BARTEL ASSOCIATES, LLC

CITY OF CHULA VISTA

MISCELLANEOUS AND SAFETY PLANS

CalPERS Actuarial Issues – 6/30/15 Valuation
Preliminary Results

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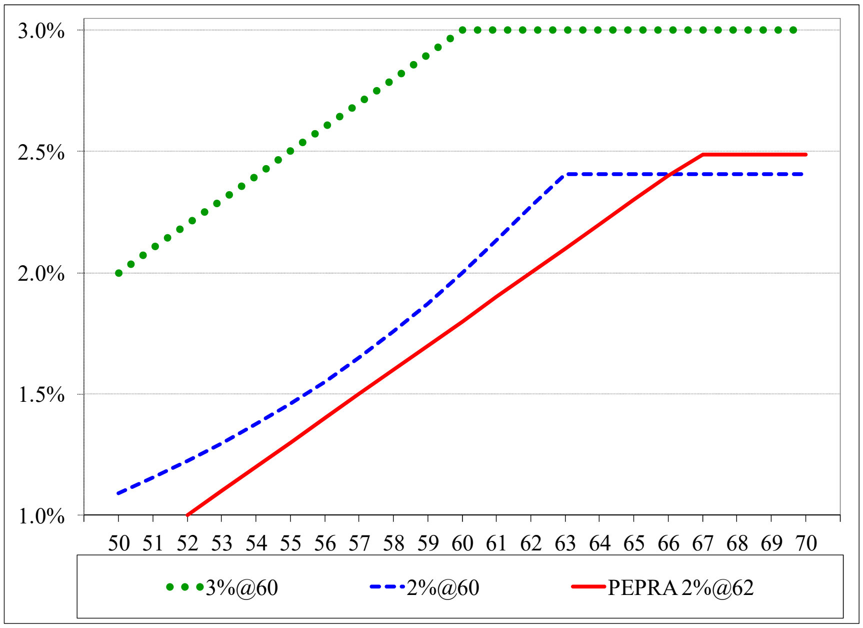
Bartel Associates, LLC

February 2, 2017

Agenda

BENEFIT FORMULAS

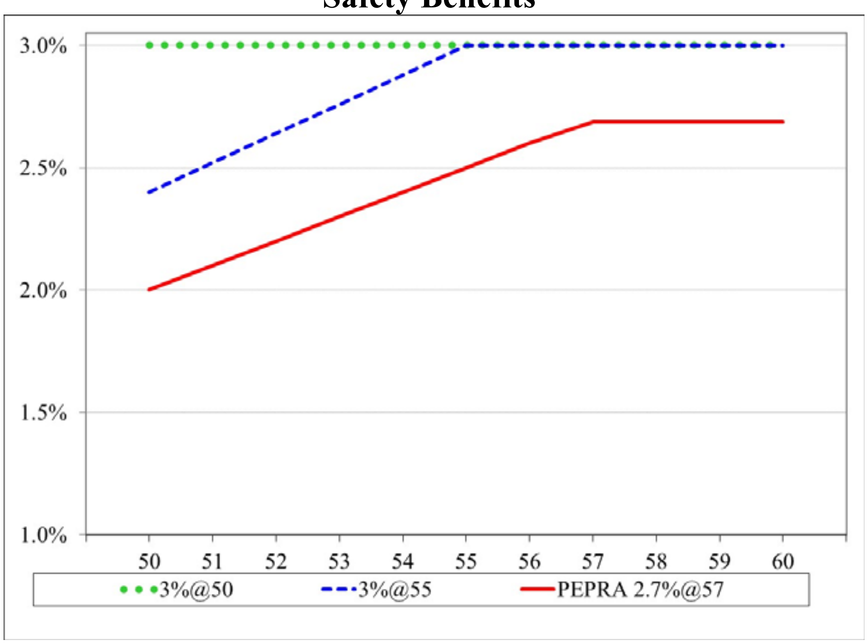
Miscellaneous Benefits[1]



[1] 2%@60, with final 3-year earnings, if hired after 4/22/11;
PEPRA 2%@62 (2.5%@67), with final 3-year earnings, for new members after 12/31/12.

BENEFIT FORMULAS

Safety Benefits[2]



[2] 3%@55, with final 3-year earnings, if hired after 4/22/11;
PEPRA 2.7%@57 with final 3-year earnings, for new members after 12/31/12.

CalPERS Changes

- Contribution policy changes:
  - No asset smoothing
  - No rolling amortization
  - 5-year ramp up
  - Included in 6/30/13 valuation (first impact 15/16 rates; full impact 19/20)
- Assumption changes:
  - Anticipate future mortality improvement
  - Other, less significant, changes
  - Included in 6/30/14 valuation (first impact 16/17 rates; full impact 20/21)
- CalPERS Board will change their discount rate:

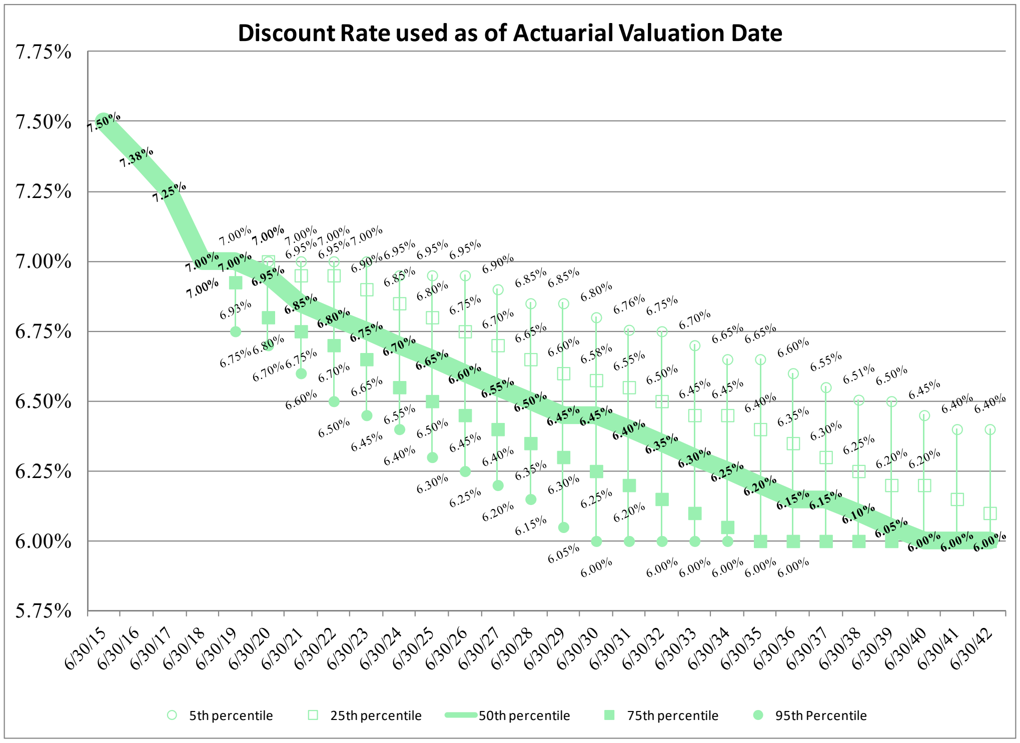
	Rate	Initial	Full
6/30/16 valuation	7.375%	18/19	22/23
6/30/17 valuation	7.25%	19/20	23/24
6/30/18 valuation	7.00%	20/21	24/25

  - Risk mitigation suspended until 6/30/18

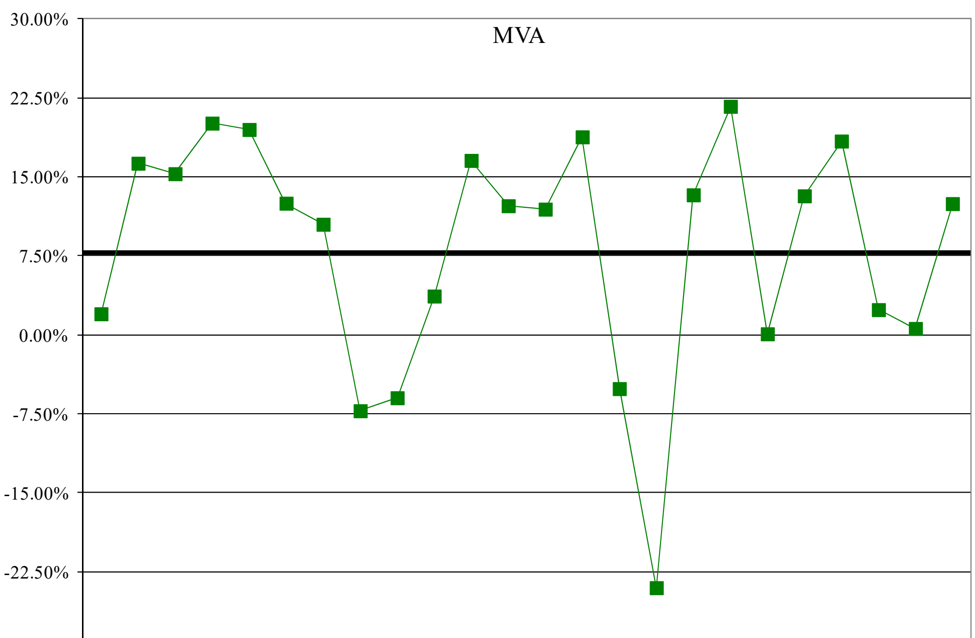
CalPERS Changes

- CalPERS Board reviewing their Capital Market Assumptions next summer/fall May result in further discount rate changes
- Risk Mitigation Strategy
  - Move to more conservative investments over time
  - Only when investment return is better than expected
  - Lower discount rate in concert
  - Essentially use ≈50% of investment gains to pay for cost increases
  - Likely get to 6.0% over 20+ years

CalPERS Changes



Investment Return



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Est. 2017
MVA	2.0%	16.3%	15.3%	20.1%	19.5%	12.5%	10.5%	-7.2%	-6.0%	3.7%	16.6%	12.3%	11.9%	18.8%	-5.1%	-24.0	13.3%	21.7%	0.1%	13.2%	18.4%	2.4%	0.6%	12.5%

