%	9.78%	22.61%
52	12.83%	9.78%	22.61%
53	12.83%	9.78%	22.61%
54	12.83%	9.78%	22.61%
55	12.83%	9.78%	22.61%
56	12.83%	9.78%	22.61%
57	12.83%	9.78%	22.61%
58	12.83%	9.78%	22.61%
59	12.83%	9.78%	22.61%
60	12.83%	9.78%	22.61%

Interest: 7.00%
 Salary Increase: See Exhibit II.
 Administrative Expense: 0.47% of payroll added to Basic rates
 Leave Cashout: 2.50%
 COLA Loading: 79.12% applied to Basic rates prior to adjustment for administrative expenses.
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #12 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
15	9.17%	4.75%	13.92%
16	9.17%	4.75%	13.92%
17	9.17%	4.75%	13.92%
18	9.17%	4.75%	13.92%
19	9.17%	4.75%	13.92%
20	9.17%	4.75%	13.92%
21	9.17%	4.75%	13.92%
22	9.32%	4.83%	14.15%
23	9.47%	4.91%	14.38%
24	9.63%	5.00%	14.63%
25	9.78%	5.08%	14.86%
26	9.94%	5.17%	15.11%
27	10.11%	5.26%	15.37%
28	10.28%	5.35%	15.63%
29	10.45%	5.44%	15.89%
30	10.62%	5.54%	16.16%
31	10.80%	5.64%	16.44%
32	10.99%	5.74%	16.73%
33	11.17%	5.84%	17.01%
34	11.37%	5.95%	17.32%
35	11.57%	6.06%	17.63%
36	11.77%	6.16%	17.93%
37	11.97%	6.27%	18.24%
38	12.17%	6.38%	18.55%
39	12.38%	6.50%	18.88%
40	12.59%	6.61%	19.20%
41	12.83%	6.74%	19.57%
42	13.07%	6.87%	19.94%

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix A (continued)

Member Contribution Rates for Members with Membership Dates before January 1, 2013

**Safety Cost Group #12 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)
For Members with Membership Dates before January 1, 2013
Calculated Under Recommended Assumptions**

Entry Age	Basic	COLA	Total
43	13.34%	7.02%	20.36%
44	13.60%	7.16%	20.76%
45	13.76%	7.25%	21.01%
46	13.80%	7.27%	21.07%
47	13.71%	7.22%	20.93%
48	13.44%	7.08%	20.52%
49	12.83%	6.74%	19.57%
50	12.83%	6.74%	19.57%
51	12.83%	6.74%	19.57%
52	12.83%	6.74%	19.57%
53	12.83%	6.74%	19.57%
54	12.83%	6.74%	19.57%
55	12.83%	6.74%	19.57%
56	12.83%	6.74%	19.57%
57	12.83%	6.74%	19.57%
58	12.83%	6.74%	19.57%
59	12.83%	6.74%	19.57%
60	12.83%	6.74%	19.57%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 2.50%

COLA Loading: 54.55% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix B

Member Contribution Rates for Members with Membership Dates on or after January 1, 2013

**General Members' Contribution Rates for Members with Membership Dates on or after January 1, 2013
(Expressed as a Percentage of Monthly Payroll)**

Calculated Under Recommended Assumptions

	Basic	COLA	Total
Cost Group #1 – PEPRA Tier 4 (2% COLA)	8.80%	2.02%	10.82%
Cost Group #1 – PEPRA Tier 4 (3% COLA)	8.95%	3.01%	11.96%
Cost Group #2 - PEPRA Tier 5 (2% COLA)	8.20%	1.87%	10.07%
Cost Group #2 - PEPRA Tier 5 (3%/4% COLA)	8.42%	2.79%	11.21%
Cost Group #3 - PEPRA Tier 4 (3% COLA)	8.03%	2.80%	10.83%
Cost Group #4 - PEPRA Tier 4 (3% COLA)	9.49%	3.24%	12.73%
Cost Group #5 - PEPRA Tier 4 (2% COLA)	9.46%	2.19%	11.65%
Cost Group #5 - PEPRA Tier 4 (3% COLA)	11.44%	3.90%	15.34%
Cost Group #6 - PEPRA Tier 4 (3% COLA)	10.01%	3.47%	13.48%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.47% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the compensation that can be taken into account for 2018 is equal to the Social Security Taxable Wage Base or \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is \$145,666 or 120% of the Social Security Taxable Wage Base). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

Appendix B

Member Contribution Rates for Members with Membership Dates on or after January 1, 2013

**Safety Members' Contribution Rates for Members with Membership Dates on or after January 1, 2013
(Expressed as a Percentage of Monthly Payroll)**

Calculated Under Recommended Assumptions

	Basic	COLA	Total
Cost Group #7 - PEPRA Tier D	14.86%	6.13%	20.99%
Cost Group #8 - PEPRA Tier D	14.28%	6.00%	20.28%
Cost Group #8 - PEPRA Tier E	13.90%	3.90%	17.80%
Cost Group #9 - PEPRA Tier E	13.50%	3.76%	17.26%
Cost Group #10 - PEPRA Tier D	13.33%	5.65%	18.98%
Cost Group #11 - PEPRA Tier D	12.66%	5.40%	18.06%
Cost Group #12 - PEPRA Tier D	11.92%	5.07%	16.99%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.47% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the compensation that can be taken into account for 2018 is equal to the Social Security Taxable Wage Base or \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is \$145,666 or 120% of the Social Security Taxable Wage Base). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

**Appendix C
Refundability Factors**

General	December 31, 2017		December 31, 2016	
	Legacy Tiers	PEPRA Tiers	Legacy Tiers	PEPRA Tiers
Cost Group #1 – County and Small Districts (Tier 1)	0.9602		0.9599	
PEPRA Tier 4 (2% COLA)		0.9605		0.9605
PEPRA Tier 4 (3% COLA)		0.9613		0.9625
Cost Group #2 – County and Small Districts (Tier 3)	0.9576		0.9576	
PEPRA Tier 5 (2% COLA)		0.9611		0.9621
PEPRA Tier 5 (3%/4% COLA)		0.9631		0.9630
Cost Group #3 – Central Contra Costa Sanitary District	0.9588	0.9670	0.9588	0.9661
Cost Group #4 – Contra Costa Housing Authority	0.9571	0.9654	0.9563	0.9667
Cost Group #5 – Contra Costa County Fire Protection District	0.9591		0.9590	
PEPRA Tier 4 (2% COLA)		0.9630		0.9635
PEPRA Tier 4 (3% COLA)		0.9606		0.9637
Cost Group #6 – Small Districts (Non-Enhanced Tier 1 and 4)	0.9556	0.9643	0.9535	0.9511
Safety				
Cost Group #7 – County (Tier A and D)	0.9657	0.9758	0.9657	0.9755
Cost Group #8 – Contra Costa and East Fire Protection Districts	0.9666		0.9665	
PEPRA Tier D (3% COLA)		0.9770		0.9779
PEPRA Tier E (2% COLA)		0.9748		0.9757
Cost Group #9 – County (Tier C and E)	0.9670	0.9752	0.9668	0.9747
Cost Group #10 – Moraga-Orinda Fire District	0.9688	0.9787	0.9693	0.9786
Cost Group #11 – San Ramon Valley Fire District	0.9665	0.9794	0.9670	0.9784
Cost Group #12 – Rodeo-Hercules Fire Protection District	0.9718	0.9803	0.9718	0.9807

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MEMORANDUM

Date: September 12, 2018

To: CCCERA Board of Retirement

From: Tim Hoppe, Retirement Services Manager

Subject: Robert Richardson, Application for Non-Service Connected Disability, Tier 3

On April 9, 2018, Robert Richardson, a 59-year old Buyer II with the Contra Costa County General Services Department, and active CCCERA member, died as a result of colon cancer. Prior to his death, Mr. Richardson had on file a Member Election Form for Non-Service Connected Disability Retirement in the Event of Member's Death During Active Service (*Active Death Form*). Mr. Richardson had over 17 years of service at the time of his death.

Medical records were analyzed by the Board's medical advisor, who concluded that the evidence showed Mr. Richardson was totally disabled from any employment prior to his death. Therefore, he meets the medical requirements of permanent disability for a Tier 3 member on a non-service connected basis.

The Board is now called upon to make a determination as to whether the member became permanently unable to perform his job duties and if the Member Election Form for a Non-Service Connected Disability Retirement in the Event of Member's Death During Active Service (*Active Death Form*) should be granted.

Recommendation:

1. Find that the member was permanently unable to engage in any substantial gainful employment and grant a non-service connected disability retirement, effective April 9, 2018.
2. Grant the member's beneficiary (member's spouse) benefits pursuant to Government Code Section 31762 (Optional Settlement 2 allowance for the life of the named beneficiary).

Notes: Upon approval of the form, Mr. Richardson's beneficiary would receive a lifetime monthly allowance equal to 100% of the Optional Settlement 2 allowance (GC 31762).

MEMORANDUM

Date: September 12, 2018
To: CCCERA Board of Retirement
From: Tim Hoppe, Retirement Services Manager
Subject: Andrea Sosa, Application for Non-Service Connected Disability, Safety Tier

On December 26, 2017, Andrea Sosa, a 41-year old Deputy Probation Officer III for the Contra Costa County Probation Department, and active CCCERA member, died as a result of breast cancer. Prior to her death, Ms. Sosa had on file, a Member Election Form for Non-Service Connected Disability Retirement in the Event of Member's Death During Active Service (*Active Death Form*). Ms. Sosa had over 16 years of retirement service at the time of her death.

Medical records were analyzed by the Board's medical advisor, who concluded that the evidence showed Ms. Sosa was totally disabled from any employment prior to her death. Therefore she meets the medical requirements of permanent disability for a Safety Tier member on a non-service connected basis.

The Board is now called upon to make a determination as to whether the member became permanently unable to perform her job duties and if the Member Election Form for a Non-Service Connected Disability Retirement in the Event of Member's Death During Active Service (*Active Death Form*) should be granted.

Recommendation:

1. Find that the member was permanently unable to engage in her usual and customary employment and grant a non-service connected disability retirement, effective December 26, 2017.
2. Grant the member's beneficiary (member's sibling) benefits pursuant to Government Code Section 31762 (Optional Settlement 2 allowance for the life of the named beneficiary).

Notes: Upon approval of the form, Ms. Sosa's beneficiary would receive a lifetime monthly allowance equal to 100% of the Optional Settlement 2 allowance (GC 31762).



<u>Meeting Date</u> 9/12/18 <u>Agenda Item</u> #9
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MEMORANDUM

Date: September 12, 2018
 To: CCCERA Board of Retirement
 From: Timothy Price, Chief Investment Officer; Chih-chi Chu, Investment Analyst
 Subject: Consider and take possible action to commit \$50 mm to DLJ RECP Fund VI.

Background

We recommend the Board make a capital commitment of \$50 million to DLJ RECP Fund VI, L.P. (Fund VI). Fund VI will enable CCCERA to carry on the strong momentum from DLJ RECP Fund V, maintaining CCCERA's opportunistic real estate exposure to unique properties located in Boston, New York City, and Los Angeles. As an anchor investor of Fund VI's first close, CCCERA is also driving fund terms improvement to better align the long-term economics between LP and GP of DLJ RECP VI.

In addition, this recommendation is based upon the following factors:

1. CCCERA remains constructive, with a 4% target and approximately \$160 million availability to commit to the opportunistic real estate segment by the time of this memo;
2. DLJ real estate team has evolved from a broader real estate mandate as an investment bank affiliated to a focused mandate as an independent investment boutique. It retains a strong, seasoned investment team, but now with an investment strategy that has proven better suited for its size.

Below is CCCERA's *current* exposure to DLJ RECP fund series.

Table: CCCERA's Current Exposure to DLJ RECP Funds

Fund	Vintage Year	Fund Size	CCCERA's Current Value	Stage
DLJ RECP Fund V	2013	\$210 million	\$23 million	Done Investing
DLJ RECP Fund IV	2008	\$1,253 million	\$95 million	Harvesting
DLJ RECP Fund III	2005	\$1,418 million	\$23 million	Harvesting

Prior to RECP Fund III, CCCERA also committed \$15 and \$40 million to RECP Fund I (1995) and Fund II (1999) respectively. Both funds had since been fully liquidated, with net IRR of 10% and 19% respectively.

CCCERA Investment Staff Research

Below is a summary of CCCERA Investment Staff’s work leading up to DLJ RECP Fund VI.

Table: CCCERA Staff Due Diligence Summary on DLJ RECP Fund VI

Event	Date
Property Visits	2016-2018
Further Research Approved	March, 2018
DLJ On-Site: Organization and Investment Staff Review	April, 2018
On-going Due Diligence	March - September, 2018
Property Visit	August, 2018
DLJ On-Site: Portfolio Review Strategy Discussion Fund Terms Negotiation Fund VI Pipeline Compliance, Finance, Cyber Security, and Operations Review	August, 2018
Initial Legal Review	7/2018-9/2018
Investment Memo Production	9/2018

DLJ RECP Evolution

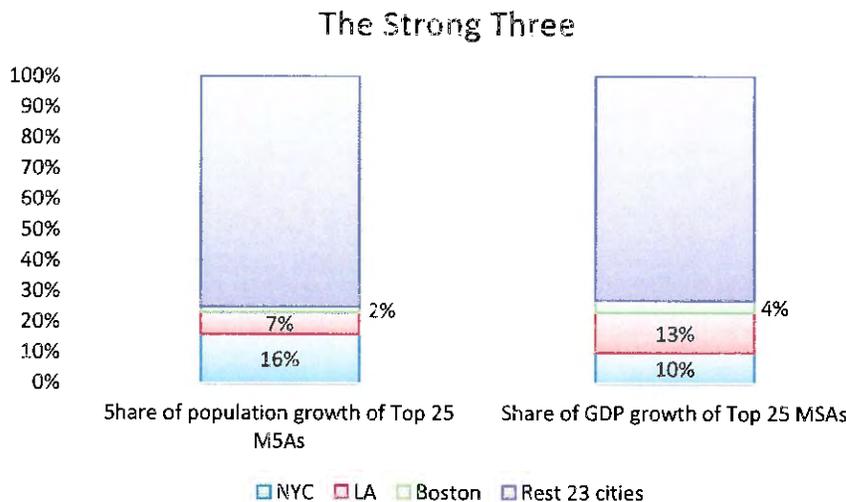
Currently an independent company, DLJ RECP was originally set up in 1995 as the real estate investment team of Donaldson, Lufkin & Jenrette (DLJ), a New York investment bank. In 2005, DLJ merged with Credit Suisse First Boston; in 2010, the management team at DLJ RECP purchased it from Credit Suisse and has remained independent since. With the ownership change, DLJ RECP has also sharpened its investment focus from a bigger, broader global mandate to a neighborhood and block specific investment strategy. This refinement was driven both by small fund sizes and by the lessons learned from over 20 years of direct real estate investing. It is staff’s opinion that the current strategy is best suited to DLJ RECP’s talents and fund size. This has been demonstrated in the Fund V’s success thus far.

DLJ RECP Fund VI Overview

DLJ RECP Fund VI targets properties in emerging neighborhoods in Boston, New York City and Los Angeles. These markets are seen as more resilient through real estate cycles and economic growth has been consistently strong in these three cities, creating disproportionate gains (compared to other cities) in residential, business and investment growth in these three cities. As a result, the real estate prices and rents in these three cities' core CBD (commercial business districts) also grow quickly, forcing tenants to seek alternative neighborhoods where they can have a more cost-effective solutions to their work/live/play needs.

Below is the chart that shows, among the top 25 MSAs in U.S., NYC, LA, and Boston together have a disproportionately large share of both population and GDP growth, which spur growth in real estate demand.

Chart: Strength of DLJ RECP's Target Markets



Source: U.S. Census Bureau (population), U.S. Bureau of Economic Analysis (GDP)

DLJ believes these cities have an advantage in establishing broader real estate trends. Transformational retailers (restaurants, studios, companies with active social media presence) often will initially set up their first shops in NYC or LA, that subsequently will attract young, artistic people to the area, and start the transformation of the neighborhood. Although Boston is relatively small compared to NYC or LA, it has a high population density with many educational institutions that produce the talent in demand in today's marketplace.

All these factors combined are creating opportunities for DLJ RECP to seek unique properties that have the potential to become the neighborhood-defining, institutional quality properties in the emerging neighborhoods of these three cities.

After acquiring the properties, DLJ RECP will launch either major renovation or construction projects to incorporate the latest tenant demands into the properties, delivering products that are current in design, desirable to tenants, and attractive to the next buyers. This investment approach is rooted on their belief that the real estate business has evolved from “location, location, location” to “product, location, experience”, which will guide them from sourcing, design, execution, to sale.

The performance results based on these investment principles have been compelling. Listed below is a summary discussion on some of DLJ RECP’s properties.

Table: Summary of DLJ RECP’s Execution Results

Market	Asset Strategy	Fund	Process and Result
Boston	Re-position to Creative Office	RECP V	<ul style="list-style-type: none"> - Off-beaten path location at the time (Somerville) - Historical brick warehouses - Rents were \$22/ SF/ Yr. at acquisition - Rents were approximately \$35/ SF/ Yr. at sale - Sold asset In November 2017 - Generated \$10.1 million in profits, a 123% gross IRR and 3.1x gross MOIC
Boston	Condo Development	RECP V	<ul style="list-style-type: none"> - Brownstones on a quiet street - Historic building adjacent to State House - The penthouse unit sold for \$11.25m, equating to approximately \$2,950/SF. This was a record-setting price in the Boston market. - At the time (Sept 2017), competitive non-hotel condo units in Boston were topping out at \$2,500 - \$2,700 /SF - Performance attributable to the first-class amenities provided, two on-site garage parking spaces, and the custom-level design and finishes
Los Angeles	High Rise re-position to Creative Office	RECP IV	<ul style="list-style-type: none"> - Landmark building on Hollywood Boulevard - Rents were \$2.07/ SF/ Month at acquisition - Rents were approximately \$4.20/ SF/ Month after renovations - Sold asset in June 2018 - Generated a 1.8x gross MOIC and \$42 million in proceeds
New York	Condo development	RECP V	<ul style="list-style-type: none"> - Early acquisition (2013) of waterfront lot - Sustainable design, thoughtful architecture

	in DUNBO, Brooklyn		<ul style="list-style-type: none"> - Substantial portion of units sold prior to completion of construction - Record average sales prices of \$1,700/ SF - A number of units sold for over \$2,000/ SF - Competitive luxury condo sales prices at \$1,540/ SF - 44% IRR and 2.2x multiple
New York	High rise mix-use development	RECP III & IV	<ul style="list-style-type: none"> - Teamed up with J.D. Carlisle - Sold Residential component at 3.3% cap rate - Hotel's revenue and occupancy is 118% of its competitive set - Property is routinely sold out (94.1% occupancy) - One of the largest conference venue available in Manhattan

For the Fund VI pipeline, DLJ RECP has identified four prospective investments: two residential conversions in Brooklyn, a historical building in Boston for office re-positioning, and a landmark building in LA for office re-positioning. All four are architecturally unique, transformable to DLJ RECP's desired end results, and all four are located in dynamic neighborhoods with live/work/play accessibility.

Andy Rifkin and Carmine Fanelle remain the key men under the Fund VI documents, as they have been since the beginning of the DLJ fund series. The biographies are included below.

Andy Rifkin

Andy has been with DLJ RECP since the very beginning when it was incubated under the investment bank, Donaldson, Lufkin & Jenrette. Now he is also the owner of DLJ RECP. Andy spends most of his time on sourcing and overseeing existing properties. Prior to working at DLJ RECP, Andy was a Vice President at Goldman Sachs' principal investment group in real estate. He graduated with honors from SUNY, Binghamton with a B.S. in mathematics and received an M.S. in Computer Science from Cornell University.

