

San José Police & Fire Department Retirement Plan



2019 Economic Assumptions Review

October 3, 2019

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Agenda



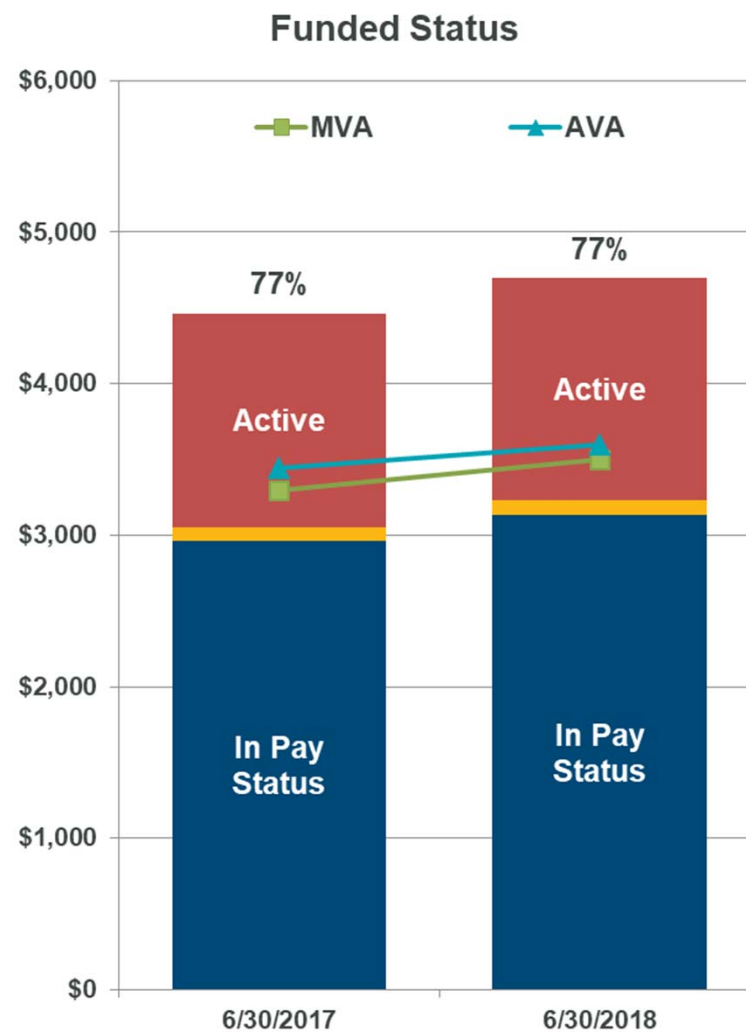
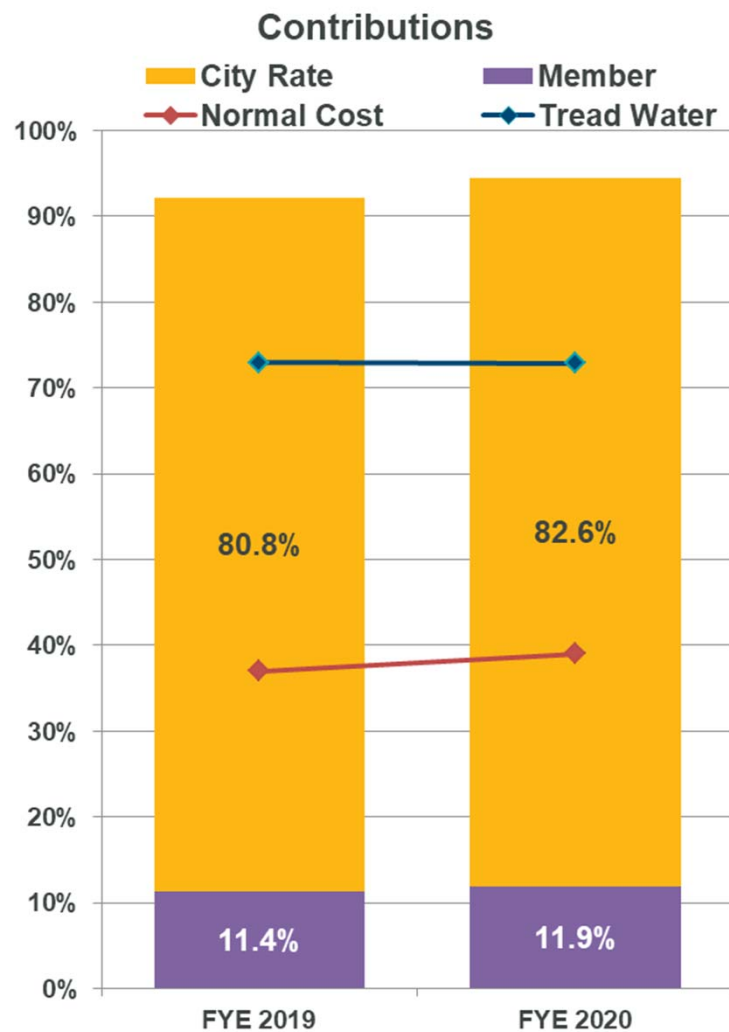
- Background
- Economic Assumptions
- Amortization Adjustments
- Appendix