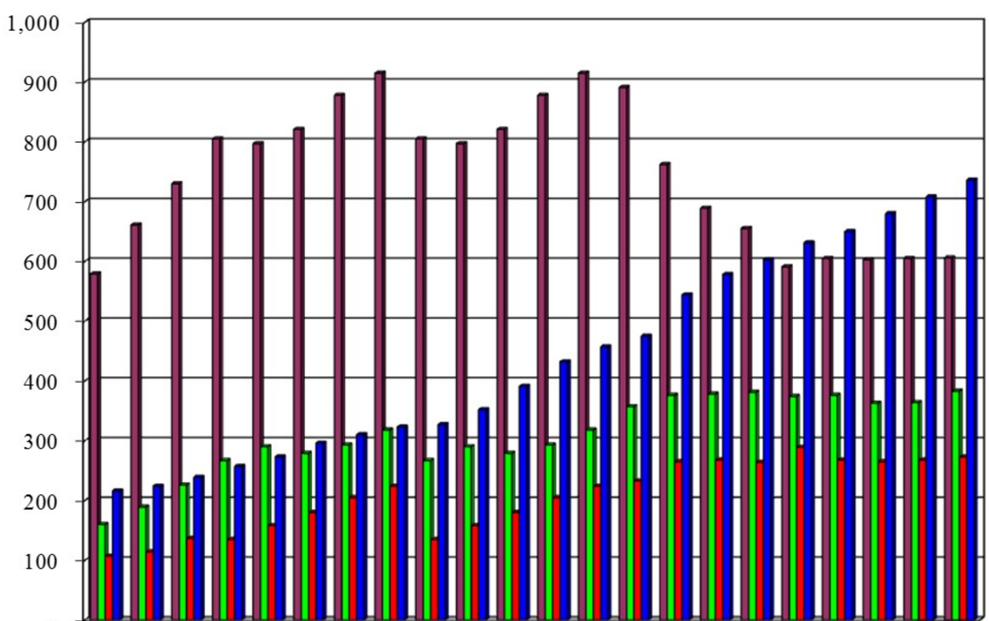
Above assumes contributions, payments, etc. received evenly throughout year

Summary of Demographic Information - Miscellaneous

	1994	2005	2014	2015
Actives				
■ Counts	579	878	605	606
■ Average				
• Age	43	43	48	48
• City Service	10	8	13	13
• PERSable Wages	\$38,000	\$60,200	\$72,200	\$73,000
■ Total PERSable Wages (millions)	22.0	52.9	43.7	44.2
Receiving Payments				
■ Counts				
• Service		336	567	591
• Disablity		43	67	67
• Beneficiaries		53	74	78
• Total	216	432	708	736
■ Average Annual City Provided Benefit[3]				
• Service		\$18,800	\$29,900	\$30,700
• Disability		7,800	6,000	5,300
• Service Retirements in last 5 years		27,500	24,300	26,400

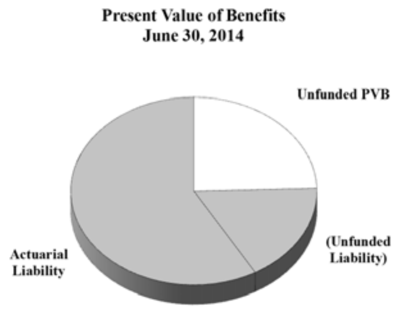
[3] Average City provided pensions are based on City service & City benefit formula, and are not representative of benefits for long service employees.

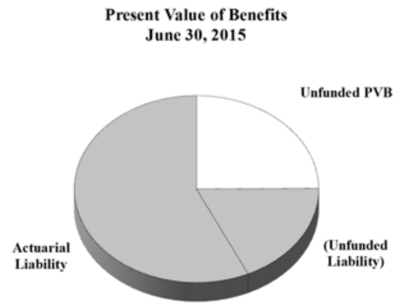
Members Included in Valuation - Miscellaneous



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Active	579	661	730	805	797	821	878	915	805	797	821	878	915	891	762	689	655	591	605	603	605	606
Transfers	160	189	226	267	290	279	293	318	267	290	279	293	318	357	376	378	381	374	376	363	364	383
Vested Terminations	107	114	137	135	158	180	205	224	135	158	180	205	224	233	265	268	264	289	268	265	268	273
Receiving Payments	216	224	239	257	273	296	310	323	327	352	391	432	457	475	544	578	603	631	650	680	708	736

PLAN FUNDED STATUS - MISCELLANEOUS



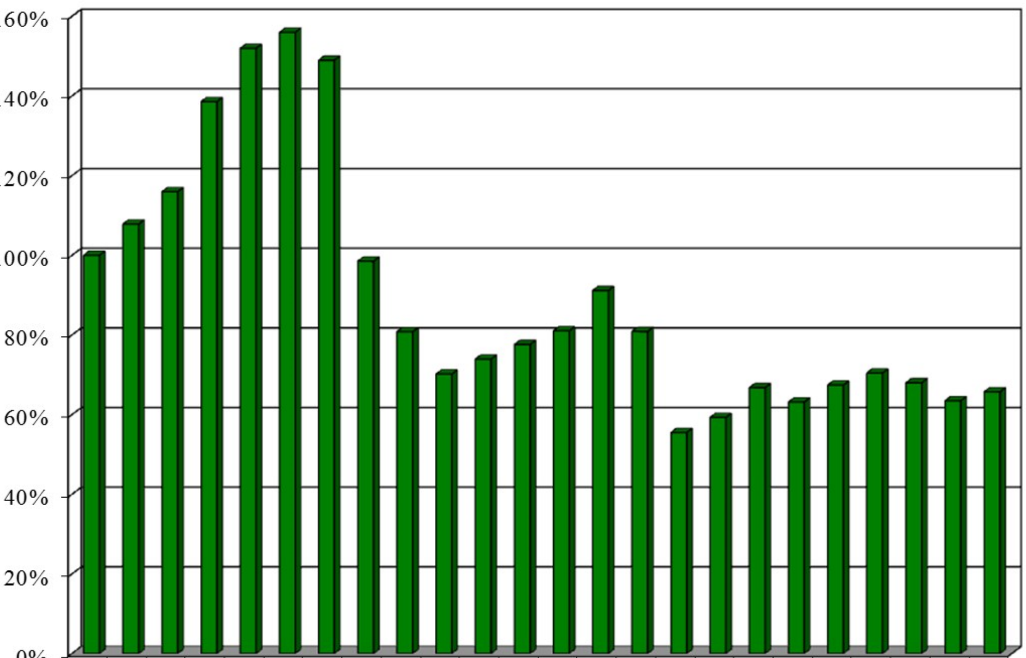


June 30, 2014		June 30, 2015
$ 195,800,000	**Active AAL**	$ 202,200,000
233,100,000	**Retiree AAL**	246,100,000
30,900,000	**Inactive AAL**	32,300,000
459,800,000	**Total AAL**	480,600,000
324,300,000	**Market Asset Value**	326,900,000
(135,500,000)	**(Unfunded Liability)**	(153,700,000)

PLAN FUNDED STATUS - MISCELLANEOUS

- What happened between 6/30/14 and 6/30/15?
  - Unfunded Liability (Increase)/Decrease ≈ $(18.2) million
- Reasons for Unfunded Liability decrease
  - Asset gain/(loss): ≈ $(17.2) million
  - Actuarial gain/(loss): ≈ $2.6 million
    - ☐ Average Salary $72,200 → $73,000
    - ☐ Number of Actives 605 → 606
    - ☐ Number of Inactives 632 → 656
    - ☐ Number of Retirees 708 → 736
  - Other gain/(loss): ≈ $(3.6) million
    - ☐ Contributions
    - ☐ Other (expected)

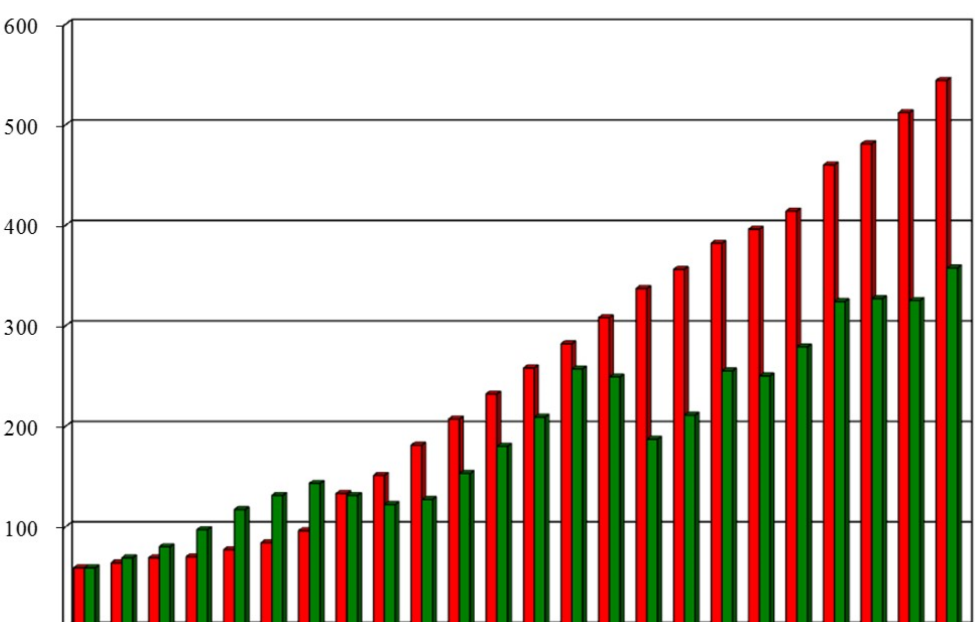
Funded Ratio - Miscellaneous



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Funded Ratio - MVA	100%	108%	116%	139%	152%	156%	149%	98%	81%	70%	74%	78%	81%	91%	81%	55%	59%	67%	63%	67%	70%	68%	63%	66%

6/30/16 & 6/30/17 funded status estimated.

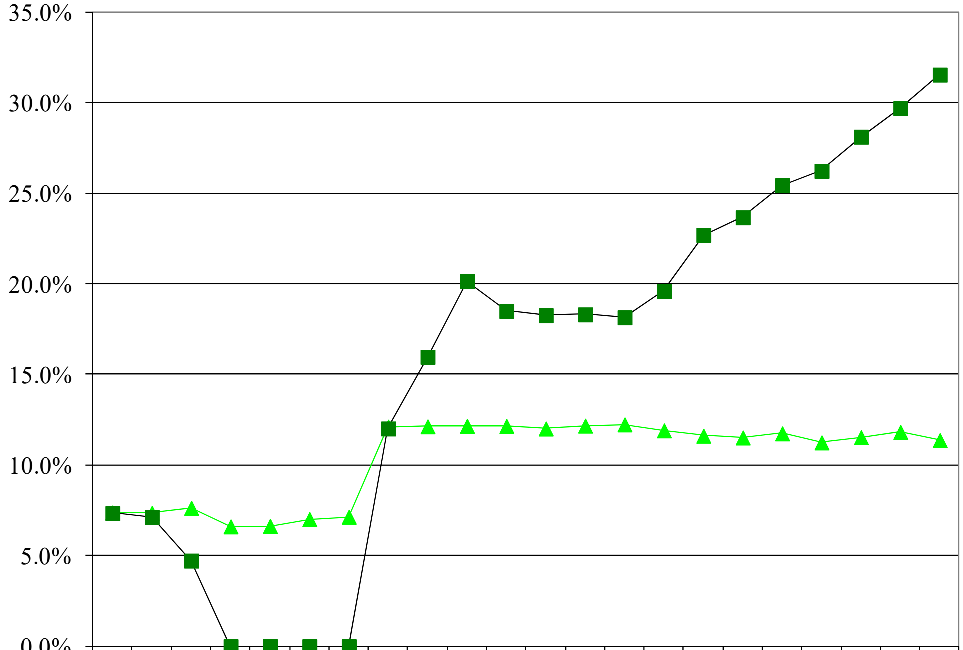
Funded Status (Millions) - Miscellaneous



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Actuarial Liability	59	64	69	70	77	84	96	133	151	181	207	232	258	282	308	337	356	382	396	414	460	481	512	544
Market Asset Value	59	69	80	97	117	131	143	131	122	127	153	180	209	257	249	187	211	255	250	279	324	327	325	357

6/30/16 & 6/30/17 funded status estimated.