Carmine Fanelle

Carmine assists Andy on the day-to-day management of the firm. Carmine has been working together with Andy since their time at Goldman Sachs. He graduated magna cum laude from Wharton (University of Pennsylvania) with a B.S. in Economics. He also has a B.S.E. in Computer Science Engineering from University of Pennsylvania and a MBA from Wharton.

CCCERA’s Existing Investments in DLJ RECP Funds

CCCERA is a serial investor in DLJ RECP Funds. Funds I (1995) and II (1999) have been fully liquidated with 10% and 19% net IRR respectively. Fund III (2005) still has seven properties under management, and is currently projected to deliver a 1.0x return at the total fund level, primarily due to delays surrounding the investment in the Four Seasons Cayo Largo development (in Puerto Rico). Fund IV (2007) currently has 18 properties under management, and tracking at 1.4x at the total fund level. The exit pace of Fund IV has been slower than expectation, but the overall portfolio is in good shape with no problematic asset.

Fund V (2013), the first fund launched after DLJ RECP became independent, most closely resembles Fund VI’s investment strategy. It is now fully invested, with four realizations to date returning half of the total invested capital. Fund V still has eleven properties under management, two of which are currently in the market, and the remaining nine assets are in various stages of the value-creation process.

Below is a summary of CCCERA’s historical investments in DLJ RECP Funds.

Table: Investments Performance Summary of DLJ RECP Funds

Fund	Vintage Year	Fund Size	CCCERA Commitment	Stage	DPI	TVPI	Net IRR
DLJ RECP V	2013	\$210 million	\$75 million	Done investing	0.5x	1.6x	19%
DLJ RECP IV	2007	\$1,253 million	\$100 million	Harvesting	0.6x	1.4x	5%
DLJ RECP III	2005	\$1,418 million	\$75 million	Harvesting	0.8x	1.0x	(1%)
DLJ RECP II	1999	\$1,200 million	\$40 million	Liquidated	1.9x	1.9x	19%
DLJ RECP I	1995	\$680 million	\$15 million	Liquidated	1.5x	1.5x	10%

DLJ RECP V (Fund V)

Fund V is done with investing and has had four realizations. The fund currently reports since inception returns of 36% (19% net) and 1.8x (1.5x net) investment multiple. It is currently ranked 1st quartile in Bloomberg's market pool of real estate funds in the same vintage year. Below is the performance breakdown of the realized portfolio and existing portfolio:

Table: DLJ RECP Fund V Performance Summary

	No. of Deals	Equity Invested	Realized Proceeds	Current Fair MV	Gross Multiple	Gross IRR	Net IRR	Net Multiple
Realized	4	\$ 30M	\$64M	-----	2.1x	-----	-----	-----
Unrealized	11	\$ 99M	\$ 5M	\$133M	1.2x	-----	-----	-----
Total	15	\$129M	\$69M	\$133M	1.6x	36%	19%	1.5x

Two of the eleven unrealized assets are now in the market for sale. If sales go through on the book values, the total realized proceeds will exceed \$100 million, returning about 78% of all invested equity of the fund. None of the remaining assets are currently impaired.

DLJ RECP IV (Fund IV)

Fund IV is 40% realized with twenty assets still under management, three of which are now in the market for sale. The fund currently reports since inception returns of 7% (5% net) and 1.3x (1.2x net) investment multiple. Below is the performance breakdown of the realized portfolio and existing portfolio:

Table: DLJ RECP Fund IV Performance Summary

	No. of Deals	Equity Invested	Realized Proceeds	Current Fair MV	Gross Multiple	Gross IRR	Net IRR	Net Multiple
Realized	18	\$442M	\$457M	-----	1x	-----	-----	-----
Unrealized	20	\$811M	\$254M	\$1,033M	1.6x	-----	-----	-----
Total	38	\$1,253M	\$711M	\$1,033M	1.4x	7%	5%	1.2x

Fund IV currently has a loan to value ratio of 33%, and 95% of the portfolio are in four strong CRE markets: 29% in NYC, 24% in Shenzhen & Shanghai (China), 23% in D.C., and 19% in LA.

DLJ RECP III (Fund III)

Fund III is 80% realized with seven assets still under management. The fund currently reports since inception returns of 1% (1% net) and 1.1x (1x net). Below is the performance breakdown of the realized portfolio and existing portfolio:

Table: DLJ RECP Fund III Performance Summary

	No. of Deals	Equity Invested	Realized Proceeds	Current Fair MV	Gross Multiple	Gross IRR	Net IRR	Net Multiple
Realized	42	\$ 909M	\$1,133M	-----	1.3x	-----	-----	-----
Unrealized	7	\$ 509M	\$ 12M	\$ 314M	1.6x	-----	-----	-----
Total	49	\$1,418M	\$1,145M	\$ 314M	1.1x	1%	(1%)	1x

Fund III was negatively impacted by a hotel development in Cayo Largo, Puerto Rico where construction has been delayed in part due to recent hurricanes. DLJ is working diligently to deliver this product to the market. The realistic expectation for Fund III is to return all contributed capital to investors.

Funds I & II are both liquidated. Below is the summary of the final results of both funds.

Table: DLJ RECP Fund I & II Performance Summary

Fund	Vintage Year	Fund Size	Fund IRR (net)	Fund Multiple (net)
DLJ RECP Fund II	1999	\$1.2 billion	19%	1.9x
DLJ RECP Fund I	1995	\$680 million	10%	1.5x

CCCERA Opportunistic Real Estate

Based on the asset allocation chosen by the Board earlier this year and CCCERA’s July 31, 2018 market value of \$8.6 billion, CCCERA has a 4% target allocation, or \$346 million, to opportunistic real estate. CCCERA’s current opportunistic real estate investments had a market value of approximately \$421 million, and the outstanding commitment is \$105 million. Given the lagged nature of investing in closed-end real estate, especially opportunistic assets taking longer to deliver, CCCERA historically over-commits 100% relative to the desired opportunistic target in order to achieve the target allocation over time. Based on this analysis, the total amount currently available for CCCERA to commit to opportunistic real estate funds is approximately \$166 million. These figures are illustrated below:

Table: CCCERA's Availability to Commit to Opportunistic Real Estate

	<u>Value</u> <u>(Millions)</u>
CCCERA Total Fund <i>as of 7/31/2018</i>	\$8,650
Opportunistic Real Estate @ 4%	\$346
Plus 100% over-commitment	\$346
less	
Closed End Opportunistic	\$421
Outstanding Commitment	\$105
Available for Opportunistic Real Estate	\$166

CCCERA currently has four opportunistic real estate managers: DLJ, Oaktree, Angelo Gordon, and Siguler Guff. Among this lineup only DLJ remains active raising the true opportunistic fund; therefore staff thinks it is appropriate to make a \$50 million commitment to Fund VI to maintain some market exposure to opportunistic real estate.

Risk Discussion

The next table displays the characteristics of closed end real estate funds with CCCERA’s representative managers. Opportunistic funds target IRRs from mid-to-high teens, and generally use higher leverage than value-add funds. The risk displayed here includes both financial risk and operating risk.

Table: Closed End Real Estate Risk Spectrum*

Strategy	CCCERA Manager	Investment Theme Example	Operating Risk	Financial Leverage	Target Return
<i>Core</i>	None	Commercial real estate with low vacancy in prime markets	Low	30-50%	Mid-to-High Single digit
<i>Value-Added</i>	Invesco, Long Wharf, LaSalle	Lease-Up	Medium	50-65%	High Single to Low Teens
<i>Opportunistic</i>	DLJ, Angelo Gordon	Development project	High	60% and above	Mid-Teens and Up
<i>Distressed</i>	Oaktree, Siguler Guff, Paulson	Recapitalization	Medium-High	0-75%	Mid-Teens and Up

*For illustration of overall industry, does not convey the exact risk and return guidelines of CCCERA’s managers.

For DLJ RECP Fund VI, the investment risks may include (but not be limited to):

- **Public Work Risk:** Some of DLJ’s properties are close to existing, or future public transit stations. However, future public transit projects are subject to delay or cancellation due to various reasons that is out of DLJ’s control. Existing stations may also go through renovation which will adversely affect the demand and rent of the properties.
- **Neighborhood Risk:** Some neighborhoods may appear upcoming at the time of property acquisition, but cool off if one of the contributing elements falls through. For example, a planned stadium may fail to be built, a corporate expansion or relocation may not materialize, or an anticipated park or store isn’t being opened.

- **Interest Rate Risk:** Rate increase, although anticipated, may impact capital markets and real estate values. Higher borrowing costs will also affect the profitability of the projects and the return of the fund.
- **Construction Risk:** Shortage on labor or skills of trade will increase the cost of the project and delay the delivery time to the market. Development projects also inherently have more construction risks than renovation projects.
- **Design Risk:** DLJ tends to be hands-on on the design phase of the project, collaborating with field experts. If the design turns out to be out of favor, it will be costly to do-over.

Summary of Key Terms of DLJ RECP Fund VI

Target Return:	18% Gross IRR
Expected Size:	\$350 million
GP Commitment:	~2-4% of the fund
Investment Period:	3 years after the final close
Maturity:	Ten years from the final close with extensions approved by majority of interest
Management Fee:	1.5%, reduced by 25 bps per year after ten years
Key Person:	Either Andy Rifkin or Carmine Fanelle
Preferred Return:	9% compounded annual return to Limited Partners
Incentive Fee:	20%; 40%/60% LP/GP catch-up

Table: Fee Projections of \$50 Million CCCERA Commitment to DLJ RECP Fund VI

<i>Net IRR Scenario</i>	<i>10%</i>	<i>12%</i>	<i>14%</i>
<i>Gross Economics to CCCERA</i>	\$77.2 million	\$83.4 million	\$88.9 million
<i>M'gmt Fees</i>	\$2.9 million	\$2.9 million	\$2.9 million
<i>Carried Interest</i>	\$4 million	\$6 million	\$7.2 million
<i>Net CCCERA Distribution</i>	\$20.2 million	\$24.3 million	\$28.8 million

Recommendation

Consider and take possible action to commit \$50 mm to DLJ RECP Fund VI.



RECP Fund VI (U.S.), L.P.

Dynamic Neighborhoods

A real estate investment fund targeting investment opportunities in the dynamic neighborhoods of New York, Boston and Los Angeles

CCCERA Presentation: September 2018



Executive Summary

Overview

- **DLJ Real Estate Capital Partners** is a fully independent real estate company, highly focused on assets in select neighborhoods in New York, Boston and Los Angeles
- Senior team has worked together across multiple funds; 200+ investments; multiple investment cycles
- **RECP VI (U.S.):** \$300m targeted fund; Targeting (Gross); 18% IRR, 1.8x MOIC; Moderate leverage of up to 65% LTC
 - Successor fund to RECP V; will follow the same investment strategy
 - RECP V current returns: 26% Gross IRR (14% Net); 1.5x Gross MOIC (1.3x Net) (as of 6/30/18)

Opportunity

Demographic shift towards select major U.S. cities

- Population and economic growth concentrated in a handful of major U.S. cities

Corporations and start-ups are moving to where people want to live/ work/ play

- Large companies relocating to vibrant neighborhoods to attract and retain talent

Growth is occurring neighborhood-by-neighborhood

- Anticipate the path of growth: infrastructure investment, presence of growing companies, transformational amenities

Strategic opportunity in mid-sized investment opportunities

- Appropriate size for team's creativity and hands-on value-creation skills
- Successfully compete against local developers while operating below the radar of large funds

Fund Strategy

Fund Strategy

1. Focused on three major US cities: New York, Boston and Los Angeles
2. Targeting emerging neighborhoods
 - Neighborhoods that are experiencing or set to experience a disproportionate influx and concentration of three things: **capital, commerce and culture**—*i.e. investment, business and people.*
3. Creating value through asset repositioning and select development
4. Focus on meeting the demands of the end-user (e.g. office tenant, resident) throughout excellence in design/architecture

Investment Platform

- Team is positioned with local offices in New York, Boston and Los Angeles
- Working in markets where team has operating capabilities, a strong local presence and deep personal knowledge
- Acquisition strategy is focused on proprietary local opportunities
- Asset management is focused on driving value through a creative, hands-on approach
- Utilize a prudent amount of leverage
- Strategy produces institutional-quality assets in high-quality core-markets

RECP Fund VI (U.S.) Overview

Dynamic Neighborhoods Investment Execution:

Operate at the local level

- Markets where team has operating capabilities, a strong local presence and deep knowledge
- Strong relationships with local community
- These relationships lead to unique proprietary deal flow

Create value through asset repositioning + development

- Understand local market trends and built a creative platform that allows us to deliver a differentiated product
- Focus on excellence in design/ architecture
 - Exceptionally designed real estate drives occupancy, rental rates and exit value
- Create value through hands-on asset management, an approach that also ensures accountability and control

Execute clearly defined business plan

- We understand the impact of social media
- Work with creative designers, architects and branding firms to develop engaging real estate
- Identify and focus on end-user and customer demands
 - Families/ Creative professionals/ TAMI sector companies/ Commuters/ Baby Boomers
- Execute a business plan that meets the nuanced demands of the target demographic
- Deliver projects that provide a curated set of amenities and services to customers

Produce neighborhood-defining, institutional-quality assets

- Institutional/ core qualities at exit:
 - Core U.S. cities with high barriers to entry and institutional demand
 - Assets leading the market in quality and design
 - Strong cash flows/ low turnover
 - Institutional management, reporting and operating procedures
 - High-quality, durable construction

Use a prudent amount of leverage

- Creating value at the asset level, not through financial engineering
- Lower leverage allows us to better control the outcome in a downturn
- RECP V U.S. LTC: 63%

DLJ RECP Organization Overview

Overview

- DLJ RECP is an independent company, controlled and owned by its management team
- Senior team has worked together for over 20 years
- Experience together across multiple funds and investment cycles

200+ Investments

Multiple Funds

Multiple Real Estate Cycles

Multiple Strategies

Donaldson, Lufkin & Jenrette, Inc (1995 - 2000)

- Formed in 1995 as the real estate private equity arm of Donaldson, Lufkin & Jenrette, Inc
- Sponsored two funds: DLJ Real Estate Capital Partners I, L.P. (1995) and DLJ Real Estate Capital Partners II, L.P. (1999)
- Strategy Outline:
 - Investment bank opportunistic strategy
 - Focused on United States/ North America, Western Europe, and Japan
 - Targeted broad pool of asset types

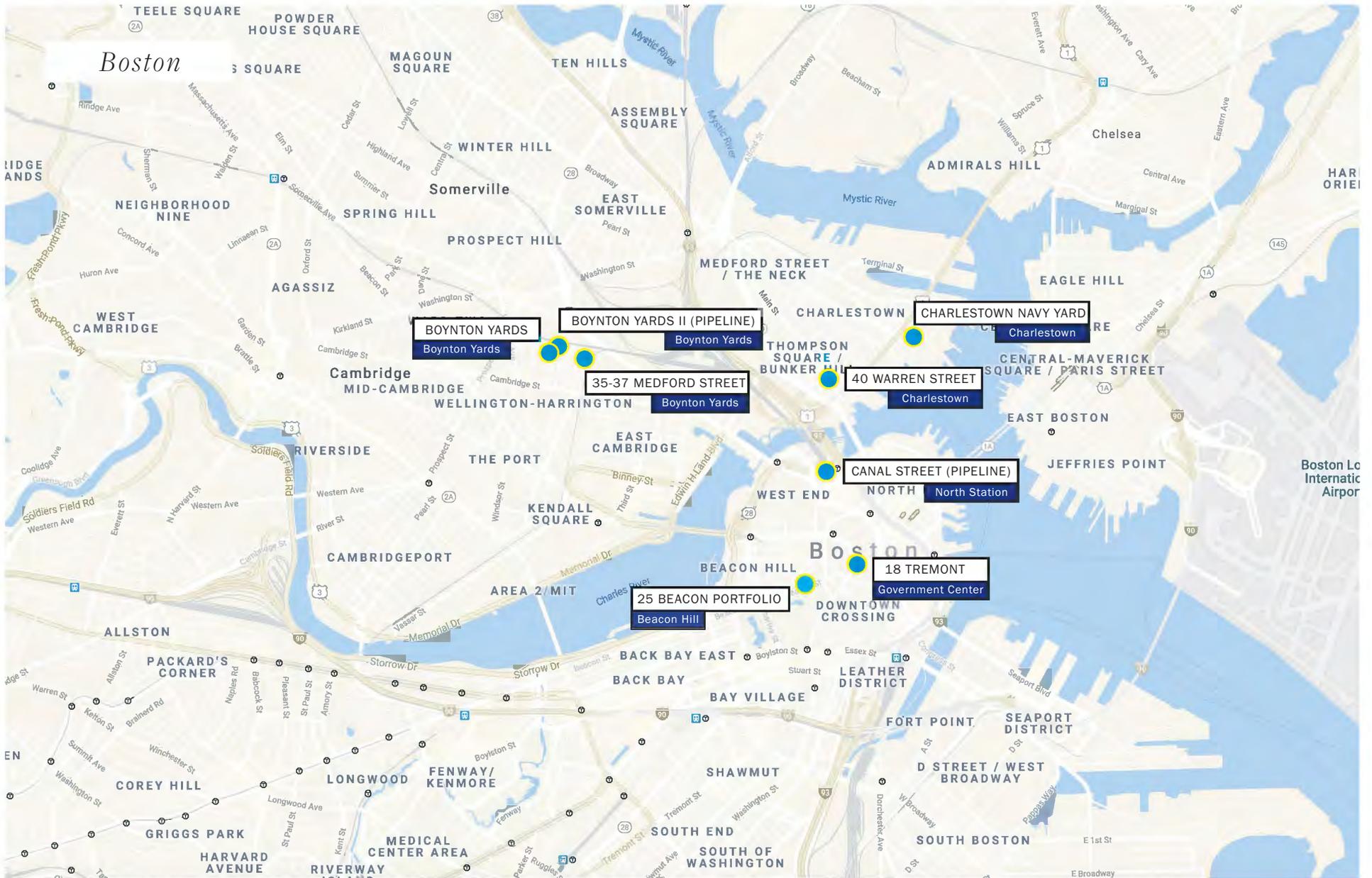
Credit Suisse (2000 - 2010)

- In 2000, Donaldson, Lufkin & Jenrette, Inc. merged with Credit Suisse First Boston
- Sponsored two funds: RECP Fund III, L.P. (2005) and RECP Fund IV, L.P. (2007)
- Strategy Outline:
 - Large global investment bank opportunistic strategy – AUM-driven banking model
 - Strategy driven by parent company’s global capabilities (North America, Europe, China, India and Japan)
 - Targeted real estate and real estate related investments (e.g. pre-IPO investments, PIPE investments, mortgage securities, etc.)

DLJ Real Estate Capital Partners, LLC (2010 - Today)

- In 2010, DLJ RECP became an independent company
- Simplified and defined our investment focus and built a highly creative, vertically integrated team
- RECP V raised to target assets in select emerging neighborhoods in New York, Boston and Los Angeles
- **Investment Strategy:**
 1. Strategy-driven investing and management
 2. Focus exclusively on three major US cities: New York, Boston and Los Angeles
 3. Operate at the local level in markets where we have strong capabilities and networks
 4. Cultivate relationships with designers, influencers and other creative leaders in each of these local communities
 5. Deliver core-quality assets in highly desirable institutional markets





Pipeline Investments

Plymouth Street - DUMBO, Brooklyn



Location:

- DUMBO, Brooklyn, NY

Asset Type/ Investment Strategy:

- Condominium Conversion

Description:

- Property consists of two interconnected buildings in the DUMBO neighborhood of Brooklyn, two blocks from One John Street, a successful RECP V investment.
- Buildings are currently used as the inpatient rehab facility for the Phoenix House Foundation, a drug and alcohol rehabilitation non profit.
- Buildings are under contract with our partner, Alloy Development, with a closing date of March 2019. Alloy Development was our partner on One John Street.
- Business plan is to convert the property to 46 luxury residences at an attractive price point.
- DUMBO remains one of the premier residential markets in Brooklyn and New York City.