Schedule

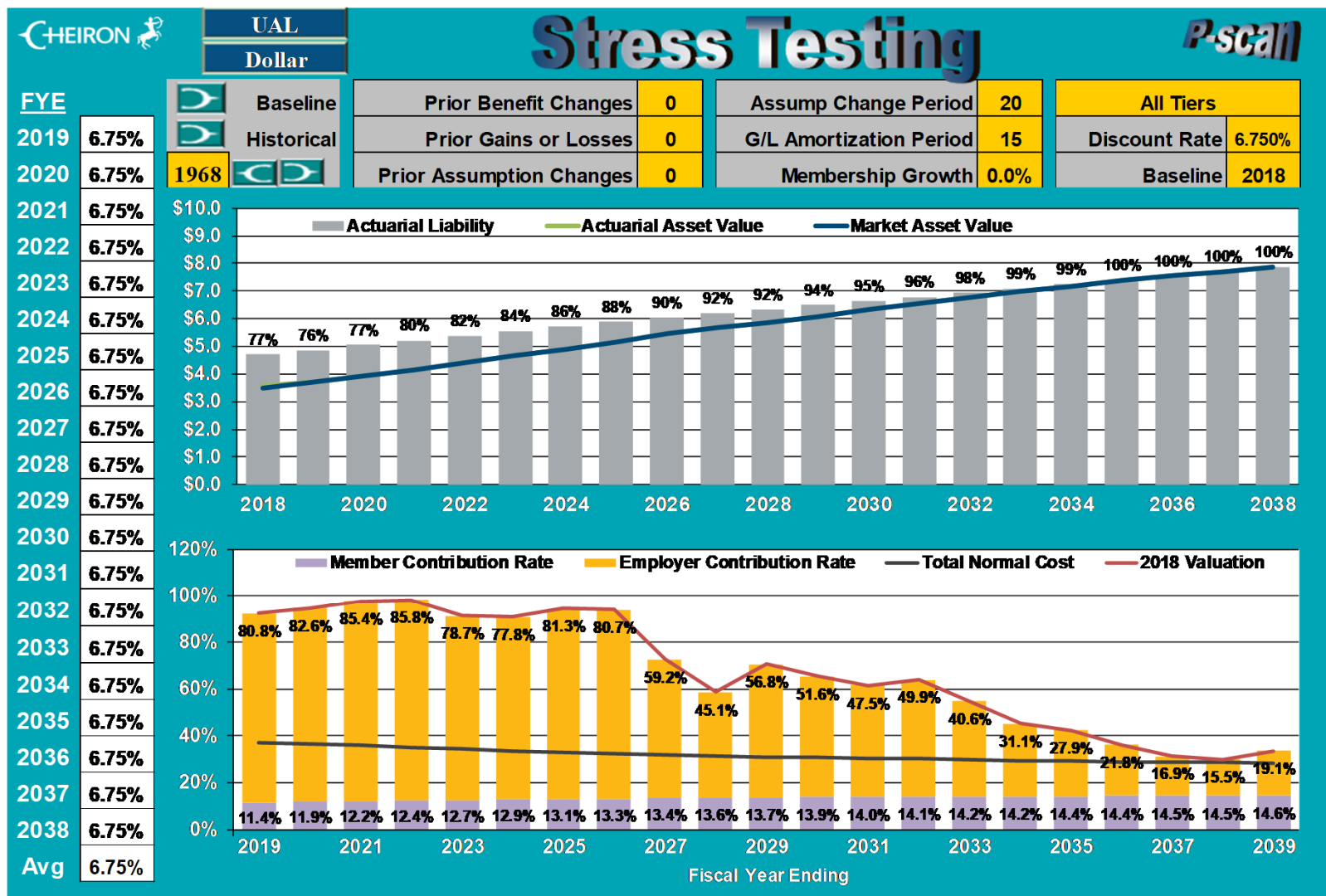


- October Board Meeting
 - Economic assumptions
 - Amortization adjustments
- November Board Meeting
 - Demographic experience study
 - Preliminary valuation results
 - Final decisions on assumptions and methods
- December Board Meeting
 - Final pension valuation