Contribution Rates - Miscellaneous



	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
ER Normal Cost	7.4%	7.4%	7.6%	6.6%	6.6%	7.0%	7.2%	12.1%	12.1%	12.2%	12.2%	12.0%	12.2%	12.2%	11.9%	11.6%	11.5%	11.7%	11.2%	11.5%	11.8%	11.4%
Total ER Cont Rate	7.3%	7.1%	4.7%	0.0%	0.0%	0.0%	0.0%	12.0%	16.0%	20.1%	18.5%	18.3%	18.3%	18.2%	19.6%	22.7%	23.7%	25.4%	26.2%	28.1%	29.7%	31.5%

Contribution Rates - Miscellaneous

	6/30/14 2016/2017	6/30/15 2017/2018
■ Total Normal Cost	19.7%	19.2%
■ Employee Normal Cost	7.9%	7.8%
■ Employer Normal Cost	11.8%	11.4%
■ Amortization Bases	17.9%	20.2%
■ Total Employer Contribution Rate	29.7%	31.5%
■ Amortization Period	Multiple	Multiple

- What Happened from 6/30/14 to 6/30/15:
  - 2016/17 Rate 29.7%
  - Asset Method Change (3rd Year) 1.3%
  - Assumption Change (2nd Year) 1.1%
  - 6/30/14 (Gains)/Losses (2nd Year) (0.9%)
  - 6/30/15 (Gains)/Losses (1st Year) 0.3%
  - 2017/18 Rate 31.5%

CONTRIBUTION PROJECTIONS - MISCELLANEOUS

- Market Value Investment Return:
  - June 30, 2016 — 0.6%[4]
  - June 30, 2017 — 12.5%[5]
  - Future returns based on stochastic analysis using 1,000 trials

Single Year Returns at[6]	25th Percentile	50th Percentile	75th Percentile
7.0% Investment Mix	**0.1%**	**7.0%**	**14.8%**
6.0% Investment Mix	**0.8%**	**6.0%**	**11.4%**

  - Assumes investment returns will, generally be 6.5% (as compared to 7.0%) over the next 10 years and higher beyond that
- No Other: Gains/Losses, Method/Assumption Changes, Benefit Improvements
- Excludes Employer Paid Member Contributions (EPMC)
- Tier 2 (2%@60 FAE3) effective April 22, 2011
- Includes Tier 1 EPMC elimination effective 2015/16
- City projected 2016/17 payroll

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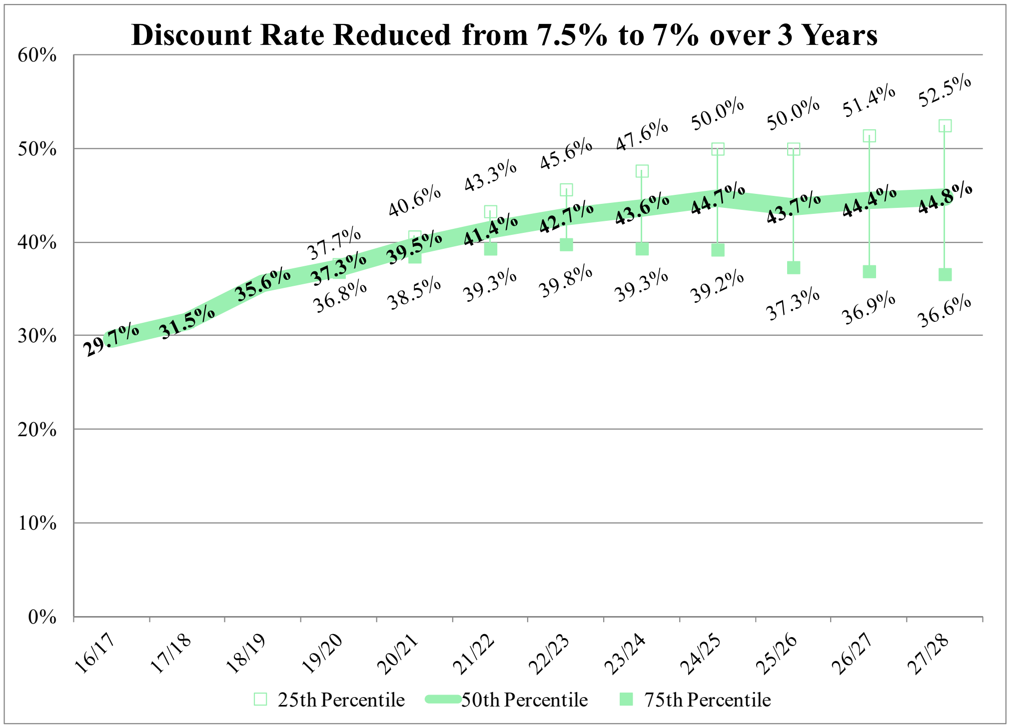
4 Based on CalPERS press release on 7/18/16, preliminary investment return of 0.61%.
5 June 30, 2017 return based on CalPERS return of 2.36% through 10/31/16, estimated return from 11/1/16 to 12/31/16 and assumed returns for 6 months.
6 Nth percentile means N percentage of our trials result in returns lower than the indicated rates.

CONTRIBUTION PROJECTIONS - MISCELLANEOUS

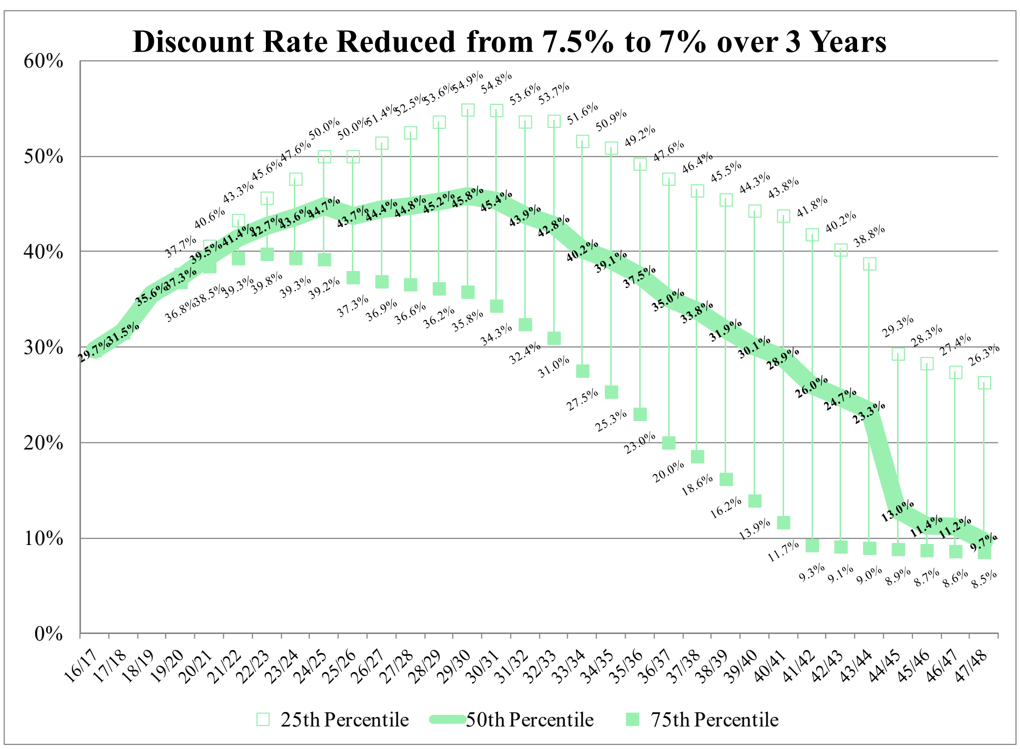
- New hire assumptions:
  - Assumes 40% of 2013 new hires will be Classic Tier 2 Members (2%@60) and 60% will be New Members with PEPRA benefits
  - Assumes Classic Tier 2 Members will decrease from 40% to 0% of new hires over 20 years