Kent Street - Williamsburg, Brooklyn



Location:

- Williamsburg, Brooklyn, NY

Asset Type/ Investment Strategy:

- Residential Repositioning

Description:

- Three-story, 46-unit residential loft building, with 56,550 gross square feet above-grade, and 11,355 square feet of additional, unused air rights.
- Originally constructed in 1910 as a dollhouse factory, the property was converted in the 1990s to loft-style rental residential units.
- Williamsburg is one of the strongest neighborhoods in the country.

Canal Street - North Station, Boston



Location:

- North Station, Boston, MA

Asset Type/ Investment Strategy:

- Repositioning

Description:

- Six-story, 39,000 SF building currently used as an office with ground-floor retail.
- Brick and beam building with high ceiling heights.
- North Station is a dynamic 24/7 mixed-use neighborhood with excellent access to public transportation.
- The North Station neighborhood is located in close proximity to two major commercial developments in Boston.

Boynton Yards II - Boynton Yards, Somerville



Location:

- Boynton Yards, Somerville, MA

Asset Type/ Investment Strategy:

- Land/ Development

Description:

- 3.4 acre site immediately adjacent to the Boynton Yards site acquired by RECP V in 2015.
- Preliminary zoning studies for the site indicate that the site will support approximately 700,000 – 750,000 GSF of buildable area.
- The site benefits from the same macro-economic conditions as Boynton Yards:
 - A prime location within one mile of Kendall Square/ MIT in East Cambridge
 - Somerville is being transformed into a high-density, mixed-use area, including the extension of Boston’s MBTA Green Line to Union Square
 - Proximity to the Cambridge and Somerville neighborhoods where many in the life science and tech workforce live
 - An ability to offer compelling lease terms to tenants due to an attractive land basis

RECP Fund VI (U.S.) Summary

Capitalizing on transformative shifts in demographics & end-user demands

- Addressing desire of Millennials and Boomers to live/work in authentic urban spaces

Driving value through a hands-on approach

- Delivering architecturally interesting, neighborhood-defining assets

Cohesive Team

- Established track record leveraging broad skill set
- Senior members have worked together for over 25 years

Focus on emerging neighborhoods in New York, Boston, and Los Angeles

- Long history, strong operating capabilities & deep local knowledge in markets with strong institutional demand

Mid-sized investments

- Compete with local developers/ non-institutional operators
- Sell to core institutional buyers

Tested Fiduciary

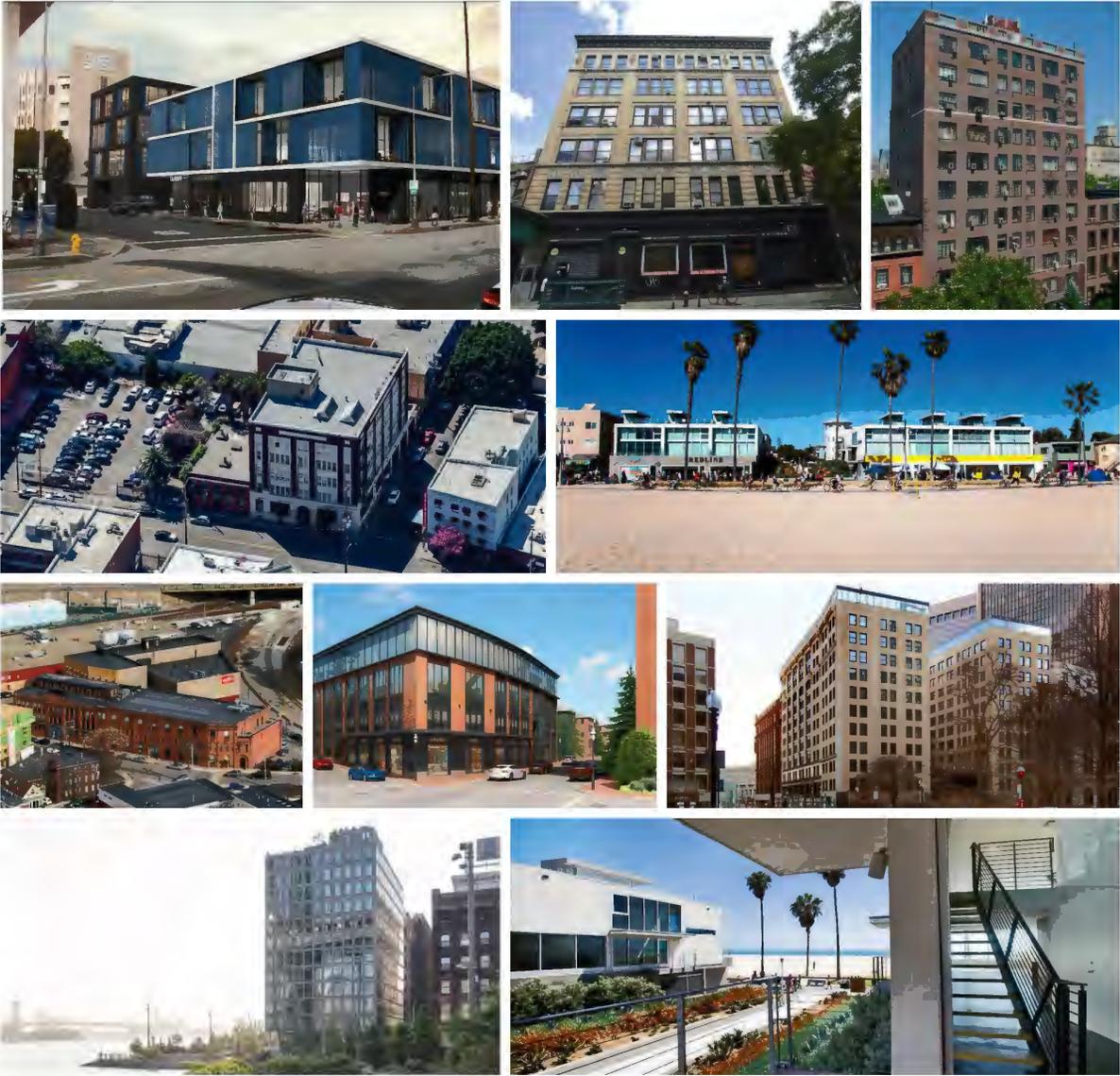
- \$4.5 billion invested over multiple real estate cycles; prudent leverage

RECP Fund VI (U.S.)
Continuing the success of RECP V
Targeting 1.8x gross returns

Case Studies

Dynamic Neighborhood Assets

- 25 Monroe
- Boynton Yards
- Thornton Buildings





25 Monroe

Dynamic Neighborhood:

Brooklyn Heights, Brooklyn

Asset Type/ Investment Strategy:

- Residential Repositioning
- Historically Protected Neighborhood

Deal Metrics:

Fund V U.S. Equity:	\$6.1 million
Co-Investment Equity:	\$10 million
Acquisition Date:	February 2014
Disposition Date:	September 2015
Realized Gross Returns:	39% IRR; 1.5x

Description:

- Historic 12-story, 68-unit pre-war apartment building in one of Brooklyn's most desirable neighborhoods.
- Purchased the property for \$38.5 million (approximately \$630/ sq. ft.) in February 2014.
- Acquisition price compared favorably to \$1,000/ sq. ft. estimated replacement-cost and then-comparable condominium sales prices between \$1,200 and \$1,400/ sq. ft..
- We increased rents by 11% in our first year of ownership.
- Received an attractive unsolicited offer for the property in April 2015.
- Sold the property for \$50 million in September 2015.



Boynton Yards

Dynamic Neighborhood:

Boynton Yards, Somerville

Asset Type/ Investment Strategy:

- Lab/ Office/ R&D Mixed-Use Development
- Ground Lease with Option to Buy

Deal Metrics:

Fund V U.S. Equity: \$3.8 million (to date)
Acquisition Date: November 2015

Transaction Description:

- Structured as a 4-year ground lease with an option to buy underlying fee interest in the land for approx. \$13.4 million.
- Annual lease payments of \$1.0 million offset by approx. \$650,000 of in-place annual NOI.

Status:

- The project is a 3.4-acre site in Somerville, MA, immediately southeast of Union Square and within a 5-minute bicycle ride to Harvard, MIT and Kendall Square in Cambridge.
- Nearby office and lab space in/around Kendall Square is over 95% occupied.
- Green Line Extension's first station will be a few blocks away at Union Square.
- Current zoning allows 675,000 sq. ft. of development (basis of \$22/ FAR sq. ft.).
- City-wide upzoning will increase zoning to allow for over 850,000 sq. ft. of development (basis of \$18/ FAR sq. ft.).
- Comparable entitled land currently trades at approximately \$60/ sq. ft.



Thornton Buildings

Dynamic Neighborhood:

Venice Beach, Los Angeles

Asset Type/ Investment Strategy:

- Tech Tenants
- Supply-Constrained Market

Deal Metrics:

Fund V U.S. Equity:	\$12.2 million
Acquisition Date:	August 2014
Fund V U.S. FMV:	\$25.6 million

Description:

- The property is located on the Venice Beach Boardwalk offering unparalleled views and access to the ocean.
- The two-building project is configured as 10 live/work creative office suites (totaling 35,500 sq. ft.), ground-floor retail (2,500 sq. ft.) and a 108-car parking garage under the buildings.

Status:

- At acquisition, in-place rents were 60% below-market.
- In December 2014, we signed a 7-year NNN master-lease with Snap, Inc. (Snapchat) for the entire property.
- In 2018, Snap, Inc. (Snap) decided to relocate to Santa Monica. They will remain on the lease through 2021.
- We are evaluating options to sell the property as-is or re-lease the building.



CCCERA Distribution Summary

ASSETS SOLD OR IN MARKET	CCCERA Portion
RECP III	\$3,300,000
RECP IV	13,300,000
RECP V Global	21,900,000
SUBTOTAL ASSETS SOLD OR IN MARKET	\$38,500,000

ASSETS EXPECTED TO BE IN THE MARKET IN NEXT YEAR	CCCERA Portion
RECP IV	\$11,300,000
SUBTOTAL ASSETS EXPECTED TO BE IN THE MARKET IN NEXT YEAR	\$11,300,000

TOTAL 2018 / 2019 ESTIMATED DISTRIBUTIONS	\$49,800,000
--	---------------------



1123 Broadway, Second Floor
New York, NY 10010
(212) 901-4928

Contra Costa County Employees' Retirement Association

Meeting Date

9/12/18

Agenda Item

#11

Semi-Annual Disability Retirement Report

*for the years ended 2014, 2015, 2016, 2017,
and January 1 to June 30, 2018*

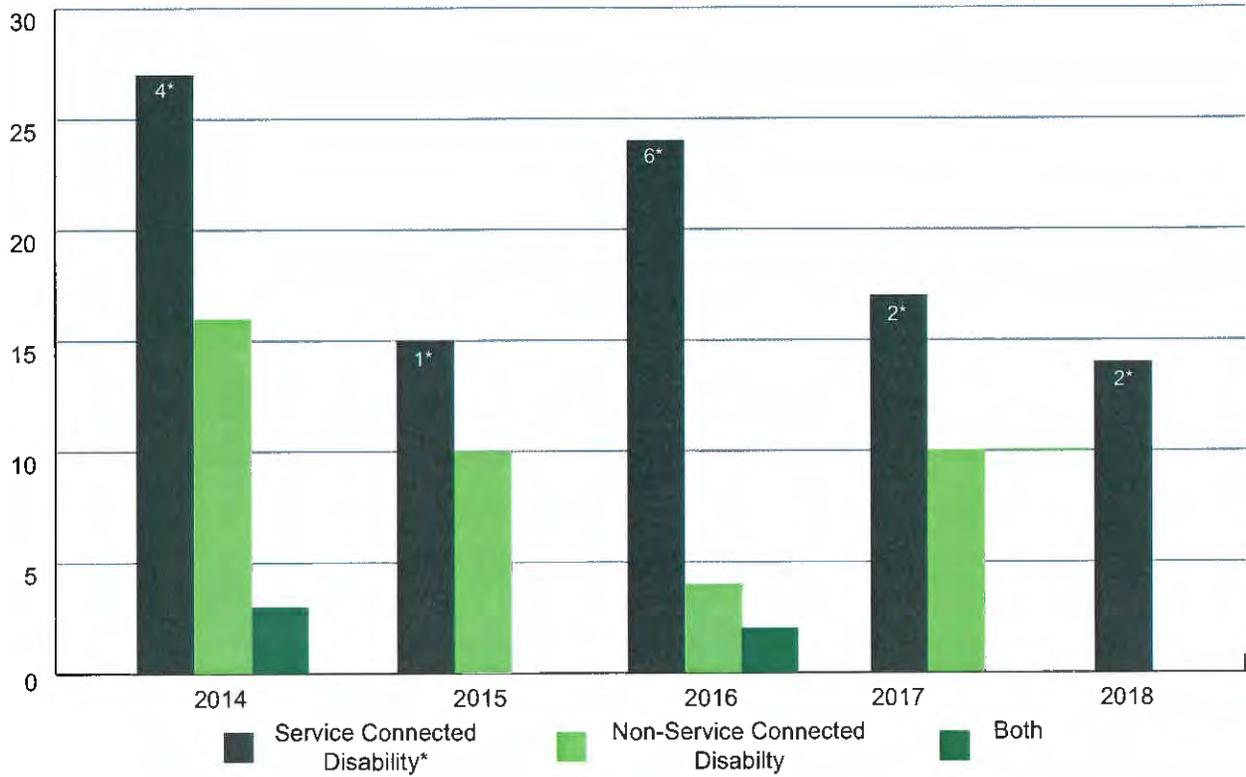


Contra Costa County Employees' Retirement Association
1355 Willow Way, Suite 221
Concord, California 94520-5728
cccera.org

Semi-Annual Disability Retirement Report

Exhibit 1: Disability Retirement Applications Received by Year

As of June 30, 2018



*Number of service connected disability applications accepted with less than 10 years of service are noted in white.

Contra Costa County Employees' Retirement Association
 Semi-Annual Disability Retirement Report (Continued)

Exhibit 2: Total Disability Applications Filed with CCCERA (totals listed by employer)

As of June 30, 2018

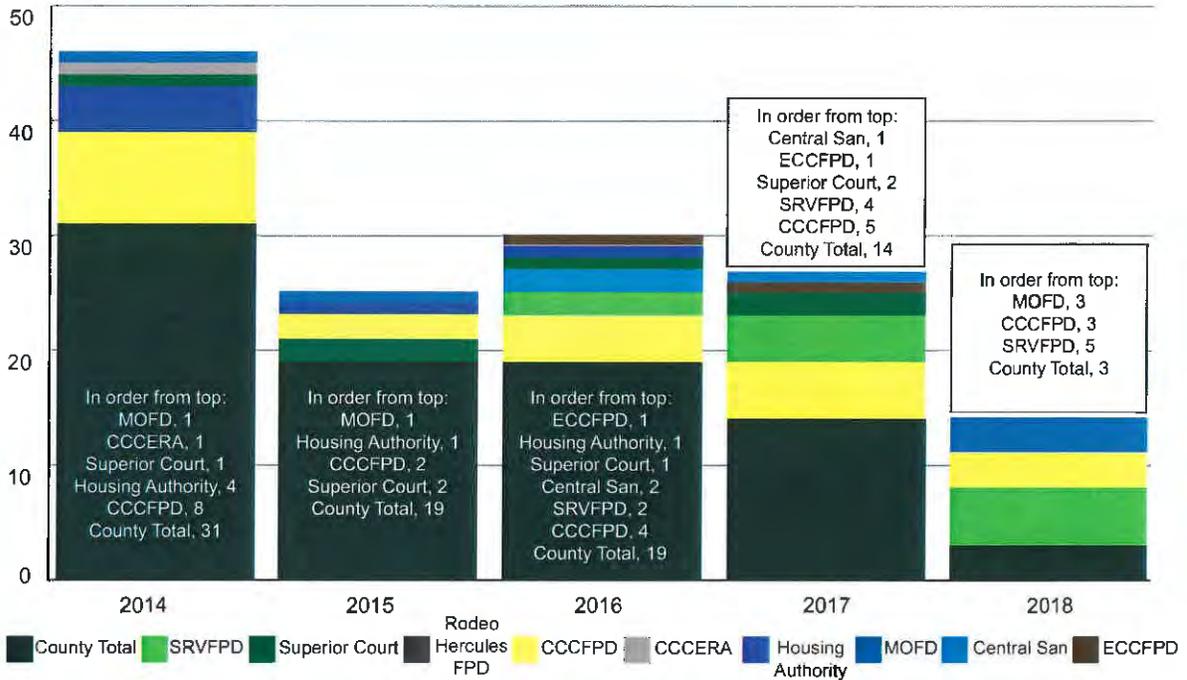
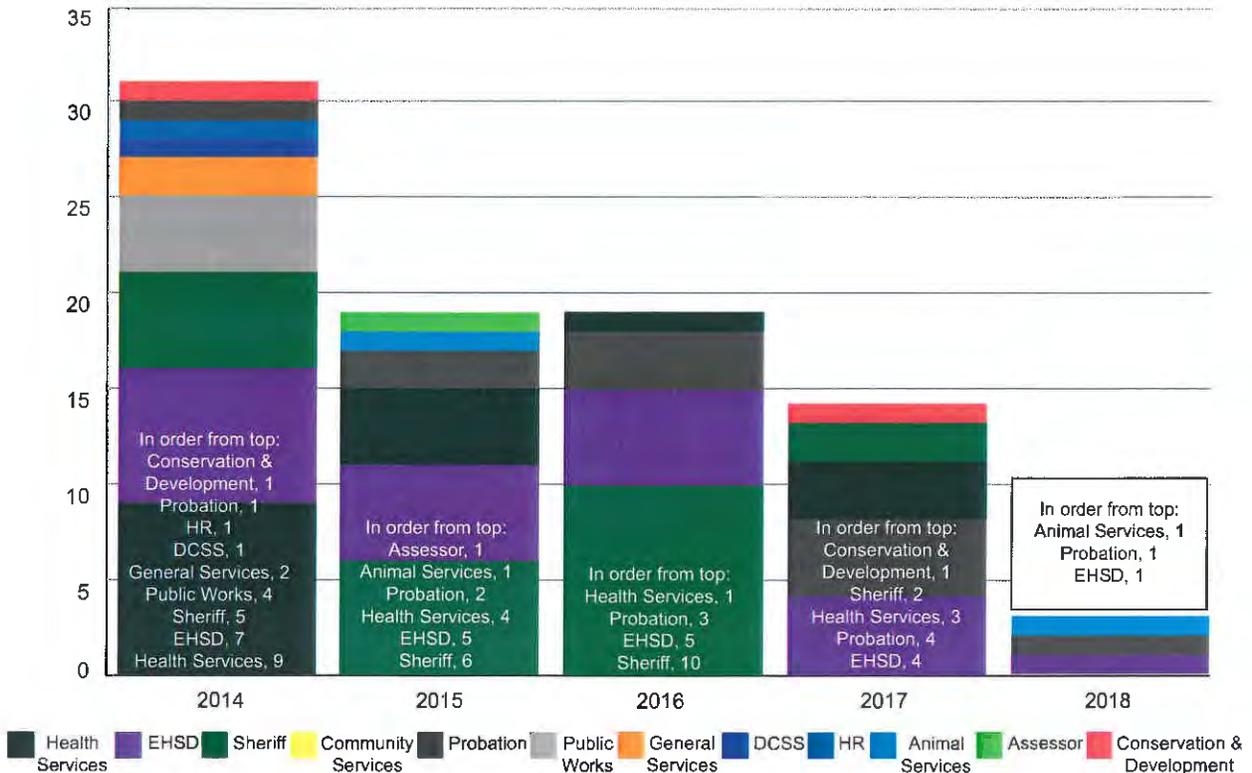