Background



Background



Review of Economic Assumptions



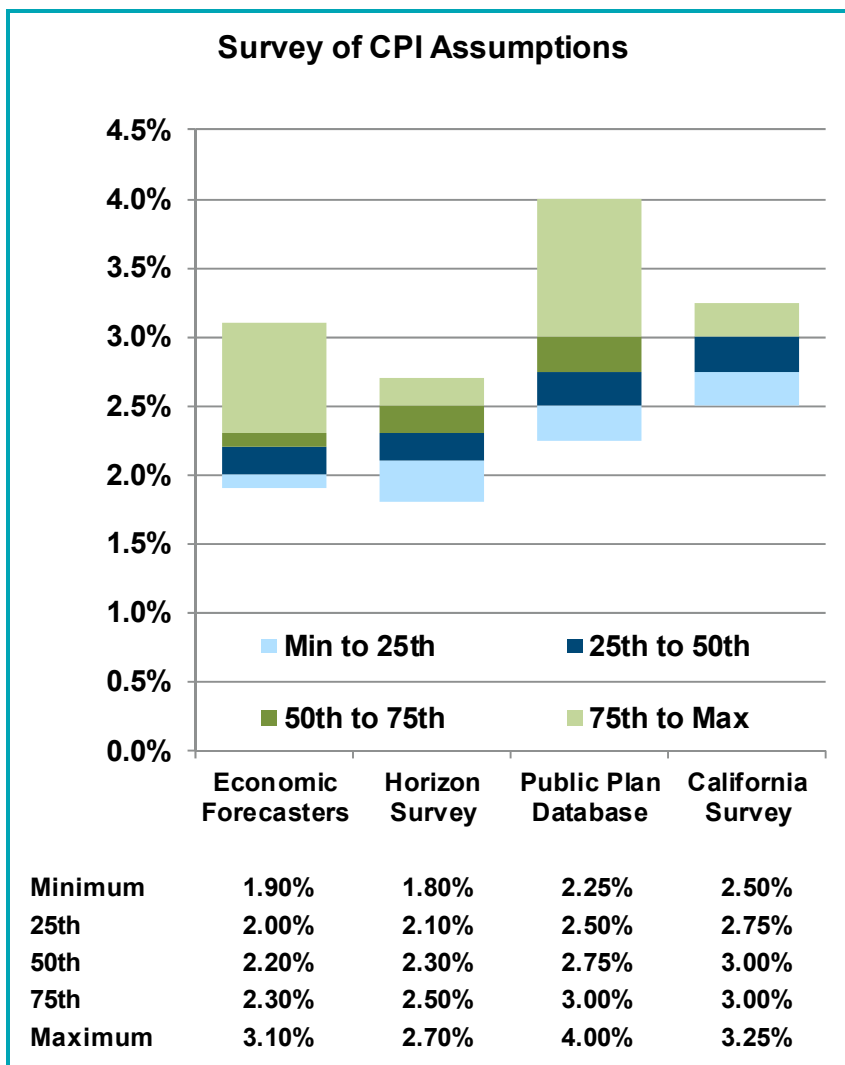
- Economic assumptions are reviewed every year
- Demographic experience study performed every two years
 - November Board meeting
- Assumptions adopted will be used for the 2019 actuarial valuation to determine contributions for FYE 2021
 - Price Inflation – Pension and OPEB valuations
 - Wage Inflation – Pension and OPEB valuations
 - Amortization Payment Increase Rate – Pension and OPEB valuations
 - Discount Rate – Pension valuation only

Price Inflation



- Price inflation is the foundation for all economic assumptions
 - $\text{Wage inflation} = \text{Price inflation} + \text{Real wage growth}$
 - $\text{Expected return} = \text{Price inflation} + \text{Real return}$
 - $\text{Ultimate health care trend} = \text{Price inflation} + \text{Real per capita GDP growth}$
- Current price inflation assumption = 2.75%
- Very limited direct impact on the valuation
 - Tier 1 COLA is fixed at 3.0% regardless of inflation
 - Tier 1 Guaranteed Purchasing Power provision affects very few retirees
 - Tier 2 COLAs equal inflation up to a maximum of 2.0%
 - Given the volatility of inflation, Tier 2 COLAs will average something slightly less than 2.0%
 - However, we recommend assuming 2.0% as a conservative assumption