CONTRIBUTION PROJECTIONS - MISCELLANEOUS



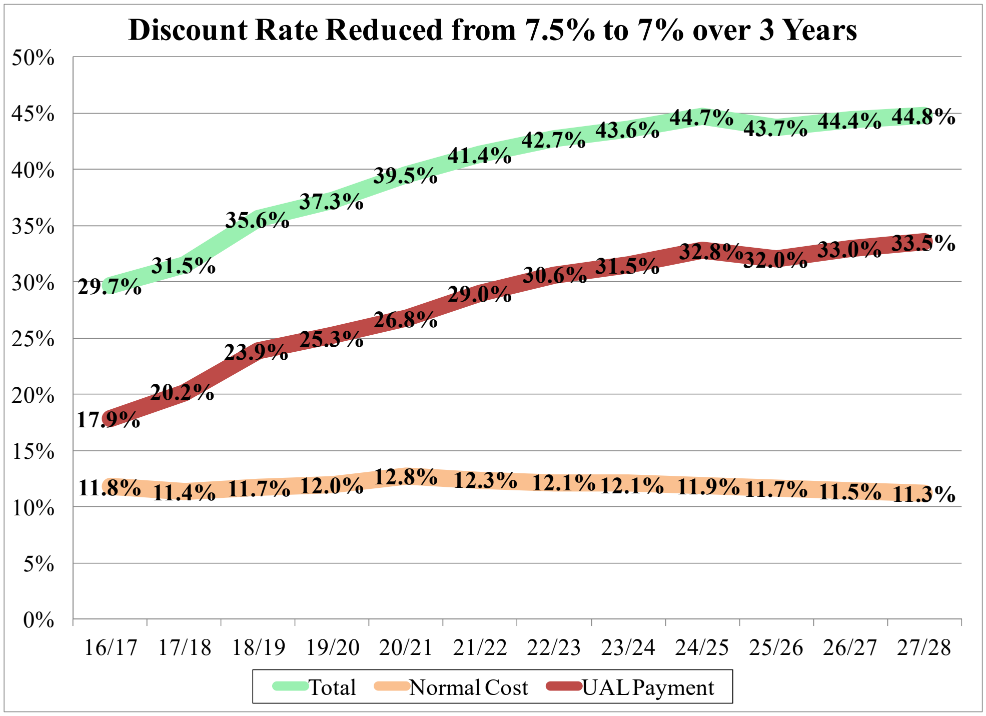
CITY OF CHULA VISTA

CONTRIBUTION PROJECTIONS - MISCELLANEOUS

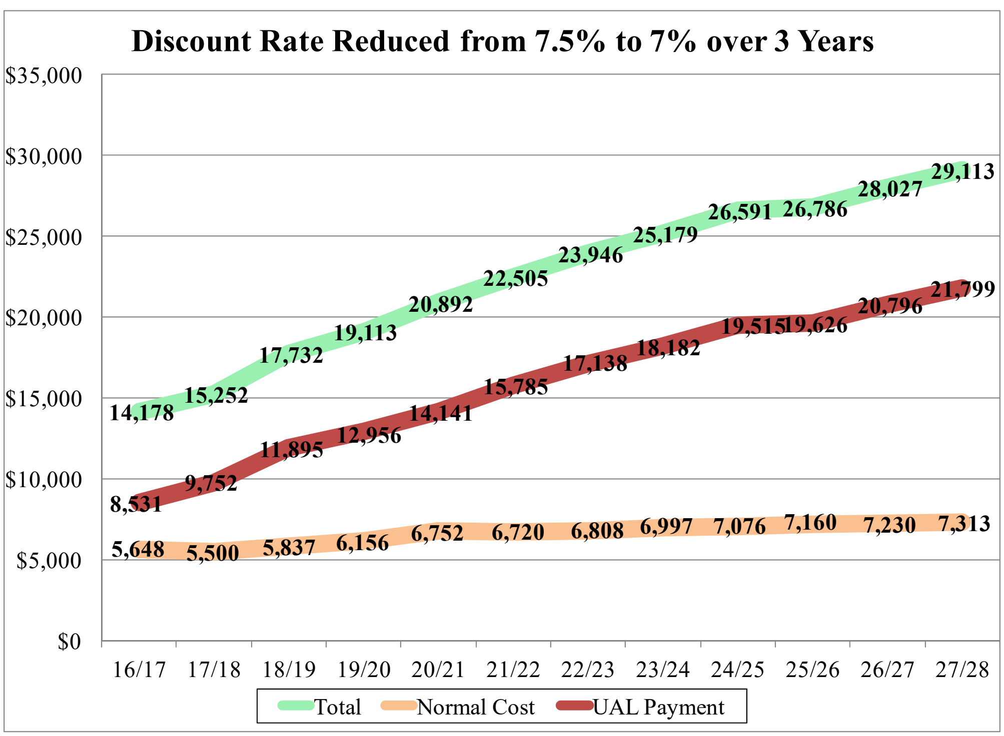


CITY OF CHULA VISTA

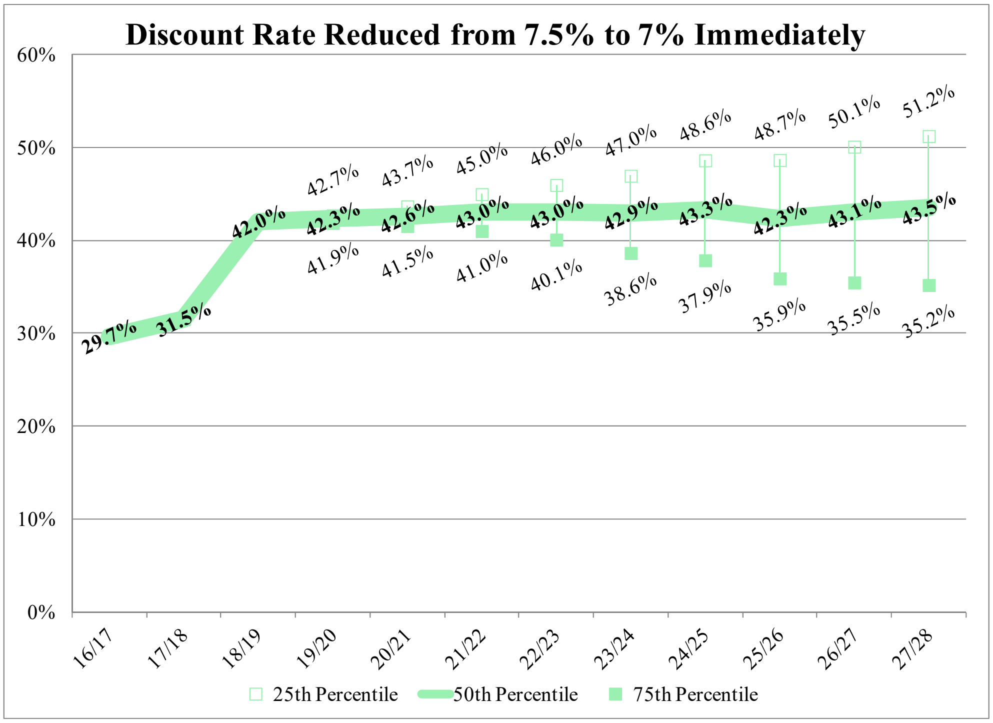
CONTRIBUTION PROJECTIONS - MISCELLANEOUS



CONTRIBUTION PROJECTIONS - MISCELLANEOUS

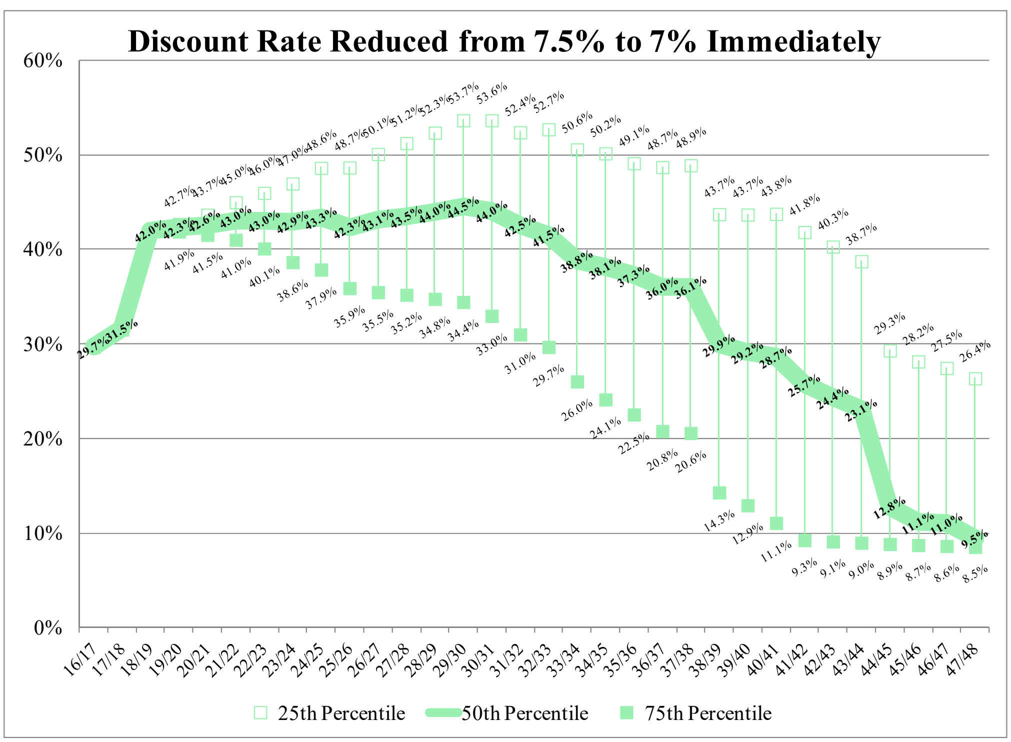


Contribution Projections - Miscellaneous



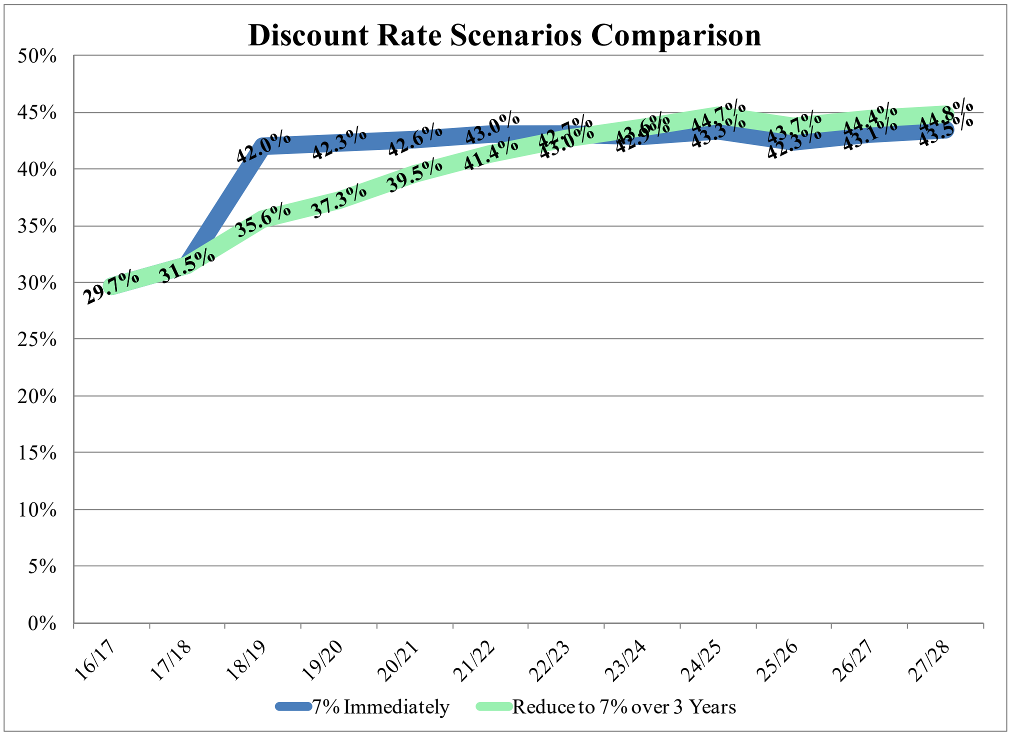
CITY OF CHULA VISTA

Contribution Projections - Miscellaneous



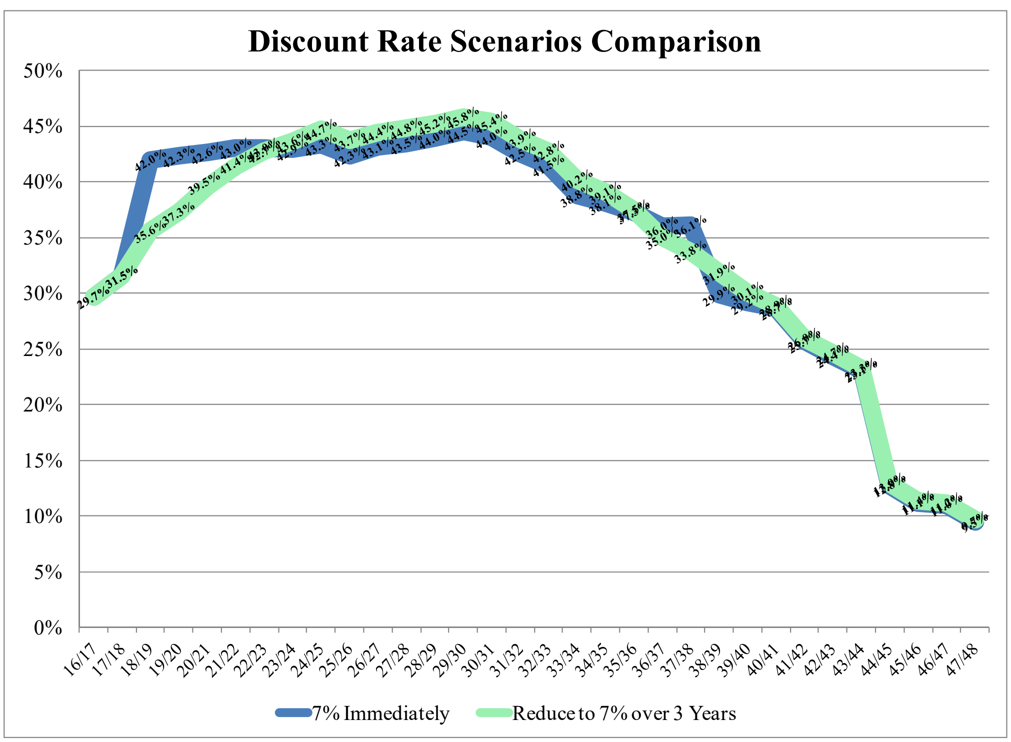
CITY OF CHULA VISTA

Contribution Projections - Miscellaneous



CITY OF CHULA VISTA

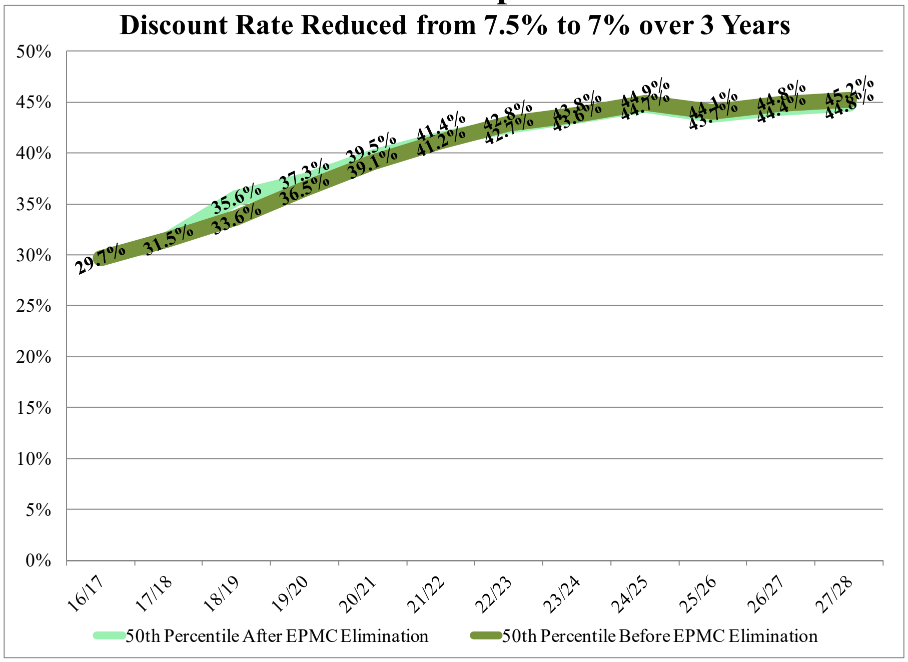
Contribution Projections - Miscellaneous



CITY OF CHULA VISTA

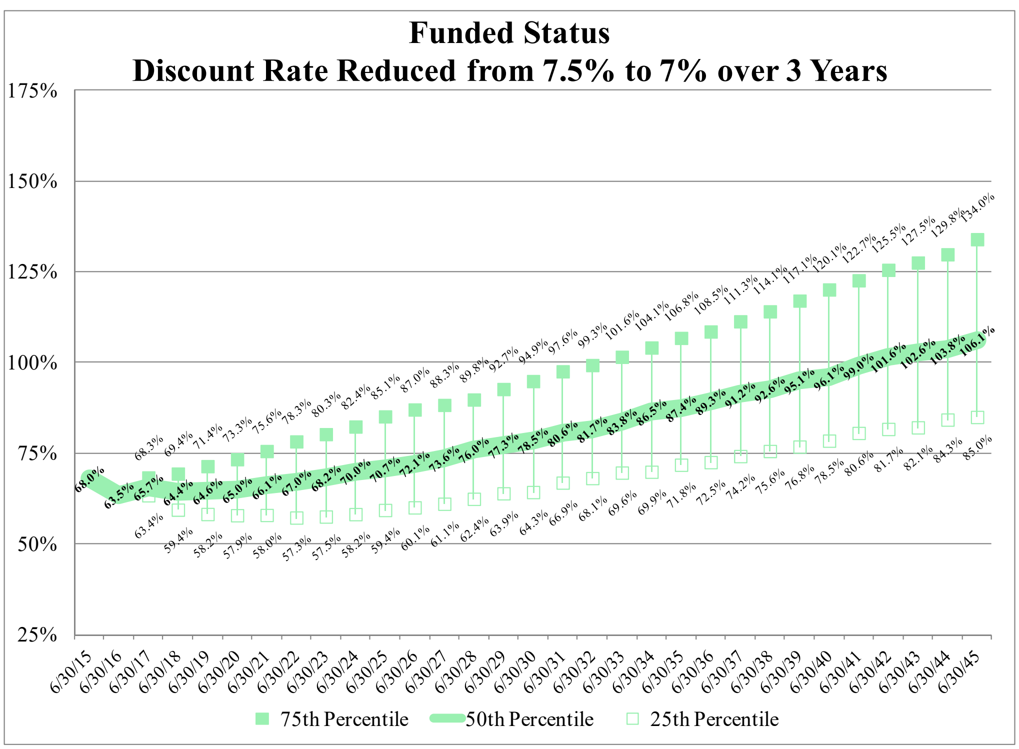
EPMC IMPACT - MISCELLANEOUS

EPMC Impact[7]



[7] Includes only the impact of EPMC on PERSable pay, and not the reduced EPMC paid by City.

FUNDED STATUS - MISCELLANEOUS

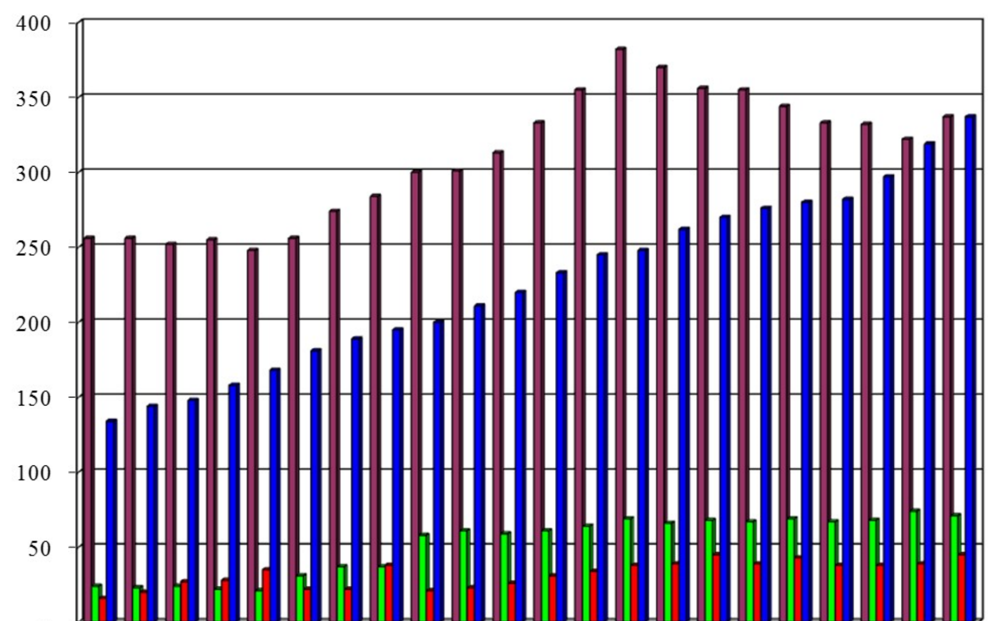


Summary of Demographic Information - Safety

	1994	2005	2014	2015
Actives				
■ Counts	256	333	322	337
■ Average				
• Age	37	38	42	41
• City Service	11	10	13	12
• PERSable Wages	$52,300	$78,400	$102,800	$102,600
■ Total PERSable Wages (millions)	13.4	26.1	33.1	34.6
Receiving Payments				
■ Counts				