Exhibit 3: Total Disability Applications Filed with CCCERA (by County Department)

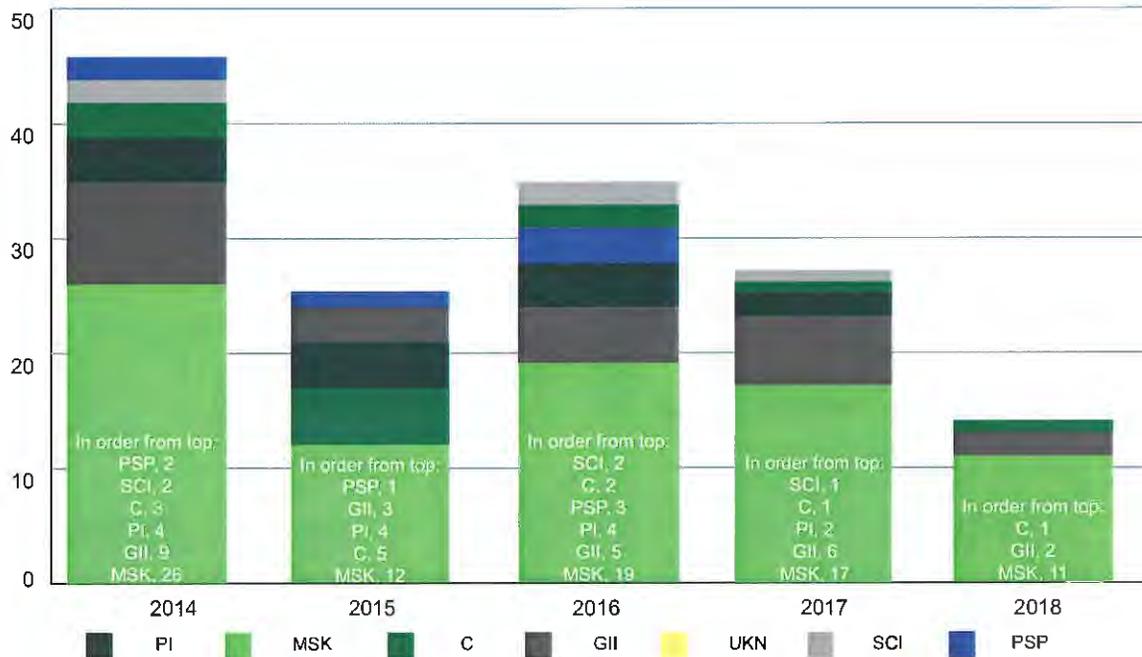
As of June 30, 2018



Contra Costa County Employees' Retirement Association
 Semi-Annual Disability Retirement Report (Continued)

Exhibit 4: Total Disability Filed by Type (Some applications filed with multiple disability types.)

As of June 30, 2018



The following acronyms group different illnesses together by type to show trends and are not limited to the examples below.

Psychiatric Incapacitation (PI)	Will include all psychiatric and mental health conditions and injuries. Examples would be PTSD, OCD, depression, schizophrenia, anxiety disorders, mood and emotional disorders.
Musculoskeletal (MSK)	Will include all orthopedic injuries and illness. Examples include carpal tunnel syndrome, amputation, avascular necrosis, back injury, degenerative disc disease, fibromyalgia, lumbar stenosis, neck injury, shoulder injury, and disc herniation.
Cancer (C)	Will include all permanent incapacitation that was the result of a form of cancer.
General Internal Incapacitation (GII)	Will include all injuries and illness that are general non-orthopedic issues, not covered by the noted above. Examples include diabetes, any disease or injury to an internal organ, rheumatology, pulmonary, gastrointestinal.
Unknown (UKN)	Disability application filed for unknown medical reasons. An example would be an employer that filed an application with limited medical records due to HIPAA.
Severe Cognitive Impairment (SCI)	Will include all illness' and injuries where the incapacitation has caused diminished cognitive function. Examples include traumatic brain injury, dementia, dyslexia, dyscalculia, memory impairments, diminished concentration and speech.
Public Safety Presumptions (PSP)	Will include all illness and injuries where the cause is governed under GC Sections 31720.5, 31720.6, 31720.7, or 31720.9. Presumptions will be listed twice; once under total presumption and once under type of disability.

Contra Costa County Employees' Retirement Association
 Semi-Annual Disability Retirement Report *(Continued)*

Exhibit 5: Type of Disability by Injury/Illness Group (Employer Level)					
Employer	2014	2015	2016	2017	2018
Contra Costa County Fire Protection District (CCCFPD)					
PI	1	0	0	0	0
MSK	5	1	4	5	3
C	0	0	0	0	0
PSP	2	1	0	0	0
Contra Costa County Employees' Retirement Association (CCCERA)					
GII	1	0	0	0	0
Central Sanitary District					
MSK	0	0	2	0	0
GII	0	0	0	1	0
SCI	0	0	1	0	0
East County Fire					
PI	0	0	1	0	0
MSK	0	0	0	1	0
Housing Authority of Contra Costa County					
MSK	3	0	1	0	0
C	0	1	0	0	0
GII	1	0	0	0	0
Moraga/Orinda Fire Protection District					
MSK	1	1	0	0	2
C	0	0	0	0	1
Rodeo/Hercules Fire Protection District					
MSK	0	0	0	0	0
San Ramon Valley Fire Protection District					
PI	0	0	2	0	0
MSK	0	0	1	4	3
GII	0	0	0	0	2
Contra Costa County Superior Court					
MSK	1	1	1	0	0
C	0	1	0	0	0
GII	0	0	0	1	0
SCI	0	0	0	1	0
Contra Costa County*					
PI	3	4	1	2	0
MSK	16	9	10	7	3
C	3	3	2	1	0
PSP	0	0	3	0	0
GII	7	3	5	4	0
UNK	0	0	0	0	0
SCI	2	0	1	0	0

*Detail by Contra Costa County departments on following page.

Contra Costa County Employees' Retirement Association
 Semi-Annual Disability Retirement Report (Continued)

Exhibit 5: Type of Disability by Injury/Illness Group (County Department Level)					
Department	2014	2015	2016	2017	2018
Contra Costa County					
<i>Animal Services</i>					
GII	0	1	0	0	0
MSK	0	0	0	0	1
<i>Assessor</i>					
GII	0	1	0	0	0
<i>Community Services</i>					
PI	0	0	0	0	0
<i>Conservation and Development</i>					
MSK	1	0	0	0	0
C	0	0	0	1	0
<i>Department of Child Support Services (DCSS)</i>					
C	1	0	0	0	0
<i>Employment & Human Services Department (EHSD)</i>					
PI	1	2	0	0	0
MSK	2	2	1	1	1
C	1	1	1	0	0
GII	1	0	3	3	0
SCI	2	0	0	0	0
<i>General Services Department</i>					
MSK	1	0	0	0	0
C	1	0	0	0	0
<i>Health Services Department</i>					
PI	1	1	0	1	0
MSK	4	1	1	1	0
C	0	1	0	0	0
GII	4	1	1	1	0
UNK	0	0	0	0	0
SCI	0	0	0	0	0
<i>Human Resources Department</i>					
GII	1	0	0	0	0
<i>Public Works Department</i>					
MSK	3	0	0	0	0
GII	1	0	0	0	0
<i>Probation Department</i>					
PI	1	1	1	1	0
MSK	0	1	1	3	1
C	0	0	0	0	0
PSP	0	0	1	0	0
GII	0	0	1	0	0
<i>Sheriff's Office</i>					
PI	0	0	0	0	0
MSK	5	5	7	2	0
C	0	1	1	0	0
PSP	0	0	2	0	0
SCI	0	0	1	0	0

Employer Audit:
San Ramon Valley Fire
Protection District

EAU2018104

Meeting Date
9/12/18
Agenda Item
#12

*Final Audit Report
dated 8/15/2018
prepared by:*



San Ramon Valley Fire Protection District

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August 15, 2018

Paige Meyer
Fire Chief
San Ramon Valley
Fire Protection District
1500 Bollinger Canyon Rd.
San Ramon, CA 94583

Re: Final Report – San Ramon Valley Fire Protection District (SRVFPD) Pensionable Compensation, Contribution and Reporting Audit

Dear Chief Meyer,

Enclosed you will find our final employer audit report for the San Ramon Valley Fire Protection District. The district's written response to the Preliminary Employer Audit Report dated June 18, 2018 included in the addendum to this report, indicates agreement with the follow up items #1 (i – vi).

With respect to follow up item #2, it is acknowledged that the district rolled the standby pay into base pay to reflect the required stand-by duties of the Fire and Life Safety Inspector classifications and that these positions would no longer be eligible for standby pay as indicated in the district's response.

For follow up item #3 regarding the review of the Fire and Life Safety classifications further review and collaboration between CCCERA and the district was needed. CCCERA provided the district with its understanding of membership classification for the Fire and Life Safety positions in its correspondence of August 14, 2018.

Regarding follow up item #4 Internal Revenue Code (IRC) Compensation Limits, we are in agreement with the procedure that the district outlined in its response for tracking compensation limits for active employees, with the clarification to the district response that refers to the "415 limit" which refers to retiree pension payments only. The correct reference and IRC citation for active Legacy (pre-2013) employees are the annual IRC 401(a)(17) limit and for PEPRA (post-2012) California Government Code Section 7522.10(c) compensation limit. These limits are communicated by CCCERA annually in January to all participating employers.

San Ramon Valley Fire Protection District

The district also acknowledged in its email communication of June 15, 2018 that a member that was identified during the audit did have excess compensation over the annual limit and was reported to the retirement system. A correction and adjustment to the member's compensation and pension contribution record for 2016 will need to be performed.

This letter, along with the final audit report will be placed on the Board of Retirement's meeting agenda for presentation to the Board on its Wednesday September 12, 2018 meeting.

I want to thank you and all the of the district staff for their time and cooperation during this audit.

Best regards,



Wrally Dutkiewicz
Compliance Officer

Cc: Natalie Korthamar-Wong, Director of Human Resources,
Kenneth Campo, Interim CFO

San Ramon Valley Fire Protection District



May 22, 2018

Paige Meyer
Fire Chief
San Ramon Valley
Fire Protection District
1500 Bollinger Canyon Rd.
San Ramon, CA 94583

Re: Preliminary Report – San Ramon Valley Fire Protection District (SRVFPD) Pensionable Compensation, Contribution and Reporting Audit

Dear Chief Meyer,

Enclosed is the preliminary audit report of the San Ramon Valley Fire Protection District (SRVFPD) pensionable compensation, contribution and reporting audit, conducted pursuant to Government Code Section 31543. I want to thank you and all SRVFPD staff for their assistance in gathering all the records and documents and making them readily available during this audit. This cooperation was greatly appreciated and allowed for the audit to be completed in an efficient manner.

The *Preliminary Audit Report* is enclosed for your review. I would direct your attention to the “*Observations*” and “*Follow-Up Items*” sections of the report. A written response from SRVFPD pertaining to the “*Follow-Up Items*” indicated in the report should be sent to CCCERA within four weeks of the date noted on the report. This response will be included in the “*Final Report*” which will be submitted to CCCERA’s Board of Retirement.

San Ramon Valley Fire Protection District

In addition, I would like to extend my gratitude to SRVFPD's payroll and human resources staff and the courtesy that they extended to CCCERA compliance staff during the review. Should you wish to discuss or have any questions regarding the items reviewed and the observations contained within this report, please contact me at 925-521-3960.

Best regards,



Wrally Dutkiewicz
Compliance Officer

Cc: Natalie Korthamar-Wong, Director of Human Resources,
Kenneth Campo, Interim CFO

San Ramon Valley Fire Protection District

Background

The Contra Costa County Employees' Retirement Association (CCCERA) is a public employee retirement system that was established by Contra Costa County on July 1, 1945, and is administered by the Board of Retirement (Board) to provide service retirement, disability, death, and survivor benefits for Contra Costa County (County) employees and 16 other participating agencies under the California State Government Code, Section 31450, et. seq. (County Employees Retirement Law of 1937 or CERL) and the California Public Employees' Pension Reform Act of 2013 (PEPRA).

CCCERA administers the retirement benefits for the employees of Contra Costa County and participating District employers. Participating employers within the CCCERA retirement system transmit payroll information and contributions to fund the benefits for their employees. CCCERA sets up retirees' accounts, processes applications, calculates retirement allowances, prepares monthly retirement benefit payment rolls, and makes adjustments to retirement benefits when needed.

Retirement allowances are computed in accordance with statute using three factors: years of service, age at retirement, and final compensation. For Legacy (pre-PEPRA) members, final compensation is defined as the highest average annual compensation earnable (as defined in G.C. Section 31461) by a member during the last one or three consecutive years of employment depending on the member's Tier, unless the member elects a different period with a higher average. For PEPRA members, final compensation is defined as the highest average annual pensionable compensation (as defined in G.C. Section 7522.34) earned by the member during a period of 36 consecutive months.

The employer's knowledge of the rules relating to membership and payroll reporting facilitates the employer in providing CCCERA with appropriate employee information. Correct enrollment of eligible employees and correct reporting of payroll information are necessary for the accurate computation of a member's retirement allowance.

The San Ramon Valley Fire Protection District provides fire, rescue and emergency medical services to the communities of Alamo, Blackhawk, the Town of Danville, Diablo, the City of San Ramon, the southern area of Morgan Territory and the Tassajara Valley, all located in Contra Costa County. The District's service area encompasses approximately 155 square miles and serves a population of 186,000.

The District maintains nine career fire stations and one volunteer-staffed station, an administrative office building and other supporting facilities all strategically located throughout the jurisdiction. The District staffs fourteen companies, including structure and wildland engines,

San Ramon Valley Fire Protection District

ladder trucks, ALS ambulances, and specialized Hazardous Materials, Rescue, Communications and other support units. The District also operates its own 911 communications center.¹

For fiscal year 2016-2017 SRVFPD has budgeted expenditures for salaries and benefits in the amount of \$55,125,000 and for fiscal year 2017-2018 it budgeted \$59,580,000. Per CCCERA records, SRVFPD had an average of 160 employees in fiscal year 2016-2017 with active memberships in CCCERA and submitted approximately \$5,155,000 in employee pension contributions and \$15,770,000 in employer pension contributions. As of December 31, 2017, CCCERA had 185 retirees and beneficiaries on record for SRVFPD with a total paid benefit amount of approximately \$15,591,600 in 2017.

¹ <http://www.firedepartment.org/about/overview.asp>

San Ramon Valley Fire Protection District

Scope

The 2013 Pension Reform legislation granted CCCERA the authority under Government Code Section 31543 for CCCERA to conduct audits of employers to ensure that employee and payroll information used in the calculation of Retiree pension benefits is correct and verifiable. The scope of these on-site reviews include:

- Correctness of retirement benefits;
- Reportable compensation;
- Enrollment in, and reinstatement to the system (GC 31554);
- Pensionable compensation (GC 31461 and 7522.34);
- Determine if employees convicted of certain felonies have forfeited benefits earned or accrued from the commission of the felony (GC 7522.72(g) and GC 7522.74(g));
- Review MOUs with respect to compensation and salary regulations (i.e. Vacation Sales etc.);
- Determine if compensation is paid to enhance a member's retirement benefit (GC 31461(b)(1) and 7522.34(c)(1));
- Evaluate employer's compliance with restrictions on retirees returning to work (GC 7522.56, I.R.S. bona fide separation and normal retirement age rules).
- Determine if compensation is paid to enhance a member's retirement benefit (GC 31461(b)(1) and 7522.34(c)(1)).

The on-site review of the District was conducted on March 18, 2018. The review period encompassed active employee records for 2015 through 2017 and retired employees from 2016 through 2018.

San Ramon Valley Fire Protection District

The following activities were performed:

- Reviewed the following documents:
 - SRVFPD Non-Represented Employee Handbook April 2004 - June 2007 (in process of being updated during audit)
 - Memoranda of Understanding (MOU):
 1. MOU between SRVFPD and the International Association of Firefighters (IAFF Local 3546) – August 1, 2009 – June 30, 2018
 2. MOU between SRVFPD and International Association of Firefighters (IAFF Local 3546–A – mid-managers) – July 1, 2013 – June 30, 2018
 - Letters of Understanding (LOUs):
 - Salary Increases:
 1. LOU between SRVFPD and IAFF Local 3546–A – April 1, 2017 (salary increase and rolling incentive pay into base pay)
 2. LOU between SRVFPD and IAFF Local 3546 – April 1, 2017 (salary increase and rolling incentive pay into base pay)
 3. LOU between SRVFPD and IAFF Local 3546 – May 1, 2015 (salary increase effective January 1, 2016)
 4. LOU between SRVFPD and IAFF Local 3546–A – May 27, 2015 (salary increase effective January 1, 2016 and Battalion chief standby pay rolled up into base pay)
 5. LOU between SRVFPD and IAFF Local 3546 – October 28, 2015 (salary increase effective November 1, 2015)
 6. LOU between SRVFPD and IAFF Local 3546 – June 30, 2014 (salary increase effective July 1, 2014)
 - Operational Changes:
 7. LOU between SRVFPD and IAFF Local 3546 – April 26, 2017 (Fire and Life Safety Inspector pay rolled into base pay)
 8. LOU between SRVFPD and IAFF Local 3546 – January 6, 2016 (reorganization of Fire Prevention Division)
 9. LOU between SRVFPD and IAFF Local 3546 – December 15, 2016 (reorganization of Fire Prevention Division)
 10. LOU between SRVFPD and IAFF Local 3546 – December 10, 2015 (changes to Public Safety Dispatcher and Public Safety Dispatch Supervisor positions and pay)
 11. LOU between SRVFPD and IAFF Local 3546 – October 4, 2013 (Hazardous Materials Team)
 12. LOU between SRVFPD and IAFF Local 3546 – March 28, 2011 (Dispatch call back procedure)

San Ramon Valley Fire Protection District

13. LOU between SRVFPD and IAFF Local 3546 – September 21, 2010 (overtime recall procedure)
 14. LOU between SRVFPD and IAFF Local 3546 – June 18, 2010 (Rescue Team)
 15. LOU between SRVFPD and IAFF Local 3546 – June 30, 2008 (short hour vacation schedules)
 16. LOU between SRVFPD and IAFF Local 3546 – November 4, 2013 (training captain overtime)
- Employment Agreements:
 1. Employment Agreement between SRVFPD and Fire Chief – February 27, 2013
 2. Amendment of Employment Agreement between SRVFPD and Fire Chief – May 27, 2015
 3. 2nd Amendment to Employment Agreement between SRVFPD and Fire Chief – August 23, 2017
 - Board Meeting Minutes:
 1. Board Meeting Minutes for Board Meeting from March 22, 2017 (two percent subvention reduction for unrepresented employees)
- Interviewed key SRVFPD staff members to obtain an understanding of the District’s personnel and payroll procedures;
 - Reviewed the payroll transactions and compared SRVFPD’s payroll register with the data reported to CCCERA to determine whether the district correctly reported employees’ compensation;
 - Reviewed whether appropriate compensation limits established by the Internal Revenue Code (IRC) were applied to SRVFPD compensation reported to CCCERA;
 - Reconciled a sample of timesheets to payroll system information;
 - Reviewed the SRVFPD’s payroll information reported to CCCERA for all employees to determine whether pay-rates were reported pursuant to public salary information;
 - Reviewed SRVFPD’s process for reporting payroll to CCCERA to determine whether the payroll reporting elements were reported correctly;
 - Reviewed SRVFPD’s employer and employee retirement contribution calculations for accuracy;

San Ramon Valley Fire Protection District

- Reviewed SRVFPD's employee enrollments to determine whether all enrollment packages were received timely by CCCERA and executed correctly;
- Reviewed receivables from SRVFPD paid to CCCERA on a monthly basis for timeliness and accuracy;
- Reviewed whether all compensation elements that were reported to CCCERA by SRVFPD are pensionable;
- Reviewed a sample of pension benefit calculations;
- Reviewed whether applicable limits established by IRC Section 415 were applied to retiree pension benefits.

San Ramon Valley Fire Protection District

Findings & Observations

Accuracy of Payroll Information provided to CCCERA

Accuracy of Payroll Information provided to CCCERA

The accuracy, timeliness and completeness of the pensionable payroll and employee and employer contributions reported to CCCERA by SRVFPD is to be tested to ensure that member benefits can be accurately calculated and that the retirement system is receiving accurate information to manage and report out from its pension administration system.

Test Standards

Pursuant to Board of Retirement Regulations Section IV: Employer pensionable payroll and corresponding pension contributions are to be reported to the retirement system timely and accurately. (*Contributions And Reporting, 2. Due Dates, 4. Employer Certification*).

Due Dates

Each employer shall report to the Association in a manner and frequency as determined by the Board sufficient for the Board to credit contributions and service to each member's record.

Unless otherwise specified, reports shall be due no later than the tenth of each month for the previous month's payroll and shall be accompanied by member and employer contributions. If the tenth of the month falls on a weekend or holiday, the due date shall be the last working day before the tenth. Reports, which are unreadable or incorrect, shall not be accepted and shall be returned to the employer. (Emphasis added.)

Reports and contributions received after the due date shall be considered late and subject to a late reporting penalty equal to: the prime rate in effect on the due date computed on a daily, non-compounding basis and applied to the contributions due.

Employer Certification

Each payroll and pension contribution report shall include or be accompanied by a certification, under penalty of perjury, as to its accuracy. The certification shall be made by a duly authorized representative of the employer. (Board of Retirement Regulations *Section IV, 4. Employer Certification*.)

San Ramon Valley Fire Protection District

Compensation Limits:

Federal and state laws place annual limits on the compensation that can be used to determine contributions and benefits for CCCERA plan members.

Legacy Members:

- The Internal Revenue Code provides for dollar limitations on benefits and contributions under qualified retirement plans which are adjusted annually for cost-of-living increases.
- Members who commenced participation in CCCERA on or after January 1, 1996 are subject to the annual federal Internal Revenue Code Section 401(a)(17) compensation limit.
- For CERL benefit formulas (General Tiers 1, 3, Safety Tiers A, & C), the 2017 calendar year compensation limit was increased to \$270,000 from \$265,000 for calendar year 2016;
- Members who commenced participation in CCCERA prior to January 1, 1996 are not subject to the Internal Revenue Code annual compensation limit.

PEPRA Members:

- For new employees who commenced participation in CCCERA on or after January 1, 2013 under PEPRA benefit formulas (General Tiers 4,5, Safety Tiers D & E), the compensation which exceeds that annual pensionable compensation limit under California Government Code Section 7522.10(c) and (d) is not included in determining benefits or contributions.
- The 2017 calendar year PEPRA compensation limits are as follows:
 - For employees enrolled in Social Security – increased to \$118,775;
 - For employees not enrolled in Social Security – increased to \$142,530;
- The 2016 calendar year PEPRA compensation limits are as follows:
 - For employees enrolled in Social Security – increased to \$117,020;
 - For employees not enrolled in Social Security – increased to \$140,424;

Compensation Earnable Applicable Law

"Compensation earnable" does not include, in any case, the following: Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise. (G.C. § 31461(b)(3).)

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Pursuant to CCCERA's "Compensation Earnable Policy"², Section III.D. "Compensation Earnable" excludes payments for additional services rendered outside of normal working hours:

"Pay received for "overtime" is not included in "compensation earnable." To be included, the time for which compensation is received:

- (1) must be the normal working hours set forth in the applicable employment agreement;
- (2) must be required by the employer to be worked by the employee (as distinguished from voluntarily worked); and
- (3) must be ordinarily worked by all others in the same grade or classification at the same rate of pay during the FAS period.

Pay that will be reviewed under these conditions is often described as "standby" and "on-call." Employers must report to CCCERA as pensionable only that pay for work that is required of and ordinarily served by everyone in the same grade or classification, at the same rate of pay.

Pensionable compensation (GC 31461 and 7522.34) is to be reported to the retirement system and the corresponding contributions are to be reported to the retirement system.

Publicly Available Pay Schedule

Pursuant to CCCERA's Policy On Determining "Pensionable Compensation"³ Under PEPR A For Purposes Of Calculating Retirement Benefits, a "publicly available pay schedule" must meet all of the following requirements:

1. *Has been duly approved and adopted by the employer's governing body in accordance with requirements of applicable public meetings laws;*
2. *Identifies the position title for every employee position;*
3. *Shows the pay rate for each identified position, which may be stated as a single amount or as multiple amounts within a range;*
4. *Indicates the time base, including, but not limited to, whether the time base is hourly daily, bi-weekly, monthly, bi-monthly, or annually;*

² <https://www.cccera.org/governance-and-policies>

³ <https://www.cccera.org/governance-and-policies>

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5. *Is posted at the office of the employer or immediately accessible and available for public review from the employer during normal business hours or posted on the employer's internet website;*
6. *Indicates an effective date and date of any revisions;*
7. *Is retained by the employer and available for public inspection for not less than five years; and*
8. *Does not reference another document in lieu of disclosing the pay rate.*

CERL §31469.3. “Safety member” defined

Safety member means any person who is any of the following:

1. A member of a pension system established pursuant to either Chapter 4 or Chapter 5, who elects by written notice filed with the board, to become a safety member.
2. Any person employed by a county, subject to Section 31676.1 or 31695.1 or by a district or court organized or existing within such a county, whose principal duties consist of active law enforcement or active fire suppression as described in Section 31470.2 and 31470.4, or active lifeguard service as limited by Section 31470.6 or juvenile hall group counseling and group supervision if adopted by the board of supervisors as provided in Section 31469.4.
3. Any person described in Section 31469.2 in any county in which Section 31470.14 has become operative.

§31470.4. Persons eligible

All county foresters, county firewardens, deputies or assistant county foresters, deputies or assistant county firewardens, firefighters, fire apparatus engineers, fire prevention inspectors, forest firemen, fire patrolmen, aircraft pilots, and foremen assigned to fire suppression crews, all other personnel assigned to active fire suppression in any county forester’s or county firewarden’s department and all officers, engineers, and firemen of any county fire protection district, and all other personnel assigned to active fire suppression in any county fire protection district are eligible.

Pension Benefit Review

- a. Compensation Policies
 - i. *Policy On Determining “Compensation Earnable Under Assembly Bill 197 For Purposes Of Calculating Retirement Benefits For “Legacy” (Pre-PEPRA) Members – Adopted: 9/10/2014; GC 31461;*

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- ii. *Policy On Determining “Pensionable Compensation” Under PEPRA For Purposes Of Calculating Retirement Benefits* - Adopted: 9/10/2014; GC 7522.34;
 - iii. *Policy Regarding Assessment and Determination Of Compensation Enhancements* – Adopted 11/1/2012, Amended: 3/8/2017; GC 31461(b)(1) and 7522.34(c)(1)
- b. Retiree Return to Work Monitoring:
 - i. GC 7522.56 Retired Persons; Service and Employment Restrictions
 - c. Felony Forfeiture Monitoring and Notification – GC 7522.72(g) and GC 7522.74(g).

Policy on Internal Revenue Code Section 415 Limits Compliance

As adopted on December 8, 2010 and amended on January 9, 2013.

Tests Performed

In order to test the timeliness, reasonableness and accuracy of the pensionable compensation and contributions that have been reported to the retirement system, the test plan incorporated the following elements:

Accuracy of Payroll Information provided to CCCERA

- Calculated sample size of active SRVFPD members during the test used for pensionable payroll and contribution audit testing. The sample included thirty-four (34) members, of which twenty-nine (29) members were Legacy and five (5) members were PEPRA with hire dates after January 1, 2013. Selected six (6) of the sample members for reconciling timesheets to payroll system information.
- Timeframe and scope selected for the audit: January 2015 through December 2017. Using the random sample of active members during the period, SRVFPD payroll records and contributions (both employee and employer paid) were tested in the audit using the following target payroll periods – November 2015, April 2016, November 2016, and April 2017.
- SRVFPD’s payroll preparation and contribution calculation and submission workflow were reviewed. CCCERA staff interviewed SRVFPD staff regarding their timekeeping practices, payroll

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preparation and contribution calculation and submission processes which were captured in a workflow document.

- The input files for CCCERA's pension administration system (CPAS) submitted by SRVFPD were reviewed for timeliness and accuracy.
- Contribution amounts were recalculated based on reported salaries for employee sample and compared to contribution amounts recorded in CPAS.
- Compensation items flowing into reported salaries were reviewed for pensionability.
- Reported pensionable compensation was compared to IRC compensation limits.
- Compared and reconciled salary and contribution data submitted to CCCERA to payroll records and receivables as posted by CCCERA's Accounting department.

Publicly Available Pay Schedule

- It was reviewed whether SRVFPD could provide a publicly available pay schedule as defined per CCCERA's Pensionable Compensation Policy.

Salaries in Accordance With Publicly Available Pay Schedules

- Salaries for SRVFPD sample employees were reviewed against SRVFPD's Employee Handbook, applicable memoranda of understanding, letters of understanding, employment agreements, and other applicable salary and pay documentation.

Enrollment of All Eligible Employees

- New member enrollment was reviewed for 2016 and 2017.

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Pension Benefit Review

- The pension benefit calculations for a sample of six (6) retired members were reviewed for compliance with all applicable laws, Board of Retirement regulations and CCCERA policies and practices. Two (2) benefit calculations were reviewed for calendar year 2016, 2017 and 2018 each.
- The 2017 IRC Section 415 limits calculated by CCCERA for SRVFPD retirees were reviewed and compared to pension benefit payments made.

Retiree Return to Work Monitoring

- SRVFPD's retirees that returned to work for fiscal years 2015-2016 and 2016-2017 were reviewed for compliance with the 960 hour fiscal year limit.

Forfeiture of benefits earned or accrued from the commission of a felony

- It was reviewed whether CCCERA received a notification from SRVFPD regarding a potential felony forfeiture and whether this notification was processed appropriately if applicable.

Observations

SRVFPD Payroll And Reporting Process

- CCCERA staff interviewed SRVFPD staff regarding their timekeeping practices, payroll preparation and contribution calculation and submission processes which were captured in a workflow document.
- One key point of the payroll preparation process is that SRVFPD uses different systems for timekeeping and payroll preparation. Timekeeping is handled by Telestaff and payroll is handled by ADP. These systems are not linked, causing the district's payroll process to include a manual keying process of Telestaff data into ADP. ADP reports are then used to manually create input files for CCCERA's pension administration system. The manual nature of this process is

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the reason that a comparison of timesheets to payroll system information was performed for a small sample group.

Input File Review

CCCERA receives four (4) types of input files from SRVFPD:

- I29 files to report demographic changes including new hires, terminations, name changes, address changes, position changes, bargaining unit changes or leaves of absence.
- I30 files to report pensionable compensation, employee contributions, and employer contributions.
- I30 adjustment files to report changes to previously reported pensionable compensation, employee contributions, and employer contributions
- Deductions file: used to report deductions for health care, retiree support group fees or credit union deductions from individual retiree benefit payments to CCCERA. This file does not update CPAS and was therefore not included in the review.

A timeline was created for SRVFPD's input files, including I29, I30 and adjustment files, which are used to update CPAS and reviewed for timeliness. In addition, a sample of I30 files and all I29 and adjustment files were reviewed for accuracy:

Timeliness:

Table 1: Receipt dates of input files for January through April 2017

SRVFPD	2017	Jan	Feb	Mar	Apr
Due Date		2/10/2017	3/10/2017	4/10/2017	5/10/2017
Demographic Change	I029	2/10/2017	3/10/2017	4/10/2017	5/11/2017
Standard file	I030	2/10/2017	3/10/2017	4/10/2017	5/11/2017
Adjustment File	I030	2/10/2017	3/10/2017	4/10/2017	5/15/2017
Variance in Days		0	0	0	1

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Table 2: Receipt dates of input files for May through August 2017

SRVFPD	2017	May	Jun	Jul	Aug
Due Date		6/9/2017	7/10/2017	8/10/2017	9/8/2017
Demographic Change	I029	6/12/2017	7/19/2017	8/10/2017	9/11/2017
Standard file	I030	6/12/2017	7/19/2017	8/10/2017	9/11/2017
Adjustment File	I030	6/12/2017	7/31/2017		
Variance in Days		3	9	0	3

Table 3: Receipt dates of input files for September through December 2017

SRVFPD	2017	Sep	Oct	Nov	Dec
Due Date		10/10/2017	11/10/2017	12/8/2017	1/10/2018
Demographic Change	I029	10/6/2017	11/10/2017	12/11/2017	1/10/2018
Standard file	I030	10/6/2017	11/10/2017	12/11/2017	1/10/2018
Adjustment File	I030				1/16/2018
Variance in Days		-4	0	3	0

2017

- Input files were timely for January, February, March, July, September, October and December and they were late for April, May, June, August and November.
- I29 and I30 files were late between 1 and 9 days.

Table 4: Receipt dates of input files for January through April 2016

SRVFPD	2016	Jan	Feb	Mar	Apr
Due Date		2/10/2016	3/10/2016	4/8/2016	5/10/2016
Demographic Change	I029	2/17/2016	3/15/2016	4/12/2016	5/11/2016
Standard file	I030	2/17/2016	3/15/2016	4/12/2016	5/11/2016
Adjustment File	I030				
Variance in Days		7	5	4	1

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Table 5: Receipt dates of input files for May through August 2016

SRVFPD	2016	May	Jun	Jul	Aug
Due Date		6/10/2016	7/8/2016	8/10/2016	9/9/2016
Demographic Change	I029	6/13/2016	7/11/2016	8/10/2016	9/9/2016
Standard file	I030	6/13/2016	7/11/2016	8/10/2016	9/9/2016
Adjustment File	I030				
Variance in Days		3	3	0	0

Table 6: Receipt dates of input files for September through December 2016

SRVFPD	2016	Sep	Oct	Nov	Dec
Due Date		10/10/2016	11/10/2016	12/9/2016	1/10/2017
Demographic Change	I029	10/7/2016		12/13/2016	1/11/2017
Standard file	I030	10/7/2016	11/10/2016	12/13/2016	1/11/2017
Adjustment File	I030			12/13/2016	1/11/2017
Variance in Days		-3	0	4	1

2016

- Input files were timely for July, August, September and October and they were late for January, February, March, April, May, June, November and December.
- I29 and I30 files were late between 1 and 7 days.

Accuracy of Input Files

General I29 Observations:

- It was observed that eight (8) employees out of 169 employees shown as active in CPAS have blank job codes and job titles. These employees became members of CCCERA between 2002 and 2008. Newer employees have job titles. Job codes were not reported for any employees.
- The publicly available salary schedule shows that SRVFPD does have job codes which could potentially be reported to CCCERA. However the I29 field allows for a 4-digit string to be reported (column C in picture below) and not all job codes are 4 digits or less.

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- In the "Last Date of Pay" column (column A), SRVFPD should report the last day that the employee was on active payroll. This date is only needed if the employee was terminated. At this time, this column is left blank and CCCERA staff manually inserts the "Status Change Date" data into the field.
- The "Bargaining Unit" column is completed with a "*" (column B) at this time which is an acceptable format for the I29; however, it should be examined if the actual bargaining unit data could be reported. The field allows for a 4-digit string.

Picture 1: Excerpt from the November 2017 I29 file

Status Change Date	Status	Reason Code	A		B		C	
			Last Date of Pay	Hours Basis	Standard Hours	Bargaining Unit	Job Code	Job Title
20171006	FT	TRM		40	40	*	*	FIREFIGHTER-1

General I30 Observations:

- The I30 files reviewed were correct and complete. No errors or omissions were observed.

Adjustment File Observations:

- All of the seven (7) adjustment files submitted to CCCERA by SRVFPD in 2017 are missing the "Adjustment Period Date From" and "Adjustment Period Date To" date column content.

CCCERA staff needs to manually revise the I29 and adjustment files which is done as an accommodation to the employer. However it is the employer's obligation to report its compensation and contributions in substance and form as required by CCCERA Board regulations and the employer guide.

Contributions Review

Contributions Review

- CCCERA staff recalculated the pension contributions remitted to CCCERA and compared the result to actual contribution data. The pensionable compensation components were identified along with the corresponding employer and employee contributions. This data was then reconciled to the pensionable compensation and contribution reports uploaded into CPAS. Variances were identified between each source to system of record reconciliation.

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Data categories reviewed are:

- Total Employee Contribution Amount
 - Employee Subvention Amount
 - Subvention Factor for Employee Subvention of Employer Basic Contributions
 - Basic Employee Contributions
 - Basic Employee Contribution Rate
 - Employee COLA
 - Employee COLA Rate
 - Total Employer Contributions
 - Basic Employer Contributions
 - Basic Employer Contribution Rate minus Subvention Factor
 - Employer COLA
 - Employer COLA Rate
 - Non-Refundability Factor
- Sixteen (16) immaterial differences of ±\$0.01 or less were observed between SRVFPD calculated contribution amounts and amounts recalculated for the audit. All differences can be attributed to rounding.
 - The MOUs and LOUs between SRVFPD and International Association of Firefighters (IAFF 3546) and between SRVFPD and IAFF 3546-A (for mid-managers) created a retirement contribution subvention schedule as follows:

Table 7: Retirement Contribution Subvention Schedule

Employee Pension Contributions	7/1/2013	7/1/2014	7/1/2017
Classic/Legacy Safety Subvention of Basic Contributions	4%	8%	12%
Classic/Legacy General Subvention of Basic Contributions	4%	8%	
Classic/Legacy Safety & General Employee Subvention of Employer COLA	0%	0%	0%
PEPRA 50% of normal cost			

- This schedule was amended by LOUs between SRVFPD and IAFF 3546/IAFF 3546-A effective April 1, 2017 which stated in point 7: “Eliminate the 4% pension contribution that has been on hold for safety employees” and in point 8: “Reduce the miscellaneous pension contribution by 2%, effective April 1, 2017”.

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- CCCERA staff noted that for April 2017 contribution calculations, the subvention factor for employee subventions of employer basic contributions for general legacy employees was reduced from 8% to 6% while for safety legacy employees the subvention factor remained at 8%.

Based on documentation provided, the auditor expected the subvention factor for both general and safety legacy employees to be reduced to 6%. It cannot be inferred from the exact wording of the LOU that “miscellaneous pension contribution” refers to general legacy employees only. Prior MOUs and LOUs do not refer to employee paid pension contributions as miscellaneous for any group of employees and provide no further insight into this matter. Therefore the LOU which is the basis for pension calculations is not clear and does not lend itself for third parties to recalculate the pension contributions.