• Service		105	156	167
• Disablity		104	135	139
• Beneficiaries		24	28	31
• Total	134	233	319	337
■ Average Annual City Provided Benefit[8]				
• Service		$37,300	$62,300	$64,200
• Disability		29,900	45,600	46,600
• Service Retirements in last 5 years		48,700	74,400	73,700

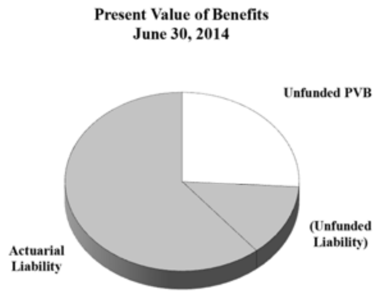
[8] Average City provided pensions are based on City service & City benefit formula, and are not representative of benefits for long service employees.

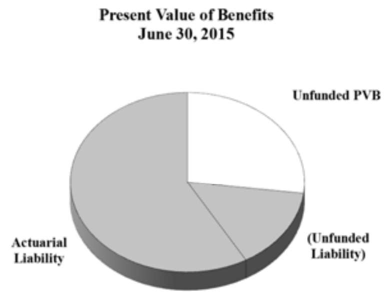
Members Included in Valuation - Safety



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Active	256	256	252	255	248	256	274	284	300	301	313	333	355	382	370	356	355	344	333	332	322	337
Transfers	24	23	24	22	21	31	37	37	58	61	59	61	64	69	66	68	67	69	67	68	74	71
Vested Terminations	16	20	27	28	35	22	22	38	21	23	26	31	34	38	39	45	39	43	38	38	39	45
Receiving Payments	134	144	148	158	168	181	189	195	200	211	220	233	245	248	262	270	276	280	282	297	319	337

PLAN FUNDED STATUS - SAFETY



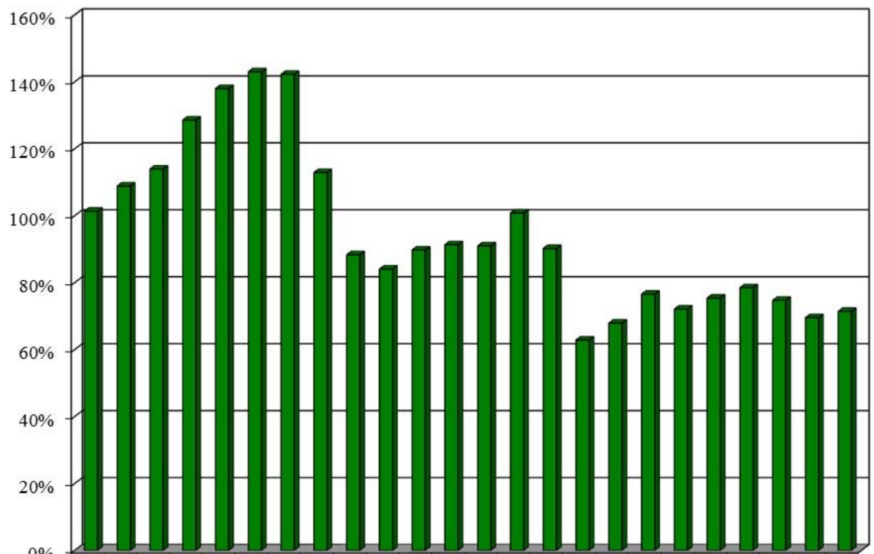


June 30, 2014		June 30, 2015
$ 155,700,000	**Active AAL**	$ 159,700,000
229,800,000	**Retiree AAL**	249,100,000
18,300,000	**Inactive AAL**	17,900,000
403,800,000	**Total AAL**	426,700,000
317,300,000	**Market Asset Value**	319,300,000
(86,500,000)	**(Unfunded Liability)**	(107,400,000)

PLAN FUNDED STATUS - SAFETY

- What happened between 6/30/14 and 6/30/15?
  - Unfunded Liability (Increase)/Decrease ≈ $(20.9) million
- Reasons for Unfunded Liability decrease
  - Asset gain/(loss): ≈ $(16.9) million
  - Actuarial gain/(loss): ≈ $(0.7) million
    - Average Salary $102,800 → $102,600
    - Number of Actives 322 → 337
    - Number of Inactives 113 → 116
    - Number of Retirees 319 → 337
  - Other gain/(loss): ≈ $(3.3) million
    - Contributions
    - Other (expected)

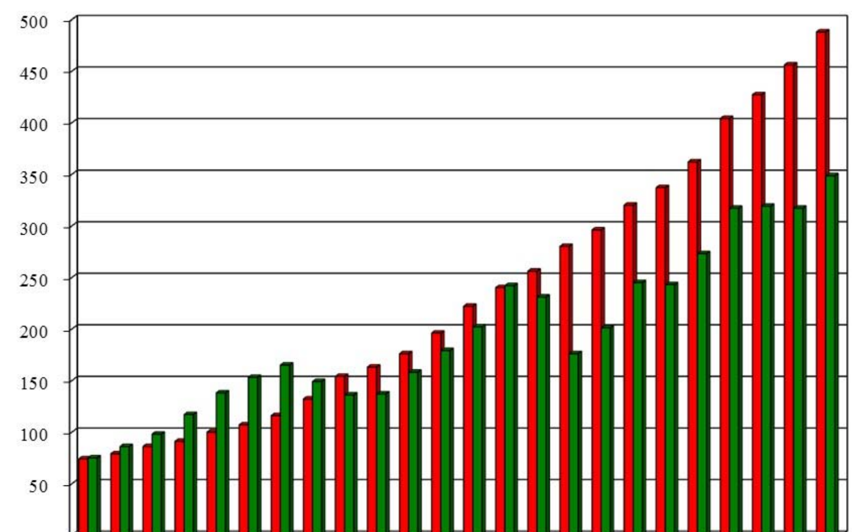
FUNDED RATIO - SAFETY



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Funded Ratio - MVA	101%	109%	114%	129%	138%	143%	142%	113%	88%	84%	90%	91%	91%	101%	90%	63%	68%	77%	72%	75%	78%	75%	70%	71%

6/30/16 & 6/30/17 funded status estimated.

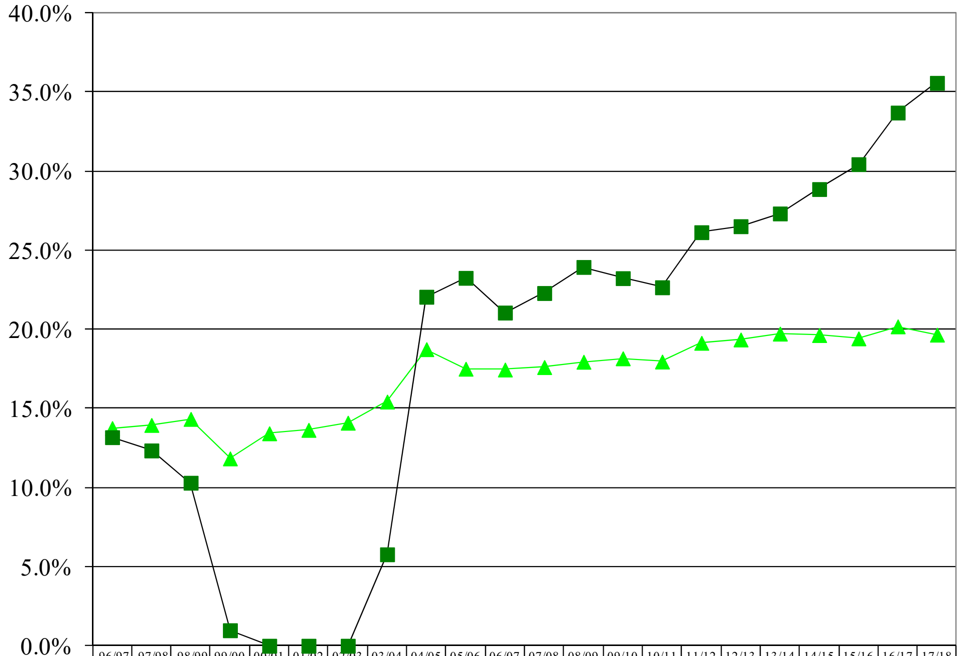
FUNDED STATUS (MILLIONS) - SAFETY



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Actuarial Liability	74	79	86	91	100	107	116	132	154	163	176	196	222	240	256	280	296	320	337	362	404	427	456	488
Market Asset Value	75	86	98	117	138	153	165	149	136	137	158	179	202	242	231	176	201	245	243	273	317	319	317	349

6/30/16 & 6/30/17 funded status estimated.

CONTRIBUTION RATES - SAFETY



	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
ER Normal Cost	13.8%	14.0%	14.3%	11.8%	13.4%	13.6%	14.1%	15.4%	18.7%	17.5%	17.5%	17.6%	17.9%	18.2%	18.0%	19.1%	19.4%	19.7%	19.6%	19.4%	20.2%	19.7%
Total ER Cont Rate	13.2%	12.3%	10.3%	1.0%	0.0%	0.0%	0.0%	5.8%	22.1%	23.3%	21.1%	22.3%	23.9%	23.2%	22.7%	26.1%	26.5%	27.3%	28.9%	30.4%	33.7%	35.6%

CITY OF CHULA VISTA

CONTRIBUTION RATES - SAFETY

	6/30/14 2016/2017	6/30/15 2017/2018
Total Normal Cost	29.3%	29.0%
Employee Normal Cost	9.1%	9.3%
Employer Normal Cost	20.2%	19.7%
Amortization Bases	13.5%	15.9%
Total Employer Contribution Rate	33.7%	35.6%
Amortization Period	Multiple	Multiple

- What Happened from 6/30/14 to 6/30/15:

2016/17 Rate	33.7%
Asset Method Change (3rd Year)	1.6%
Assumption Change (2nd Year)	1.2%
6/30/14 (Gains)/Losses (2nd Year)	(1.0%)
6/30/15 (Gains)/Losses (1st Year)	0.1%
2017/18 Rate	35.6%

CITY OF CHULA VISTA

Contribution Projections - Safety

- Market Value Investment Return:
  - June 30, 2016 — 0.6%[9]
  - June 30, 2017 — 12.5%[10]
  - Future returns based on stochastic analysis using 1,000 trials

Single Year Returns at[11]	25th Percentile	50th Percentile	75th Percentile
7.0% Investment Mix	**0.1%**	**7.0%**	**14.8%**
6.0% Investment Mix	**0.8%**	**6.0%**	**11.4%**

  - Assumes investment returns will, generally be 6.5% (as compared to 7.0%) over the next 10 years and higher beyond that.
- No Other: Gains/Losses, Method/Assumption Changes, Benefit Improvements
- Excludes Employer Paid Member Contributions (EPMC)
- Tier 2 (3%@55 FAE3) effective April 22, 2011
- City projected 2016/17 payroll

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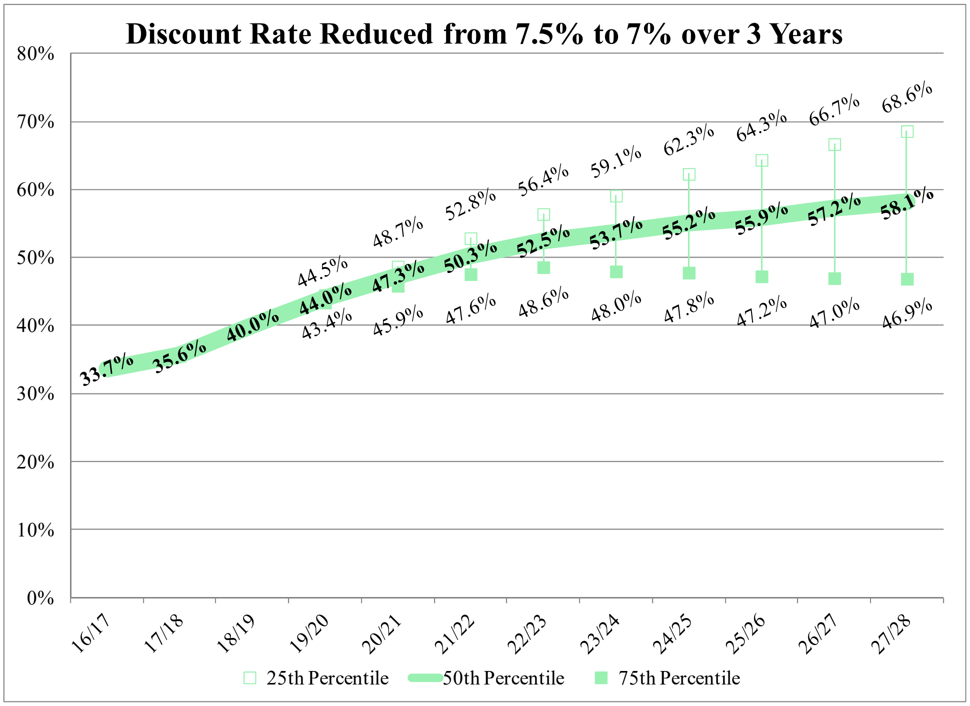
9 Based on CalPERS press release on 7/18/16, preliminary investment return of 0.61%.
10 June 30, 2017 return based on CalPERS return of 2.36% through 10/31/16, estimated return from 11/1/16 to 12/31/16 and assumed returns for 6 months.
11 N^{th} percentile means N percentage of our trials result in returns lower than the indicated rates.