- Comparison of SRVFPD pension contribution calculations to CPAS contribution rates and member account postings:
 - For November 2015, April 2016 and April 2017 no variances were observed
 - For November 2016, four (4) variances were observed as follows:

Table 8: November 2016 Variances between SRVFPD Pension Contribution Calculations and CPAS Member Account Postings

	San Ramon Valley Fire Protection District	CPAS Data	Differences
Sample Employee ID #	Pensionable Pay	Pensionable Pay	Pensionable Pay
4	\$16,410.92	\$19,432.52	-\$3,021.60
10	\$24,153.64	\$31,264.84	-\$7,111.20
15	\$16,153.85	\$20,957.53	-\$4,803.68
20	\$28,370.07	\$37,204.47	-\$8,834.40

- It was further observed that the variances were for those four (4) sample employees who sold vacation time in the exact amount of the vacation sale.

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- A review of CPAS data for sample employee ID #20 for November 2016 showed the following:

Picture 2: Screen shot 1 from CPAS for Sample Employee #20

Date From	Date To	Base Earnings	Actual Earnings	Current Service	Differentials
Apr 01 2017	Apr 30 2017	18,595.00	21,128.12	0.0833	2,533.12
Mar 01 2017	Mar 31 2017	17,194.00	19,535.67	0.0833	2,341.67
Feb 01 2017	Feb 28 2017	17,194.00	19,535.67	0.0834	2,341.67
Jan 01 2017	Jan 31 2017	17,194.00	19,535.67	0.0833	2,341.67
Dec 01 2016	Dec 31 2016	26,028.40	28,370.07	0.0833	2,341.67
Nov 01 2016	Nov 30 2016	17,194.00	37,204.47	0.0834	2,341.67

Picture 3: Screen shot 2 from CPAS for Sample Employee #20

Terminal Pay	Pers Hol Hrs	Pers Hol Rt	Total Earnings
0.00	0	0	21,128.12
0.00	0	0	19,535.67
0.00	0	0	19,535.67
0.00	0	0	19,535.67
0.00	0	0	28,370.07
8,334.40	0	0	28,370.07

- The vacation sale amount (identified via remarks in the I30 adjustment file) is shown in the Terminal Pay column and appears to be included in the Actual Earnings column twice. The Total Earnings column includes this amount once in addition to base pay and other differentials.
- There is no easily identifiable cause for the duplication. Note that no duplicate contributions were observed. Duplicate contribution amounts are expected if duplicate I30 files were uploaded. SRVFPD's files do not contain this duplication.

This issue appears to be a pension administration issue and was forwarded to the Member Services manager for follow up and resolution.

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The above detailed review yielded several more observations outside of the initial audit timeframe:

December 2016

- For December 2016 it was observed that the annual admin leave cash-out was reported as regular or base pay.
- The auditor tested three (3) PEPRA members to review if vacation leave and/or admin leave cash outs were reported for PEPRA members. None were observed in 2016 or 2017. No significant increases in base pay were observed.

November 2017

- For November 2017 it was observed that an amount appearing to be vacation cash-out was reported as regular or base pay. In this month's adjustment file there are no remarks to confirm vacation cash-outs as there had been in prior years.
- Vacation cash-out being reported as regular pay in 2017 is inconsistent with prior years as it was reported under pay code VAC previously.

December 2017

- For December 2017 it was observed that amounts appearing to be administrative leave cash-out were reported as regular or base pay. In this month's adjustment file there are no remarks in the input file to confirm the nature of the compensation as there had been in prior years.

Implications of Observations

The inclusion of pay items other than base pay in base pay reporting is problematic for several reasons:

- The tie back of salary to MOUs becomes very difficult as only one base pay amount is shown. It is not divided in to discreet compensation elements that might allow a comparison to publicly available salary schedules.
- The review of pensionable pay items for pension benefit calculation becomes more difficult. Specifically, the review of vacation sales complies with CCCERA's "Compensation Earnable Policy", Section III B. "Compensation Earnable" Excludes Payments For Unused Leave To The Extent They Exceed What Was Both Earned and Could Have Been Sold Back For Cash During Service During

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The FAS Period. For PEPPRA members, payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off are excluded from “pensionable compensation” pursuant to G.C. 7522.34(5). This could lead to incorrect pension benefit calculations.

- As termination pay and vacation pay were reported under the same pay code for years, these pay items are very difficult to separate at a later time. The review of whether compensation complies with CCCERA’s “Compensation Earnable Policy”, Section III C. ““Compensation Earnable” Excludes Termination Pay” becomes challenging.
- With higher complexity, the likelihood of reporting errors increases.
- Compensation enhancements would become more difficult to detect by the retirement system.

Timekeeping Sample Review

SRVFPD’s payroll preparation and contribution calculation and submission workflow showed that hours worked were manually transferred from Telestaff (and prior to June 1, 2017 also from Microsoft Access which was used to track overtime) to ADP. To review accuracy of the data transfer, the auditor included a sample of six (6) employees for whom Telestaff timesheets and Microsoft Access spreadsheets for overtime were reconciled to ADP payroll registers for November 2015, April 2016, November 2016 and April 2017.

Observations:

- For April 2016, a variance of 0.5 sick hours between Telestaff and ADP was observed for sample employee #34.
- For November 2015 and April 2017, no unexplained variances were observed.

Payroll Reporting – Pensionable Compensation and Contribution Review

Payroll Reporting – Pensionable Compensation and Contribution Review

Pay Codes

- As of December 31, 2017 SRVFPD has reported payroll to CCCERA under 28 different pay codes.
 - Of these 28:
 - 9 are still active as of July 1, 2017,
 - 14 are confirmed by SRVFPD as no longer active,

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- 5 are codes that SRVFPD could not confirm as active or inactive. A review showed that these codes were either used in error, and /or used prior to 2009 or earlier for between 1 and 10 employees/instances. These codes are also considered not active.
- On July 1, 2017, SRVFPD rolled the incentive pay for Basic Life Support, Advanced Life Support, Hazardous Materials pay, Deputy Fire Marshal and Fire Inspectors' Hazardous Materials pay, Rescue and Training Captain pay into the base pay for both Legacy and PEPRA members. This action is the main reason for the reduction in active pay codes.
- While the LOU effective April 1, 2017 stated that the agreement to roll incentive pay into base pay was to commence on April 1, 2017, SRVFPD's HR and Accounting staff advised that the change was implemented on June 1, 2017 (July 10th paycheck) due to required work in the payroll system that had to be completed.
- This change reduced the number of pay codes reported in the I30 files submitted in 2017, from an average of 16 for the first 5 months of 2017 to an average of approximately 7 in the last 7 months of 2017.

Standby Pay

- SRVFPD reported standby pay for three groups of employees to CCCERA as of September 2014 when CCCERA adopted its "Compensation Earnable Policy". These groups are Battalion Chiefs, Fire Marshal and what is now combined under the Fire and Life Safety Inspectors designation. The Fire and Life Safety Inspectors were under several different job classification between 2014 and 2016 including Deputy Fire Marshal, Fire Inspector, Plans Examiner, Code Compliance Officer, Community Risk Reduction Inspector and Community Risk Reduction Manager.
- Battalion Chief standby compensation, reported to CCCERA under pay code SB, was integrated into Premium Base Monthly Salary (base pay plus all pensionable salary components) of the Battalion Chief classification effective June 1, 2015. Pensionable compensation was reported under SB until May 2015.

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- Standby pay for Fire and Life Safety Inspectors was rolled into Base Monthly Salary (base pay) effective April 26, 2017. Standby pay for this position and its predecessors was reported as pensionable compensation under pay code SB to CCCERA until February 2016 for all employees.
- Standby pay for one Division Chief/Fire Marshal position was rolled into base pay effective May 1, 2016. Standby pay was reported to CCCERA under pay code SB as pensionable until April 2016.
- Standby pay for the Fire Prevention Inspectors and Deputy Fire Marshal positions was rolled into Base Monthly Salary (base pay) effective January 6, 2016. Note that there is overlap between the Fire and Life Safety Inspectors and Fire Prevention Inspectors and Deputy Fire Marshal positions as was explained above.
- SRVFPD confirmed that even though the official agreement to roll up standby pay was in a LOU dated 4/26/2017, no standby pay was reported to CCCERA after it was rolled up for Fire Prevention Inspectors and Deputy Fire Marshal positions in early 2016.

Pensionability Review of Standby Pay pursuant to CCCERA's "Compensation Earnable Policy"

To be included, the time for which compensation is received: (1) must be the normal working hours set forth in the applicable employment agreement, (2) must be required by the employer to be worked by the employee (as distinguished from voluntarily worked); and (3) must be ordinarily worked by all others in the same grade or classification at the same rate of pay during the FAS period.

Battalion Chiefs

For Battalion Chiefs, the standby differential is based on the MOU between SRVFPD and IAFF 3546-A effective July 1, 2013 – July 30, 2018, Section 9.

Excerpt from MOU between SRVFPD and Local 3546-A effective July 1, 2013 - June 30, 2018

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Section 9. Battalion Chief Standby Duty

The Battalion Chief Standby Duty (BC Standby), assignment is intended to provide a backup shift commander constantly available for immediate recall during times when the Duty Battalion Chief is committed to an incident and unable to respond to a subsequent or simultaneous incident, during major incidents requiring additional command staff, or when the Duty Battalion Chief or an executive Chief Officer determines that immediate command support within the District is necessary. Personnel on BC Standby are required to immediately respond back to District upon notification and advise the SRM Communications Center when they are available within District boundaries. BC Standby is distinct from Red Flag or Special Event up-staffing which is both for planned needs and is not regular or recurring need/assignments whereas BC Standby is regular and recurring.

The BC Standby assignment is mandatory and is to be shared equally among all Battalion Chiefs each month. The Battalion Chiefs (Public Safety Mid-Level Managers) will arrange for and maintain a schedule of daily BC Standby coverage and post the schedule to the District Standby Chief/District Chief calendar, by the first of each month, on a monthly basis. Battalion Chiefs may voluntarily trade individual BC Standby shifts with other Battalion Chiefs. Traded BC Standby shifts must be repaid within each calendar year so that no Battalion Chief works more BC Standby than any other Battalion Chief.

Compensation for BC Standby is 5% of PBMS. Compensation for BC Standby is for personnel availability only. Any incident or occasion requiring Battalion Chief on BC Standby to be recalled to Battalion Chief duty will be compensated according to Emergency Recall Overtime parameters as prescribed in Section 6 above, when responding outside of normal work hours.

Normal working hours are defined per the following:

Excerpt from MOU between SRVFPD and Local 3546-A effective July 1, 2013 - June 30, 2018

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Section 6. Hours of Work and Overtime

6.1 Shift Employees

The work schedule for a Shift Battalion Chief shall consist of two (2) consecutive twenty-four (24) hour duty shifts commencing and ending at 7:00 A.M.

The work schedule shall consist of two (2) twenty-four (24) hour on-duty shifts within six (6) day cycle to be worked in accordance with the following chart:

X = 24 hour on-duty

O = 24 hour off-duty

XXOOOOXXOOOOXXOOOOXXOOOO

Fire Marshal

The standby differential for the Fire Marshal is based on the Non-Represented Employee Handbook effective April 2004 - June 2007 which was still in use at the time of the audit and in the process of being updated, Section II Compensation, F. Differentials.

Excerpts from Non-Represented Employee Handbook effective April 2004 - June 2007 Section II Compensation, B. Forty (40) hour personnel – Exempt Employees and F. Differentials

B. Forty (40) hour personnel – Exempt Employees

Exempt employees hold positions that meet specific tests established by the Fair Labor Standards Act (FLSA) and state law and who are exempt from overtime pay requirements.

F. Differentials

- a. Standby Pay: All safety managers shall receive a monthly standby differential of 5% of Premium Base Monthly Salary (PBMS) for emergency response after hours.

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Fire and Life Safety Inspectors (Fire Prevention Inspectors and Deputy Fire Marshal)

For the Fire and Life Safety Inspectors, the standby differential is based on the MOU between SRVFPD and IAFF 3546 effective August 1, 2009 – June 30, 2018, Section 10 (Fire Inspectors).

Excerpts from MOU between Local 3546 and SRVFPD effective August 1, 2009 - June 30, 2018

Section 10. Fire Inspector Stand-by

Compensation in the amount of two and one-half percent (2.5%) per month of the premium base monthly salary (PBMS) of a Fire Inspector, at any step, assigned to cover one week in four (25% coverage) will be provided in recognition of a Fire Investigator Stand-By Assignment.

Normal working hours are defined per the following:

Excerpts from MOU between Local 3546 and SRVFPD effective August 1, 2009 - June 30, 2018

Section 6. Hours of Work and Overtime

6.2 Forty (40) hour personnel

The normal work schedule for all forty (40) hour workweek employees shall commence Monday and end Friday, excepting holidays. The employees may choose from one of the following schedules that will be made available by the District. Those schedules are either an eight (8) hour work day (0800 to 1700 hours) or a schedule of eight (8) nine (9) hour workdays and one (1) eight (8) hour workday and this schedule will be identified as a 9/80 schedule.

Employees assigned to a 9/80 schedule will commence work at 07:30 and end at 17:30 hours, or commence work at 07:00 and end at 17:00 hours, Monday through Friday, with one day off every two (2) weeks. Employees assigned a 9/80 schedule shall have any time differential resulting from a holiday falling on a regularly scheduled nine (9) hour workday deducted from the employee's vacation or compensatory time accrual. Employees working a 9/80 schedule having a holiday fall on their regular day off (RDO) shall have Thursday off preceding a Friday RDO and Tuesday off following a Monday RDO. [...]

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All employees covered by the Memorandum of Understanding shall receive overtime compensation for all hours worked in excess of the employee's normal work schedule.

Excerpt from LOU between SRVFPD and Local 3546 dated January 6, 2016

6.40 Standby Duties and Pay

Standby pay for incumbent Fire Prevention Inspectors and Deputy Fire Marshal shall be rolled into the base monthly salary. Fire Prevention and Deputy Marshal are relieved of standby duty Monday through Friday, but shall remain on a list and rotate standby for weekends and recognized District Holidays.

Analysis

Battalion Chiefs:

- The MOU between Local 3546-A and SRVFPD effective July 1, 2013 - June 30, 2018 showed that standby pay was mandatory and worked equally by all Battalion Chiefs.
- The description of normal working hours for Shift Battalion Chiefs shows that they are scheduled for 48 hours in a six (6) day cycle which leaves eight (8) hours where standby duties may be performed in the 56 hour schedule. Therefore it appears that the requirements for standby pay to be included in compensation earnable are met for Shift Battalion Chiefs assuming that no standby duty in excess of the 56 hour work schedule was worked.
- Any exempt Battalion Chief working a 40 hour schedule is exempt from overtime pay requirements. All work hours are therefore normal working hours and the compensation earnable standard is met.

Fire Marshal:

- (a) The Division Chief/Fire Marshal position is the only position in its classification. Therefore there are no other members of the same classification to compare this position to.
- (b) In an email from April 26, 2018, SRVFPD certified that standby duties for the Division Chief/Fire Marshal position were required.
- (c) The Division Chief/Fire Marshal is an exempt position that is exempt from overtime pay requirements. All work hours are

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therefore normal working hours and the compensation earnable standard is met.

Fire and Life Safety Inspectors:

- (a) This analysis is made more complex by the fact that several previous classifications were first combined under the Community Risk Reduction Inspector designation in January 2016 and then under the Fire and Life Safety Inspector designation in December 2016. Not all classifications appear to have had standby duties.
- (b) It does not appear that the Plans Examiner and Code Compliance Officer classifications had standby duties prior to being converted to Fire and Life Safety Inspector designation as there is no mention in the MOU or any LOU.
- (c) Only the previous Fire Prevention Inspector and Deputy Fire Marshal classifications had standby pay.
- (d) In an email from April 26, 2018, SRVFPD certified that standby duties for the Fire and Life Safety Inspector positions and all predecessor positions (specifically Fire Prevention Inspector and Deputy Fire Marshal) were required, performed by all members of the same classification and paid at the same rate of pay.
- (e) At this time it is unclear whether Fire and Life Safety Inspectors and the predecessor positions fulfill the normal working hours standard laid out in the Compensation Earnable Policy.

Compensation Limits

Compensation Limits:

Table 9: IRC Compensation Limits for 2016 and 2017

	2016	2017
PEPRA in Social Security	117,020	118,775
PEPRA not in Social Security	140,424	142,530
Legacy	265,000	270,000

SRVFPD employees did not participate in Social Security in 2016 or 2017.

Observations:

2016:

Legacy:

- For one legacy employee SRVFPD reported a total compensation of \$266,811.77. This exceeded the \$265,000 compensation by an amount of \$1,811.77.

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- It was verified by recalculating employer contributions for 2016 that the total compensation of \$266,811.77 was used to calculate employer contributions. A comparison of submitted contribution amounts for December 2016 to calculated contribution amounts based on the reduced compensation after the compensation limit shows the following:

Table 10: Impact of Over-Reported Compensation

	Submitted to CCCERA	Should have been	Difference
Employer Contribution	10,440.86	9,597.13	843.73
Employer COLA	6,649.75	6,112.37	537.37
Employee Contribution	2,199.39	2,021.66	177.73
Employee COLA	1,614.23	1,483.79	130.45
Employee Subvention	1,793.59	1,648.65	144.94

PEPRA:

- No PEPRA employees exceeded the 2016 PEPRA compensation limit of \$140,424.

2017:

Legacy:

- No legacy employee exceeded the \$270,000 limit in total compensation for SRVPD in 2017.

PEPRA:

- No PEPRA employee exceeded the 2017 PEPRA compensation limit of \$142,530.

Receivables Review

SRVFPD pre-pays its employer contributions on an annual basis. Therefore monthly amounts reviewed and shown in the tables below are employee contribution amounts only. The annual employer contribution calculations are reviewed separately.

Employee Contribution Payment Timeliness

2017

- All 2017 employee contribution payments were late when compared to the tenth of the month baseline.
- Payments were between 6 and 12 days late each month.

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2016

- All 2016 employee contribution payments were late.
- Payments were between 5 and 11 days late each month.

Employee Contribution Accuracy

The tables below compare the expected employee contribution payment amount to the actual amount plus a potential Internal Revenue Code (IRC) Section 415 Limit adjustment amount.

The term IRC Section 415 Limit refers to the dollar limits set forth in IRC Section 415 which establishes the maximum allowable benefit payments CCCERA may make to an individual retiree. The Internal Revenue Service (IRS) provides guidance on this amount on an annual basis. Once this amount is paid out by CCCERA, the respective employer takes up alternate benefit payments. CCCERA is involved in this hand-off in that it informs the employers of the payment timeframe and exact amounts that the employer must make to the retiree(s).

The IRC Section 415 Limit adjustments shown in the tables below represent a return of employer contributions given from CCCERA to SRVFPD in the amount of the alternate payment amount for each applicable month that SRVFPD pays the benefit to its retirees. From an actuarial perspective, an employer pays contributions based on an employee's income to support a predefined pension. This pension benefit can be higher than IRC Section 415 allows CCCERA to pay. Therefore the employer overpaid contributions.

2017

- Immaterial variances between expected and actual employee contribution payment amounts were observed for every month. With the exception of April and July, the variances ranged from -\$0.16 to \$0.01.
- In April an underpayment of \$210.62 was observed. A corresponding overpayment of \$210.40 was observed for July.

2016

- Immaterial variances between expected and actual payment amounts were observed for every month except September. The variances ranged from -\$0.24 to \$0.03.
- In September the expected and actual payment amounts matched.