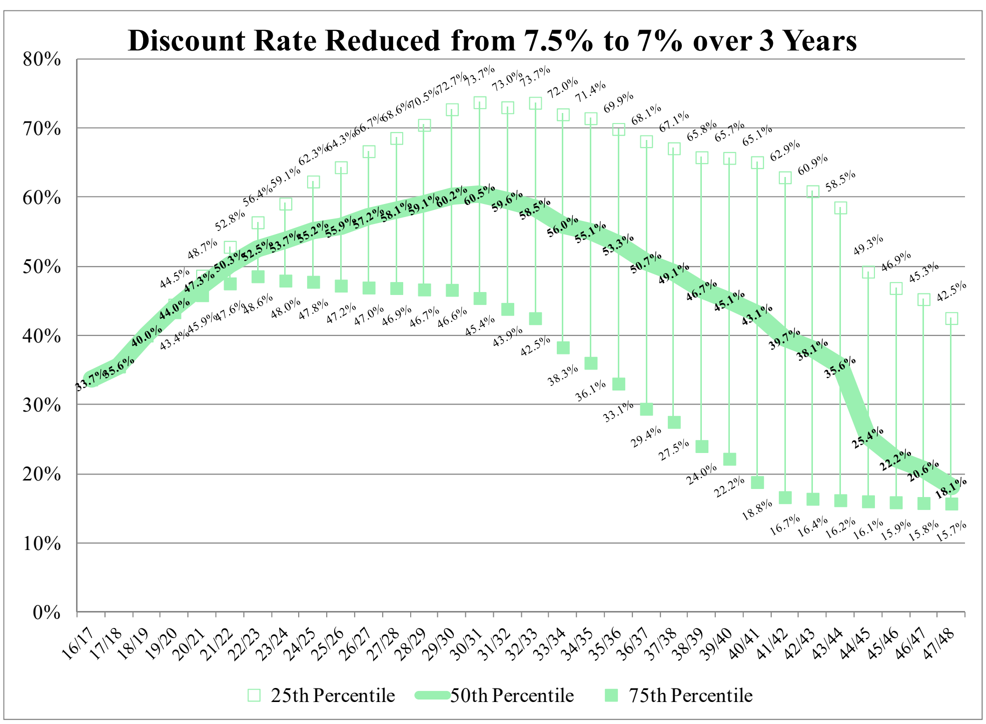
Contribution Projections - Safety

- New hire assumptions:
  - Assumes 30% of 2013 new hires will be Classic Tier 2 Members (3%@55) and 70% will be New Members with PEPRA benefits
  - Assumes Classic Tier 2 Members will decrease from 30% to 0% of new hires over 10 years

CONTRIBUTION PROJECTIONS - SAFETY



CONTRIBUTION PROJECTIONS - SAFETY



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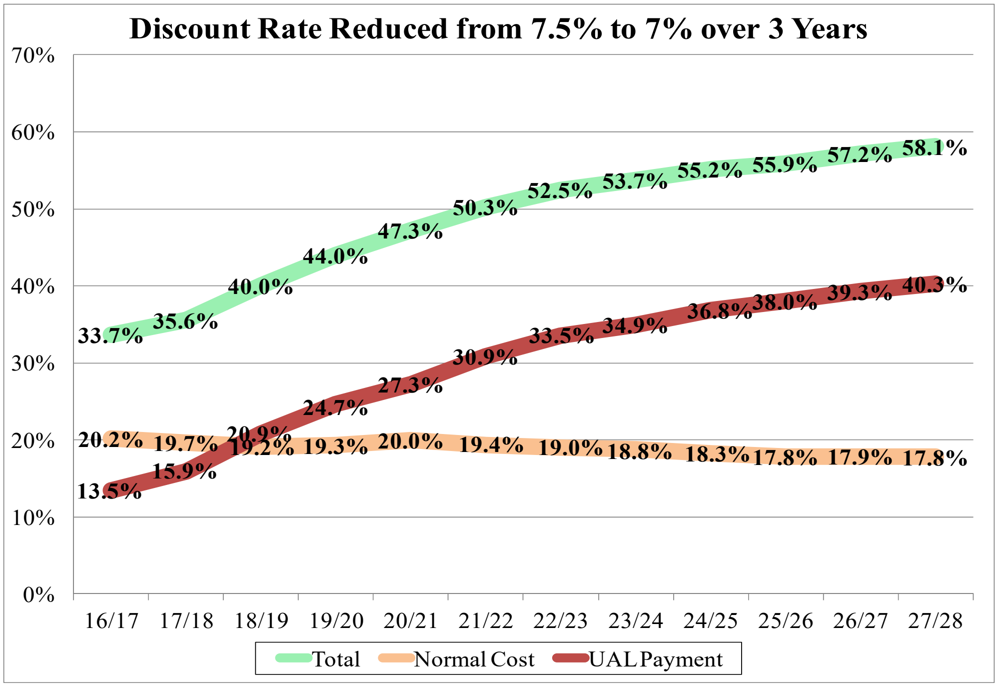

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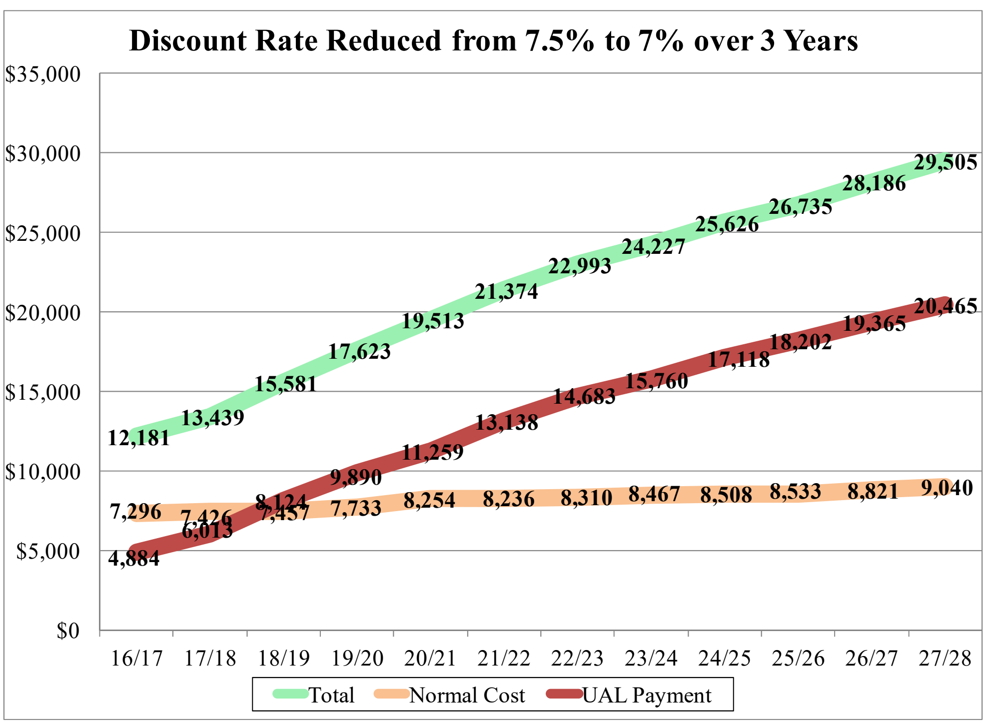

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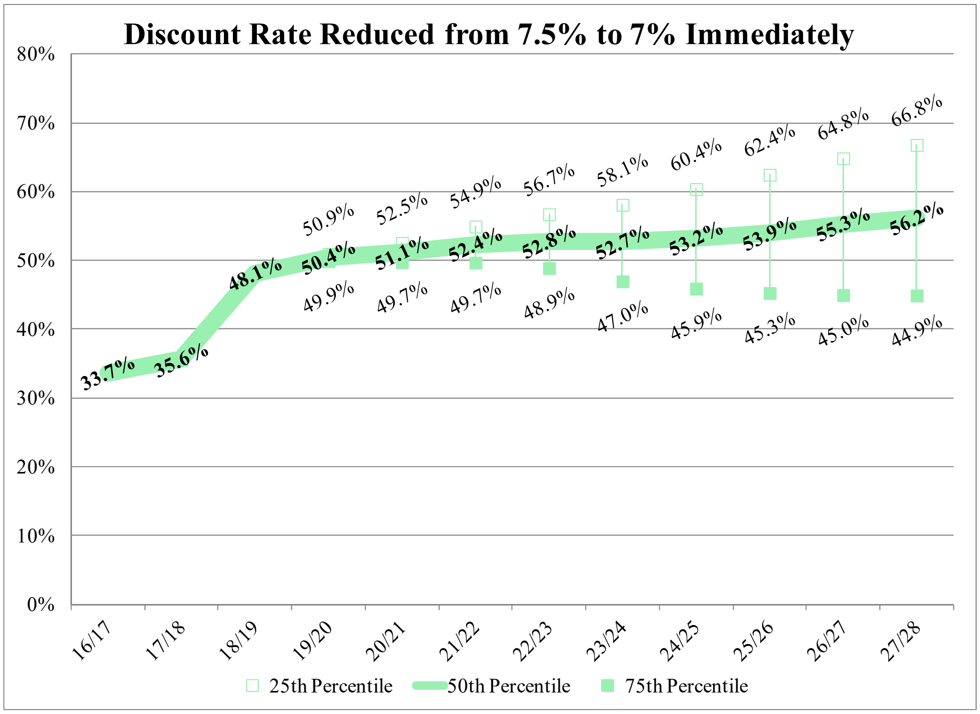

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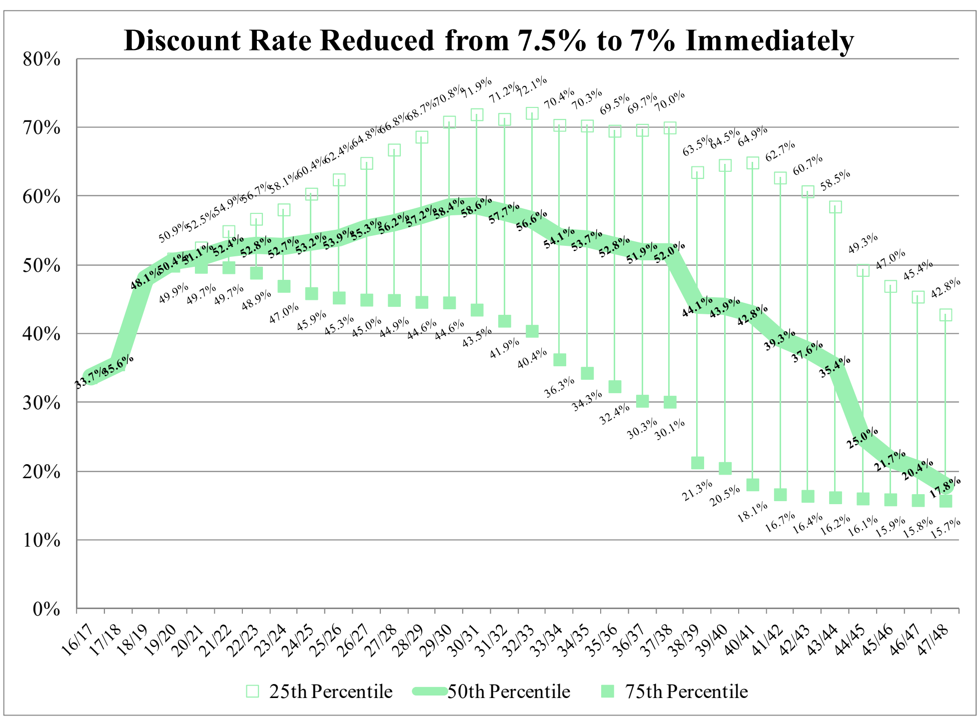

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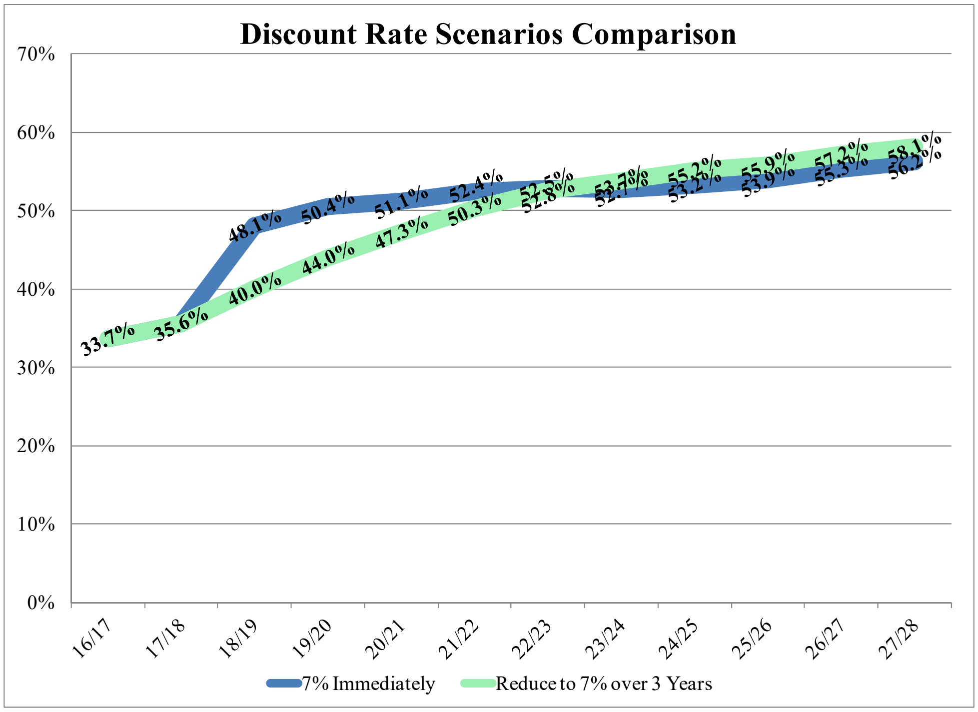
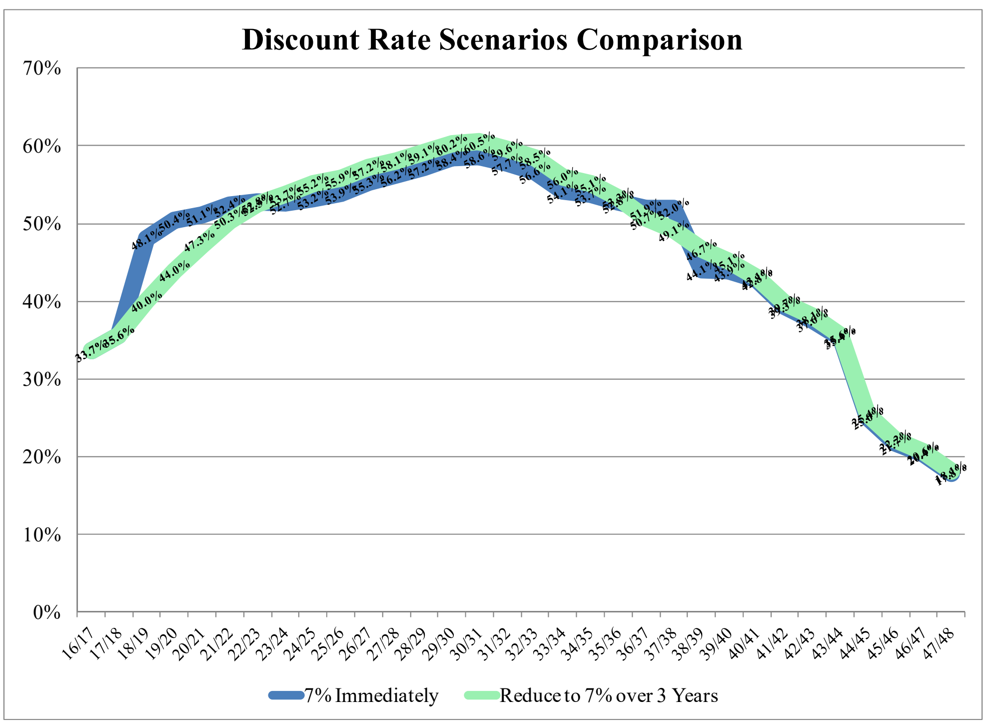


CONTRIBUTION PROJECTIONS - SAFETY

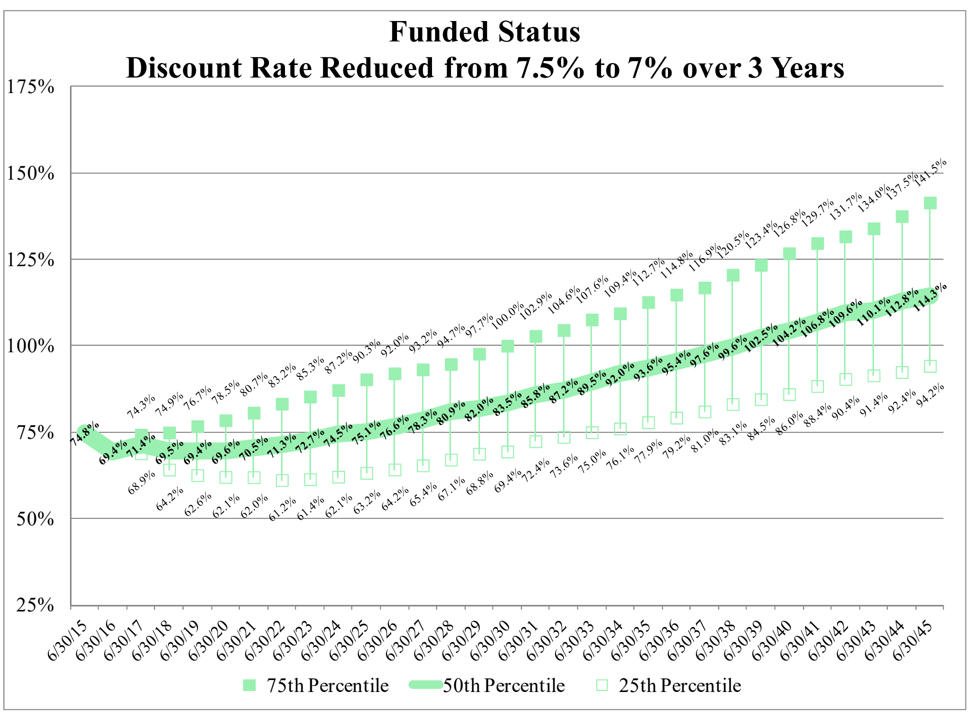


Contribution Projections - Safety

Assumes EPMC Eliminated in 2018/19[12]

[12] Includes only the impact of EPMC on PERSable pay, and not the reduced EPMC paid by City.

Funded Status - Safety



PEPRA

- Target of 50% of total normal cost for everyone
- *New members* must pay greater of 50% of total normal cost or bargained amount if higher
- Employer cannot pay any part of *new member* required employee contributions
- Employer may impose current employees pay 50% of total normal cost (limited to certain amounts) if not agreed through collective bargaining by 1/1/18
- Miscellaneous Plan (based on 7.5% discount rate):

	Classic Members		New Members
	Tier 1 3%@60 FAE1	Tier 2 2%@60 FAE3	PEPRA 2%@62 FAE3
Employer Normal Cost	12.1%	7.4%	6.01%
Member Normal Cost	8.0%	7.0%	6.75%
Total Normal Cost	20.1%	14.4%	12.76%
50% Target	10.1%	7.2%	6.38%

PEPRA

- Safety Plan (based on 7.5% discount rate):

	Classic Members		New Members
	Tier 1 3%@50 FAE1	Tier 2 3%@55 FAE3	PEPRA 2.7%@57 FAE3
Employer Normal Cost	22.7%	17.3%	11.85%
Member Normal Cost	9.0%	9.0%	12.25%
Total Normal Cost	31.7%	26.3%	24.10%
50% Target	15.85%	13.2%	12.05%

PAYING DOWN THE UNFUNDED LIABILITY

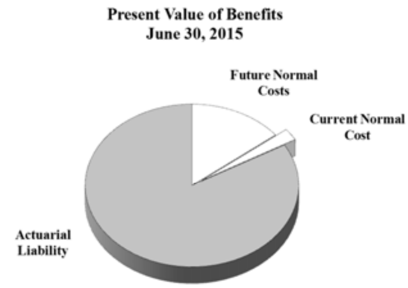
- Pension Obligation Bond (POB)
  - Interest arbitrage between expected CalPERS earnings and rate paid on POB
  - Not guaranteed
- Borrow from General Fund
  - Pay GF back like a loan
  - Payments come from all funds
- One time payments
  - City resolution to use portion of one time money
- Internal Service Fund
  - Restricted investments
    - Likely low (0.5% - 1.0%) investment returns
    - Short term/high quality
    - Designed for preservation of principal
  - Assets could be used by Council for other purposes

PAYING DOWN THE UNFUNDED LIABILITY

	Approximate Years to Attain Funded Percent		
	80%	90%	100%
Miscellaneous	16	22	27
Safety	13	19	24

- Ad-hoc payments applied to all amortization bases will not shorten amortization period but will reduce contribution
- Only ways to shorten period are:
  - Request shorter amortization period of CalPERS
    - Higher short term payments
    - Less interest and lower long term payments
  - Make ad-hoc payment that targets specific bases with longer amortization periods
    - Modestly lower (short & long term) payments
    - Less interest

DEFINITIONS

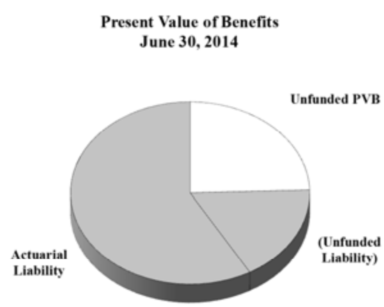


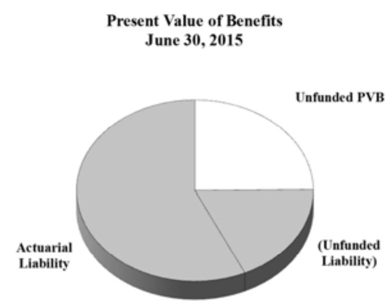
PVB - Present Value of all Projected Benefits:

- Discounted value (at valuation date - 6/30/15), of all future expected benefit payments based on various (actuarial) assumptions

- **Actuarial Liability:**
  - Discounted value (at valuation date) of benefits earned through valuation date [value of past service benefit]
  - Portion of PVB "earned" at measurement
- **Current Normal Cost:**
  - Portion of PVB allocated to (or "earned" during) current year
  - Value of employee and employer current service benefit

DEFINITIONS





- **Target-** Have money in the bank to cover Actuarial Liability (past service)
- **Unfunded Liability -** Money short of target at valuation date
- **Excess Assets / Surplus:**
  - Money over and above target at that point in time
  - Doesn't mean you're done contributing
- **Super Funded:**
  - Assets cover whole pie (PVB)
  - If everything goes exactly like PERS calculated, you'll never have to put another (employer or employee) dime in