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Table 11: Timeliness and Accuracy Review January through April 2017

SRVFPD	Jan	Feb	Mar	Apr
Due Date	2/10/2017	3/10/2017	4/10/2017	5/10/2017
Date Payment Received	2/22/2017	3/21/2017	4/18/2017	5/22/2017
Payment Amount	\$420,953.79	\$416,949.72	\$419,252.19	\$434,887.41
Amount Expected	\$420,953.95	\$416,949.88	\$419,252.32	\$435,098.03
415 Limit Adjustments				
Variance in Days	12	11	8	12
Variance in \$	-\$0.16	-\$0.16	-\$0.13	-\$210.62

Table 12: Timeliness and Accuracy Review May through August 2017

SRVFPD	May	Jun	Jul	Aug
Due Date	6/9/2017	7/10/2017	8/10/2017	9/8/2017
Date Payment Received	6/19/2017	7/17/2017	8/16/2017	9/18/2017
Payment Amount	\$432,510.12	\$435,191.95	\$437,440.27	\$425,317.76
Amount Expected	\$432,510.11	\$435,192.05	\$437,229.87	\$440,882.90
415 Limit Adjustments				-\$15,565.09
Variance in Days	10	7	6	10
Variance in \$	\$0.01	-\$0.10	\$210.40	-\$0.05

Table 13: Timeliness and Accuracy Review September through December 2017

SRVFPD	Sep	Oct	Nov	Dec
Due Date	10/10/2017	11/10/2017	12/8/2017	1/10/2018
Date Payment Received	10/17/2017	11/22/2017	12/18/2017	1/16/2018
Payment Amount	\$448,374.71	\$240,791.39	\$365,117.63	\$466,702.50
Amount Expected	\$450,311.30	\$447,482.12	\$504,891.44	\$466,702.57
415 Limit Adjustments	-\$1,936.54	-\$206,690.64	-\$139,773.72	
Variance in Days	7	12	10	6
Variance in \$	-\$0.05	-\$0.09	-\$0.09	-\$0.07

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Table 14: Timeliness and Accuracy Review January through April 2016

SRVFPD	Jan	Feb	Mar	Apr
Due Date	2/10/2016	3/10/2016	4/8/2016	5/10/2016
Date Payment Received	2/16/2016	3/21/2016	4/18/2016	5/19/2016
Payment Amount	\$415,360.95	\$422,212.18	\$423,012.23	\$411,153.81
Amount Expected	\$415,360.96	\$422,212.21	\$423,012.20	\$411,153.82
415 Limit Adjustments				
Variance in Days	6	11	10	9
Variance in \$	-\$0.01	-\$0.03	\$0.03	-\$0.01

Table 15: Timeliness and Accuracy Review May through August 2016

SRVFPD	May	Jun	Jul	Aug
Due Date	6/10/2016	7/8/2016	8/10/2016	9/9/2016
Date Payment Received	6/17/2016	7/18/2016	8/15/2016	9/20/2016
Payment Amount	\$414,615.24	\$412,398.71	\$418,504.23	\$403,336.33
Amount Expected	\$414,615.22	\$412,398.68	\$418,504.32	\$418,448.11
415 Limit Adjustments				-\$15,111.71
Variance in Days	7	10	5	11
Variance in \$	\$0.02	\$0.03	-\$0.09	-\$0.07

Table 16: Timeliness and Accuracy Review September through December 2016

SRVFPD	Sep	Oct	Nov	Dec
Due Date	10/10/2016	11/10/2016	12/9/2016	1/10/2017
Date Payment Received	10/18/2016	11/21/2016	12/19/2016	1/18/2017
Payment Amount	\$324,651.11	\$318,865.17	\$339,233.62	\$443,726.29
Amount Expected	\$418,579.04	\$423,022.63	\$473,352.14	\$443,726.45
415 Limit Adjustments	-\$93,927.93	-\$104,157.40	-\$134,118.28	
Variance in Days	8	11	10	8
Variance in \$	\$0.00	-\$0.06	-\$0.24	-\$0.16

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Employer Contribution True-up

Table 17: Fiscal Year 2015-2016 True-Up Calculation

Actual Contribution Paid in FY 15-16	\$14,892,537.33
NET Contribution 15-16 (Due on Actual PR)	\$15,375,322.46
Pre-Paid Amount FY 15-16	\$13,664,000.00
Over Payment FY 14-15	\$928,159.67
Total prepayments	\$14,592,159.67
Adjusted Prepayment (w/o discount)	\$15,065,207.18
Over(Under) Paid	(310,115.28)
Discount Factor	1.0388235
Amount Over(Under)	(322,155.04)

- Payment in the amount of \$322,155.04 was received on July 27, 2016.

Table 18: Fiscal Year 2016-2017 True-Up Calculation

Actual Contribution Paid in FY 16-17	\$15,110,884.01
NET Contribution 16-17 (Due on Actual PR)	\$15,772,272.90
Pre-Paid Amount FY 16-17	\$15,576,000.00
Over Payment FY 15-16	-
Total prepayments	\$15,576,000.00
Adjusted Prepayment (w/o discount)	\$16,080,941.57
Over(Under) Paid	308,668.67
Discount Factor	1.0388235
Amount Over(Under)	320,652.26

- The overpayment amount of \$320,652.26 will be included as credit for the true-up calculation for fiscal year 2017-2018.

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Publicly Available Pay Schedule Review

Publicly Available Pay Schedule Review

The most current pay schedule effective June 1, 2017 was available on SRVFPD's website. In addition, the employer was able to produce the four (4) preceding pay schedules applicable to the audit period upon request by CCCERA. These schedules were effective April 1, 2017, March 1, 2016, January 1, 2016 and November 1, 2015.

The schedules fulfill the requirements listed in the test standard.

Salaries in Accordance With Publicly Available Pay Schedules

Salaries in Accordance With Publicly Available Pay Schedules

November 2015:

1. No variances observed between salary schedule (expected base salary) and SRVFPD Pay Schedule Report (actual base salary).

April 2016:

2. Observed two (2) variances between expected and actual base pay, for sample employees #6 and #19.
3. Both variances are explained in the LOU effective 12/10/2015 which amends the salary range for Public Safety Dispatcher positions and the Public Safety Dispatch Supervisor position.

November 2016:

4. Observed three (3) variances between expected and actual base pay, for sample employees #6, #19 and #34.
5. The variances for sample employees #6 and #19 are explained in the LOU effective 12/10/2015 amends the salary range for Public Safety Dispatcher positions and the Public Safety Dispatch Supervisor position.
6. The variance for sample employee #34 is explained with personnel action documentation. Sample employee #34 received long-term acting pay of 5%. The acting pay was rolled into base pay and reported as base pay due to the long-term nature of the assignment.

April 2017:

7. Observed one variance between expected and actual base pay, for sample employee #34.
8. The variance occurred for the same reason as in the previous sample month.

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Safety Status of SRVFPD's Job Classifications

Observations:

In an LOU effective January 2016 SRVFPD announced the creation of the following positions:

- Community Risk Reduction Inspector
- Community Risk Reduction Manager
- Permit Technician

The LOU stated that employees previously in the positions of Deputy Fire Marshal, Fire Inspector, Plans Examiner and Code Compliance Officer were to be replaced by Community Risk Reduction Inspectors and Community Risk Reduction Managers. The LOU further stated that previous Safety employees could remain in their Safety tier.

Excerpt from LOU between SRVFPD and Local 3546 dated January 6, 2016:

Section 4.00 Hiring-Community Risk Reduction Inspector

When an employee in the classifications of Deputy Fire Marshal, Fire Inspector, Plans Examiner, Code Compliance Officer, or Fire Prevention Specialist vacates their position on a permanent basis, the District will hire replacement employees using the classification of Community Risk Reduction Inspector.

Section 4.10 Hiring – Community Risk Reduction Manager

It is the District's intent to hire two Community Risk Reduction Managers. Such recruitment will be open to both current Fire Prevention Division employees who meet the minimum qualifications for the position and external applicants. Incumbent Fire Prevention Division employees shall be eligible to participate in the promotional process regardless of the prior managerial experience. In the event an internal competitor is selected for the position who is currently classified as a "safety member" for pension purposes, the selected employee will continue to perform the job tasks necessary to maintain such classification of "safety member" for pension purposes.

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These positions were replaced per a December 2016 LOU which created the following job classifications:

- Fire and Life Safety Inspector (previously Community Risk Reduction Inspector)
- Fire and Life Safety Manager (previously Community Risk Reduction Manager)
- Permit Technician

Excerpt from LOU between SRVFPD and Local 3546 dated December 15, 2016:

Section 5.00 Job Classifications Created

Effective July 1, 2016 the following three classifications are created:

- Fire and Life Safety Inspector (formerly Community Risk Reduction Inspector)
- Fire and Life Safety Manager (formerly Community Risk Reduction Manager)
- Permit Technician

At the request of the Union, as of this LOU, only Incumbent Local 4564 members, including Plans Examiner, will be given the opportunity to become a Fire and Life Safety Inspector and obtain “Safety” status when a current Fire Inspector position is vacated. The two current “Safety” status Fire Inspector positions are the only two positions available for promotion into a “Safety” status for retirement purposes. Current Fire Inspectors shall maintain their “Safety” status for pension purposes, and this LOU shall, in no way, affect their “Safety” status with CCCERA.

The December 2016 LOU also stated that “employees in the classification of Deputy Fire Marshal, and Fire Inspector currently classified as “Safety” for pension purposes shall continue to be classified as “Safety” for pension purposes.”

Excerpt from LOU between SRVFPD and Local 3546 dated December 15, 2016:

Notwithstanding the provisions of Section 5.11 below, employees in the classification of Deputy Fire Marshal and Fire Inspector currently classified

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as “Safety” for pension purposes shall continue to be classified as “Safety” for pension purposes.

The LOU further stated that employees in the classification of Deputy Fire Marshal, Fire Inspector, Code Compliance Officer and Fire Prevention Specialist will perform the duties of the Fire and Life Safety Inspector. The Fire and Life Safety Inspector classification is not designated as “Safety”. In the job description it is stated that “This is not a designated a “Safety” position for CCCERA retirement purposes unless otherwise provided for in the labor agreement between the District and Local 3546.”

The position description includes the verbiage “This is not a designated “Safety” position for CCCERA retirement purposes unless otherwise provided for in the labor agreement between the District and Local 3546.”

Discussion:

The review of the classifications and in conjunction with the clarification and certification via email on April 26, 2018 from the District indicates that the classifications as revised do not meet the criteria to remain in the safety classification and in the safety retirement tier. GC 31469.3 states:

§31469.3. “Safety member” defined

Safety member means any person who is any of the following:

1. A member of a pension system established pursuant to either Chapter 4 or Chapter 5 who elects by written notice filed with the board, to become a safety member.
2. Any person employed by a county, subject to Section 31676.1 or 31695.1 or by a district or court organized or existing within such a county, whose principal duties consist of active law enforcement or active fire suppression as described in Section 31470.2 and 31470.4, or active lifeguard service as limited by Section 31470.6 or juvenile hall group counseling and group supervision if adopted by the board of supervisors as provided in Section 31469.4.20
3. Any person described in Section 31469.2 in any county in which Section 31470.14 has become operative.

Per GC 31469.3(a) the district on behalf of the member, or the member, can file a notice with the Board of Retirement (BOR) to become a safety member. The BOR would deliberate based on the facts and the circumstances presented and based on the criteria that establishes a member of a fire district to be a safety member, that of being engaged in “...active

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fire suppression...” the BOR may affirm the member’s safety classification status and placement into the safety tier.

Further clarification is provided in GC 31470.4 *Person’s eligible*, see below, which specifically provides for the inclusion of “...fire prevention inspectors...”, “...assigned to fire suppression crews...” and “.....all other personnel assigned to active fire suppression in any county fire protection district are eligible.” The district affirmed that the members in the aforementioned classifications do not perform active fire suppression and does not require a Firefighter 1 certificate.

§31470.4. Persons eligible

All county foresters, county firewardens, deputies or assistant county foresters, deputies or assistant county firewardens, firefighters, fire apparatus engineers, fire prevention inspectors, forest firemen, fire patrolmen, aircraft pilots, and foremen assigned to fire suppression crews, all other personnel assigned to active fire suppression in any county forester’s or county firewarden’s department and all officers, engineers, and firemen of any county fire protection district, and all other personnel assigned to active fire suppression in any county fire protection district are eligible.

Conclusion:

Based on the information provided by the district, the classifications under discussion do not appear to fall within the requirements to be safety members per the standard provided for under GC 31469.3 and 31470.4.

Enrollment of all Eligible Employees

Enrollment of all Eligible Employees

Observations:

2016

- The enrollment packages for all SRVFPD employees that were submitted as "ENR" (enrolled) in the I29s, were received timely. All enrollment packages were received within the same month as the enrollment was reported on the I29s.
- All enrollment packages were executed correctly.

2017

- The enrollment packages for all SRVFPD employees that were submitted as "ENR" in the I29s, were received timely. All 2017

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enrollment packages were received within the same or following month as the enrollment was reported on the I29s.

- Per CCCERA records, for all seven (7) employees enrolled in September of 2017, SRVFPD sent copies of the enrollment cards rather than originals and did not complete the verification page or send the District memo it usually provides.
- Of these seven (7) enrollment packages, two (2) were missing signatures on CCCERA Form 102. The completed forms have since been received.
- For one (1) employee enrolled in December 2017, the enrollment package was missing CCCERA Forms 102 and 104. The completed forms have since been received.

Pension Benefit Review

Pension Benefit Review

Pension Review

The pension benefit calculations for six (6) of SRVFPD's retirees were reviewed; two (2) each for 2016, 2017 and 2018. The review focused on the final average salary (FAS) period selected and compensation used in the calculation for sample members.

Observations:

- The review agreed with the FAS period and the compensation used in the calculations for all six (6) members.

Retiree Return to Work Monitoring

Retiree Return to Work Monitoring

GC 7522.56, I.R.S. bona fide separation and normal retirement age rules

There are two ways retirees may return to work for a CCCERA participating employer: on an approved limited basis while receiving their pension, or by suspending their retirement to return to full time employment. The PEPRA 2013 "return to work" rules create a framework under which a retiree's eligibility will be determined to be re-employed without having to be reinstated from retirement. The "return to work" rules affect new, deferred, and current employees.

The Board of Retirement Regulations Section VII Normal Retirement Age and Bone Fide Separations states the following:

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Bona Fide Separation from Service

A) In order to comply with tax law restrictions on in-service distributions, a member who retires at an age younger than Normal Retirement Age, as defined herein, may not enter into an agreement, either oral or written, prior to the date the member's retirement commences, to be reemployed while retired by the same CCCERA employer, regardless of the length of the member's break in service after retirement. The member must acknowledge in writing to CCCERA at the time of retirement that the member has been informed of these requirements and limitations on post-retirement employment and that no prearrangement to be reemployed while retired exists.

B) A member who retires at an age younger than Normal Retirement Age, as defined herein, must have at least a continuous 90-day break in service from the date of the member's last day of employment prior to being reemployed while retired by the member's prior CCCERA employer.

C) If a member is reemployed without compliance with subsections (A) and (B) above, the retired member's retirement benefits from CCCERA must cease as soon as practicable upon discovery by CCCERA and will not resume until the member has a bona fide separation from service or reaches Normal Retirement Age, whichever occurs first.

Employer Certification and Determination – Submission of CCCERA Form 213 Certification for Post-Retirement Employment.

- No pre-arrangement for post-retirement re-hire;
- Reinstatement from retirement requirement if rehired by an employer in the same public retirement system from which the retiree receives the benefit;
- Waiting period between retirement date and rehire of a retiree (with some exceptions for Safety Members and special circumstance General Members);
- Fiscal Year Limitations – 960 Hours;
- Limited duration of the return to work (7522.56(c).);
- Compensation Limits;
- Employer certification and approval by the Board of Supervisors (7522.56(f)(1).);

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- Retiree certification of non-receipt of unemployment insurance compensation (7522. 56(e)).

Observations:

- In 2016 two (2) employees returned to work for SRVFPD.
- In 2017 four (4) employees returned to work for SRVFPD.
- The retirees returned to work did not work more than 960 hours in 2016 or 2017.

Internal Revenue Code Section 415 Limits

Internal Revenue Code Section 415 Limits

IRC Section 415 establishes the maximum allowable benefit payments CCCERA may make to an individual retiree. CCCERA's contracted actuary provides CCCERA on an annual basis with a table of IRC Section 415 Dollar Limits, reflecting each annual Dollar limit that applies for retirees of the calendar year based on IRS guidelines.

Observations:

In 2016 and 2017 CCCERA applied the IRC Section 415 Limit to six (6) members who retired from SRVFPD. Based on a review of the IRC Section 415 Dollar Limit calculations for 2016 and 2017, it was confirmed that the 2016 and 2017 IRC Section 415 Limit calculations for these six (6) retirees from SRVFPD were correctly executed.

Forfeiture of Benefits Earned or Accrued from the Commission of a Felony

Forfeiture of Benefits Earned or Accrued from the Commission of a Felony

Test Standard

Reporting Requirements For Public Employers Under PEPR require the public agency that employs or employed a public employee who was convicted of a job related felony must notify CCCERA of the conviction within 90 days of the conviction. (Govt. Code §§ 7522.72(f) and 7522.74(f)).

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Observations

The review indicated that CCCERA had not received any notice from the employer regarding any employee of SRVFPD that would have been subject to the felony conviction and benefit forfeiture provisions under government statute. SRVFPD confirmed that they knew of no such employee.

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Follow- Up Items

The following items were noted during the course of the review and require follow-up by the District and CCCERA:

1. **Pensionable Compensation and Contribution Reporting:** CCCERA provides the following recommendations:
 - i. Implementation of separate pay codes for reporting vacation-cash outs, administrative leave cash-outs and terminal pay to separate these compensation items from base pay and provide clarity around reported compensation items.
 - ii. Setting up a meeting between CCCERA's Member Services Department and SRVFPD's administrative staff to review the input file format and information reported. Specifically, SRVFPD should include the "Last Date of Pay" field for terminated employees and it should be reviewed whether additional information such as job codes and bargaining unit can be reported within the existing file format. Note that CCCERA's Participating Employer Handbook which covers some of these items is available on CCCERA's website⁴.
 - iii. Provide guidance to the district staff on the need to provide MOUs and LOU's to CCCERA for review if they create new positions or compensation items or change existing positions or compensation items.
 - iv. Providing an I29 correction file to add current job codes and job titles for the eight (8) employees who do not have data in these fields in CCCERA's pension administration system.
 - v. The LOU between SRVFPD and IAFF 3546/IAFF 3546-A effective April 1, 2017 referencing the term "miscellaneous pension contribution" should be clarified so that it is clear that it refers to general legacy employees only.
 - vi. For April 2016 a variance of 0.5 sick hours between Telestaff and ADP was observed for sample employee #34. Please review and clarify.
2. **Inclusion of Standby Pay in Pensionable Compensation:** The information provided to CCCERA appears to support an inclusion of standby pay for Shift Battalion Chiefs, exempt Battalion Chiefs and the exempt Division Chief/Fire Marshal position, provided that no Shift Battalion Chief worked standby hours in excess of their normal working hours which were the assigned 56 hour schedule.

For the non-exempt Fire and Life Safety positions, based on the "normal work hours" defined in the MOU between Local 3546 and SRVFPD effective August 1, 2009 - June

⁴ <https://www.cccera.org/employers>

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30, 2018 (shown in this report), please advise how standby duties were performed within each of the three alternate allowable 40 hour work schedules.

- 3. Safety Status:** Based on the information CCCERA received during the audit, it appears that the Fire and Life Safety Inspector positions and their predecessor positions including Deputy Fire Marshal, Fire Inspector, Plans Examiner and Code Compliance Officer do not, at this time, fulfill the standard to place a member in safety membership as provided for under GC 31469.3 and 31470.4.

CCCERA asks SRVFPD to provide a clarifying response regarding the basis of the District's safety classification of the Deputy Fire Marshal, Fire Inspector, Plans Examiner, and Code Compliance Officer.

- 4. IRC Compensation Limits:** Please advise what the SRVFPD procedure is for tracking the IRC compensation limits for CCCERA reporting purposes.

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District Response:

Wrally Dutkiewicz

From: Korthamar, Natalie <nkorthamar@srvfire.ca.gov>
Sent: Monday, June 18, 2018 4:51 PM
To: Wrally Dutkiewicz
Cc: Kristina Dohm
Subject: Response to CCCERA Audit
Attachments: Fire Prevention Division - Community Risk Reduction LOU.PDF; CCCERA Preliminary Audit Report - 05-22-18 - Follow-up Items.pdf

Wrally,

This email is in response to the CCCERA audit draft dated 5/22/18. The District's response is in blue italics.

Item 1: Pensionable Compensation and Contribution Reporting:

i. Implementation of separate pay codes for reporting vacation-cash outs, administrative leave cash-outs and terminal pay to separate these compensation items from base pay and provide clarity around reported compensation items.

District Response: The District agrees to create the separate pay codes recommended by CCCERA.

ii. Setting up a meeting between CCCERA's Member Services Department and SRVFPD's administrative staff to review the input file format and information reported. Specifically, SRVFPD should include the "Last Date of Pay" field for terminated employees and it should be reviewed whether additional information such as job codes and bargaining unit can be reported within the existing file format. Note that CCCERA's Participating Employer Handbook which covers some of these items is available on CCCERA's website.

District Response: The District agrees to meet with CCCERA to review these items.

iii. Provide guidance to the district staff on the need to provide MOUs and LOU's to CCCERA for review if they create new positions or compensation items or change existing positions or compensation items.

District Response: The District agrees to provide MOUs and LOUs to CCCERA for review if there are new positions created, changes to existing positions or compensation changes.

iv. Providing an I29 correction file to add current job codes and job titles for the eight (8) employees who do not have data in these fields in CCCERA's pension administration system.

District Response: The District will make these corrections.

v. The LOU between SRVFPD and IAFF 3546/IAFF 3546-A effective April 1, 2017 referencing the term "miscellaneous pension contribution" should be clarified so that it is clear that it refers to general legacy employees only.

District Response: The District will make future agreements clearer.

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San Ramon Valley Fire Protection District

vi. For April 2016 a variance of 0.5 sick hours between Telestaff and ADP was observed for sample employee #34. Please review and clarify.

District Response: The District is reviewing and will make a correction.

Item 2: Inclusion of Standby Pay in Pensionable Compensation

Inclusion of Standby Pay in Pensionable Compensation: The information provided to CCCERA appears to support an inclusion of standby pay for Shift Battalion Chiefs, exempt Battalion Chiefs and the exempt Division Chief/Fire Marshal position, provided that no Shift Battalion Chief worked standby hours in excess of their normal working hours which were the assigned 56 hour schedule. For the non-exempt Fire and Life Safety positions, based on the "normal work hours" defined in the MOU between Local 3456 and SRVFPD effective August 1, 2009 – June 30, 2018 (shown in this report), please advise how standby duties were performed within each of the three alternate allowable 40 hour work schedules.

District Response: For the Fire and Life Safety Inspectors who are responsible for fire investigation, stand-by pay was rolled in to base pay per the January 2016 LOU (attached). Therefore, these positions no longer receive stand-by pay. The stand-by duties are included in the responsibilities of the position.

Item 3: Safety Status

Based on the information CCCERA received during the audit, it appears that the Fire and Life Safety Inspector positions and their predecessor positions including Deputy Fire Marshal, Fire Inspector, Plans Examiner and Code Compliance Officer do not, at this time, fulfill the standard to place a member in safety membership as provided for under GC 31469.3 and 31470.4.

CCCERA asks SRVFPD to provide a clarifying response regarding the basis of the District's safety classification of the Deputy Fire Marshal, Fire Inspector, Plans Examiner, and Code Compliance Officer.

District Response: For those positions that are designated "safety," their role is to investigate the cause and origin of fires.

Item 4: IRC Compensation Limits

IRC Compensation Limits: Please advise what the SRVFPD procedure is for tracking the IRC compensation limits for CCCERA reporting purposes.

District Response:

The District uses the following procedures for retirees:

- 1. The District receives a letter annually from CCCERA which notifies the District which retirees are going to reach the limit and also includes a copy of the letter that is sent to the retirees.*
- 2. The District notes on what day the payments need to start per retiree.*
- 3. Once the specific day is reached, the District begins providing payment to the retirees.*

The District uses the following procedures for active employees:

- 1. The District's payroll department maintains a spreadsheet that is updated monthly that keeps track of employees' whose compensation is going to reach the 415 limit.*

2

San Ramon Valley Fire Protection District

- 2. Once the limit is reached, the payroll department stops deducting a retirement contribution for the remainder of the year.*

Please let me know if you have any other questions.

Nataie

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Meeting Date
9/12/18
Agenda Item
#13

MEMORANDUM

Date: September 12, 2018
To: CCCERA Board of Retirement
From: Gail Strohl, Chief Executive Officer
Subject: Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS Systems, Inc.

Background

Since 2009, CCCERA has had a maintenance and system software support services agreement with CPAS Systems, Inc. for its pension administration system. It is typically renewed on an annual basis. These services include correction services, legislative compliance updates, maintenance updates, and overall system support services. The maintenance and support is necessary for continued operation of the system. The annual renewal amounts are \$ 34,613.50 for maintenance and \$ 81,900 for system support services. This is a 3% increase compared to the prior year.

Recommendation

Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS Systems, Inc.



Meeting Date
9/12/18
Agenda Item
#14a.

6th Annual California Institutional Forum

*An Annual Meeting of the Regional Institutional Investor Community – Wednesday December 5th, 2018
The Lodge at Sonoma Hotel & Spa, 1325 Broadway at Leveroni & Napo Roads, Sonoma, CA 95476*

DESIGNED FOR:

Pensions, Endowments, Foundations, Hospital Plans, Insurance Companies & Investment Consultants

2018 PROGRAM CONTRIBUTORS

Gary Dokes, Chief Investment Officer, **Arizona Community Foundation**

David Hunter, Executive Director / Chief Investment Officer, **North Dakota Retirement & Investment Office**

Rob Feckner, Vice President, **CalPERS Board of Administration**

Travis Antoniono, Investment Officer Corporate Governance, **California State Teachers' Retirement System**

Daniel Ingram, Vice President for Responsible Investment Research and Consulting, **Wilshire Associates**

Liza Crisafi, Chief Investment Officer, **San Diego City Employees' Retirement System**

Steve Algert, Managing Director and Assistant Treasurer, **The J. Paul Getty Trust**

Stephen Marshall, Director, Head of Asset Allocation, **Beacon Pointe Advisors**

Sean Olesen, Director, Investments, **Dignity Health**

Ryan Lobdell, Senior Vice President, **Pension Consulting Alliance**

John Ritter, Managing Director of Real Assets, **University of California**

Susan Slocum, Chief Investment Officer & Treasurer, **Children's Hospitals and Clinics of Minnesota**

Mary Lehmann, Vice President, Finance & Treasurer, **Amgen**

Don Stracke, Senior Consultant, **NEPC**

Paul Erlendson, Senior Vice President, **Callan LLC**

Bob Maynard, Chief Investment Officer, **Public Retirement System of Idaho**

Eileen Neill, Managing Director, Senior Consultant, **Verus**

Rochelle Witharana, Director of Finance, **The California Wellness Foundation**

Carl Ludwigson, Director of Manager Research, **Bel Air Investment Advisors**

Stacy Jennings, Director of Investments, **Intermountain Healthcare**

James McCallum, Chief Financial Officer, **Sacramento Region Community Foundation**

Mark White, Head of Real Assets, **Albourne Partners**

2018 CONTRIBUTING PARTNERS

**Allianz Global Investors | Nuveen Asset Management | ClearBridge Investments | ArrowMark Partners
Royal Bank of Canada | Vontobel Asset Management | Morgan Stanley Investment Management
Capital Fund Management | Bernstein Litowitz Berger & Grossman LLP | Putnam Investments
HSBC Global Asset Management | Nikko Asset Management | Credit Suisse | Jane Street Trading**



7:30 Registration & Welcome Coffee

8:00 Breakfast Workshop—ESG Now and Then: Recent Trends in ESG Implementation

The ESG discussion is rapidly evolving as are the techniques for incorporating ESG analytics and factors into the portfolio construction process. This workshop will explore how investors are assessing ESG's longer-term material impacts and how they are positioning their portfolios to avoid these potential risks. The workshop will also examine specific strategies investors are using to address and integrate ESG issues in systematic value and multi-factor-based frameworks.

Moderator:

Daniel Ingram, Vice President for Responsible Investment Research and Consulting, **Wilshire Associates**

Panelists:

Travis Antoniono, Investment Officer Corporate Governance, **California State Teachers' Retirement System**

Rochelle Witharana, Director of Finance, **The California Wellness Foundation**

Alexander Davey, Director, Senior Equity Product Specialist, **HSBC Global Asset Management**

8:30 Welcome Remarks

Organizer: **Kari Walkley**, Program Manager, **Markets Group**

Honorary Chair: **Rob Feckner**, Vice President, **CalPERS Board of Administration**

Chairman: **Don Gervais**, Managing Director, **Allianz Global Investors**

8:40 Panel: Macro Outlook and Global Asset Allocation

This year, the biggest investment-market uncertainties appear to revolve around political factors, such as the extent of policy shifts under new administrations in many countries, the effectiveness of fiscal stimuli, and more referendums and elections in the Eurozone. One hope among investors is that a global growth environment emerges, with a reasonably positive outlook for corporate profitability, a strong but relatively predictable U.S. dollar, and stabilized oil and other commodity prices. This panel will address these and other factors that could affect investors' global asset allocation decisions.

Panelists:

Bob Maynard, Chief Investment Officer, **Public Retirement System of Idaho**

Stephen Marshall, Director, Head of Asset Allocation, **Beacon Pointe Advisors**

David Wilson, Managing Director, **Nuveen Asset Management**

9:20 Presentation: Protecting Capital Amid Increased Uncertainty

Investors can ill afford another market crash, yet what is available to protect plan assets without sacrificing return potential? One option that has not yet seen mainstream institutional adoption is the dynamic asset allocation approach of Managed Futures, which has historically acted as a crisis-risk alpha source by delivering positive returns in periods of extended equity market decline. This discussion will illustrate how a Managed Futures implementation can benefit plan returns during both positive and negative markets by taking long and short positions across a global multi-asset class universe.

Presenter:

Giorgio Carlino, Chief Investment Officer of Multi Asset US., **Allianz Global Investors**

9:40 Panel: Headwinds Shifting to Tailwinds in International Markets

After a decade of being out of favor, international value stocks are overdue for a comeback. And, actually, Europe's high exposure to cyclical stocks is evolving from a drag to a benefit as prices firm and the yield curve begins to steepen. Accelerating earnings growth and stimulus measures are expected to drive international stock performance going forward.

Panelists:

Speaker, Managing Director, **ClearBridge Investments**

10:20 Morning Coffee Break**10:35 Panel: An Evolving World for Alternative Credit**

Following the global financial crisis, a low-rate environment has forced investors to rethink asset allocation in order to meet their portfolio objectives. This prolonged market condition has put particular stress on traditional credit and fixed income instruments that have historically played a critical role in portfolios. Further, hedge fund strategies employed to provide diversification and non-correlation have struggled to deliver. These dynamics are leading investors to increasingly embrace alternative credit strategies that look to take advantage of more complex, and often less liquid, opportunities. The panelists will seek to define the various segments within alternative credit, to highlight several key characteristics of these strategies, and to discuss real-time examples of opportunities in today's market.

Moderator:

Eileen Neill, Managing Director, Senior Consultant, **Verus**

Panelists:

Steve Algert, Managing Director and Assistant Treasurer, **The J. Paul Getty Trust**

Tim Beresford, Client Portfolio Manager, **ArrowMark Partners**

11:15 Panel: Opportunistic Alternative Investments

In an environment where investors are starved for returns, where can institutions turn to find alternatives that generate meaningful risk-adjusted returns? What's the role of private debt within a diversified portfolio and what are the best opportunities across infrastructure, real estate, commodities, hedge funds and private equity? These are real, important questions—not rhetorical ones—that this panel discussion will attack.

Moderator:

Carl Ludwigson, Director of Manager Research, **Bel Air Investment Advisors**

Panelists:

Sean Olesen, Director, Investments, **Dignity Health**

Speaker, Managing Director, **Royal Bank of Canada**

11:55 Interview: Seeking Alpha Requires Left and Right Brains

Are Volatility, Uncertainty, Complexity and Ambiguity (VUCA) threats or opportunities for investment managers seeking alpha? Traditional left-brain investment skills are technical analysis, mathematical prowess and logical reasoning. Although influenced by logical factors, changes in investment markets are often irrational and illogical. Dr. Philipp Hensler argues that a whole-brain approach to seeking alpha is necessary to win in the investment game. With the help of both the left (logical) and right (empathetic) hemispheres of one's brain – an investor is better prepared to anticipate and deal with unexpected market fluctuations and achieve greater financial return. In fact, he says that right-brain skills are crucial to surviving unforgiving market conditions.

Interviewee:

Sudhir Roc-Sennett, Executive Director, Senior Portfolio Adviser, **Vontobel Asset Management**

12:25 Networking Luncheon hosted by Credit Suisse



1:25 Panel: How to Create Value in a Competitive Infrastructure Environment

Depending on the structure of your portfolio, risk preference and subjective attitude towards infrastructure, 5-10% of total funds may be dedicated to the asset class. How should investors choose the appropriate infrastructure projects for their portfolios? Where can investors look outside the box for attractive infrastructure investment opportunities beyond core markets and sectors, while providing appropriate returns for the risk being taken?

Moderator:

James McCallum, Chief Financial Officer, **Sacramento Region Community Foundation**

Panelists:

John Ritter, Managing Director of Real Assets, **University of California**

Mark White, Head of Real Assets, **Albourne Partners**

Jim Wilmott, Managing Director, **Morgan Stanley Investment Management**

2:05 Panel: Evaluating Alternative Beta Strategies

What should investors look for when evaluating the new generation of beta strategies? Is the flexibility of having alternative weighting methods important? And what about the strategies' correlation with established benchmarks? Let's hear our presenter's views and experiences.

Moderator:

Ryan Lobdell, Senior Vice President, **Pension Consulting Alliance**

Panelists:

Speaker, Managing Director, **Capital Fund Management**

2:45 Interview: Assessing the Uptick in Securities Litigation

A number of financial frauds have come to light in recent years, including manipulation of various industry benchmarks, such as LIBOR and the London Gold Fixing, and market manipulation, including in markets for U.S. Treasuries, credit default swaps, precious metals, and most recently, municipal bonds. This session will begin with a brief summary of the litigations that have been commenced by investors to date, and then will address questions relevant to investors seeking to maximize recovery of their investment losses.

Interviewee:

Tony Gelderman, Counsel, **Bernstein Litowitz Berger & Grossmann LLP**

3:05 Afternoon Coffee Break

3:20 Panel: Emerging Markets: Relevancy and Value in Today's Markets?

After several challenging years, emerging markets equities and debt have done well over the past year. Geopolitical issues, multiple Fed rate hikes and the increasingly likelihood of an unwinding of monetary accommodation by the ECB have led to increased uncertainty around whether the EM rally can continue. These and other factors have raised the question: Are EM equities and debt still relevant and deserving of a meaningful allocation in a long-term, well diversified portfolio? This, and other important questions about the class, will be answered.

Moderator:

Don Stracke, Senior Consultant, **NEPC**

Panelists:

Mary Lehmann, Vice President, Finance & Treasurer, **Amgen**

Stacy Jennings, Director of Investments, **Intermountain Healthcare**

Speaker, Managing Director, **Putnam Investments**



4:00 China: The Great Disruptor of Our Time

This session will delve into how China has effectively replaced the US as the primary source of demand growth - not just for investment but increasing consumption, and will soon become the second largest stock market in capitalization. Combined, China and Japan will become the next two most important decisions around risk and return in equity portfolios behind the US. Furthermore, Japan is mobilizing with renewed investment in Asia and industries accessing the China consumer, and changes in governance and transparency are reinvigorating investor enthusiasm and valuations. How can investors navigate these two markets in their portfolios as China comes online?

Interviewee:

Eng Teck Tan, Senior Portfolio Manager, Nikko Asset Management

4:30 Chief Investment Officer Roundtable

Chief Investment Officers constantly face unique sets of challenges and investing environments. In this discussion, chief investment officers will focus on the key investment and management issues facing their funds, along with what they consider to be their plans' "best ideas" with regard to investment strategy. They will speak to what are the best performing asset allocations they have made this year, what a successful allocation looks like, and how they are identifying these investments.

Moderator:

Paul Erlendson, Senior Vice President, Callan LLC

Panelists:

Gary Dokes, Chief Investment Officer, Arizona Community Foundation

David Hunter, Executive Director / Chief Investment Officer, North Dakota Retirement & Investment Office

Liza Crisafi, Chief Investment Officer, San Diego City Employees' Retirement System

5:00 Breakout Discussions

In the format of roundtables, small discussion groups are formed by topic. This is your opportunity to interact with some of our star speakers of the day, ask questions, and make connections.

Table 1 - ESG Now and Then: Recent Trends in ESG Implementation Hosted by: HSBC Global Asset Management

Table 2 - Macro Outlook and Global Asset Allocation Hosted by: Nuveen Asset Management

Table 3 - Protecting Capital Amid Increased Uncertainty Hosted by: Allianz Global Investors

Table 4 - Headwinds Shifting to Tailwinds in International Markets Hosted by: ClearBridge Investments

Table 5 - Alternatives - Moving From Assets to Outcomes Hosted by: ArrowMark Partners

Table 6 - Opportunistic Alternative Investments Hosted by: Royal Bank of Canada

Table 7 - Seeking Alpha Requires Left and Right Brains Hosted by: Vontobel Asset Management

Table 8 - How to Create Value in a Competitive Infrastructure Environment Hosted by: Morgan Stanley Investment Management

Table 9- Evaluating Alternative Beta Strategies Hosted by: Capital Fund Management

Table 10- Assessing the Uptick in Securities Litigation Hosted by Bernstein Litowitz Berger & Grossmann LLP

Table 11 - Emerging Markets: Relevancy and Value in Today's Markets Hosted by: Putnam Investments

Table 12 - China: The Great Disruptor of Our Time Hosted by: Nikko Asset Management

5:30 Chairperson's Closing Remarks

5:35 Networking Cocktail hosted by Jane Street Trading

6:00 Invitation-Only Dinner hosted by Allianz Global Investors

2019 Aether Annual Meeting

January 23-24, 2019

Denver, CO

Meeting Date

9/12/18

Agenda Item

#14b.



A E T H E R

INVESTMENT PARTNERS, LLC

Wednesday, January 23, 2019

- 7:00pm – Colorado Avalanche vs. Minnesota Wild game and dinner

Thursday, January 24, 2019

- 8:00am – Advisory Committee meeting
- 8:30am – Breakfast
- 9:00am – Annual meeting
- 11:15am – Underlying manager presentation
- 12:15pm – Lunch
- 12:45pm – Underlying manager presentation
- 1:45pm – Conclude