Price Inflation

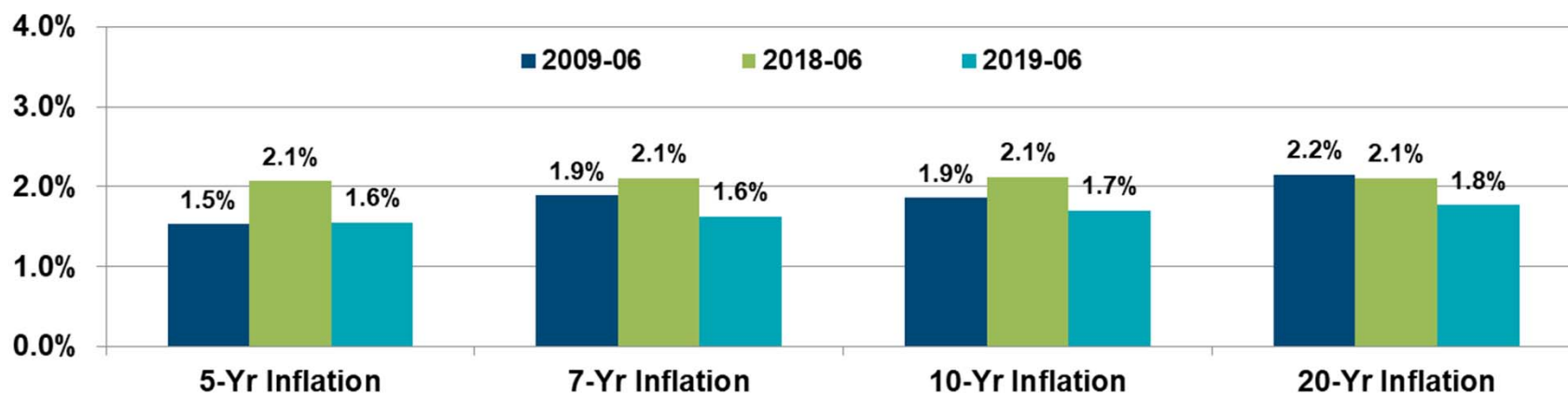


- The Federal Reserve survey of professional economic forecasters shows 10-year forecasts
 - Range = 1.9% to 3.1%
 - Median = 2.2%
 - 75th percentile = 2.3%
- Horizon survey of over a 20-year forecasts
 - Range = 1.8% to 2.7%
 - Median = 2.3%
- Public Plan Database
 - Range = 2.25% to 4.0%
 - Median = 2.75%
- California public pension plans
 - Range = 2.5% to 3.25%
 - Median = 3.0%

Price Inflation



Break-Even Inflation



- Break-even inflation (Yield on Treasury securities minus TIPS) ranges from 1.6% to 1.8%
 - 30 to 50 bps lower than last year
- Meketa assumes 2.1% over 10 years and 2.6% over 20 years
- Verus assumes 2.0% over 10 years and 1.8% over 30 years
- We propose reducing the current assumption from 2.75% to 2.5%

Wage Inflation



- Wage inflation can be thought of as the annual across-the-board increases in wages
 - Individual salary increases in excess of wage inflation are studied as part of the merit salary scale
- Wage inflation generally exceeds price inflation over the long term by some margin reflecting the history of increased purchasing power
- Wage inflation is used in the actuarial valuation as the minimum individual salary increase
- The current assumption is 3.25%
 - 2.75% price inflation + **0.50% real wage growth**

Wage Inflation



Wage Inflation Data Through June 30, 2018

	Local Governments			San José Police & Fire		
	5 Years	10 Years	20 Years	5 Years	10 Years	20 Years
Wage Growth	1.66%	1.51%	2.42%	4.27%	1.55%	3.27%
Inflation	1.54%	1.42%	2.20%	3.07%	2.42%	2.77%
Real Wage Growth	0.12%	0.09%	0.22%	1.20%	-0.87%	0.50%

- San José has experienced higher wage growth and higher local inflation than local governments nationally
- The median wage inflation in our survey of California systems is 3.25% (used by 8 of the 39 systems)
 - Minimum = 2.75%, Maximum = 3.50%
- We believe the current long-term assumption of 3.25% continues to be reasonable

Amortization Payment Increase Rate

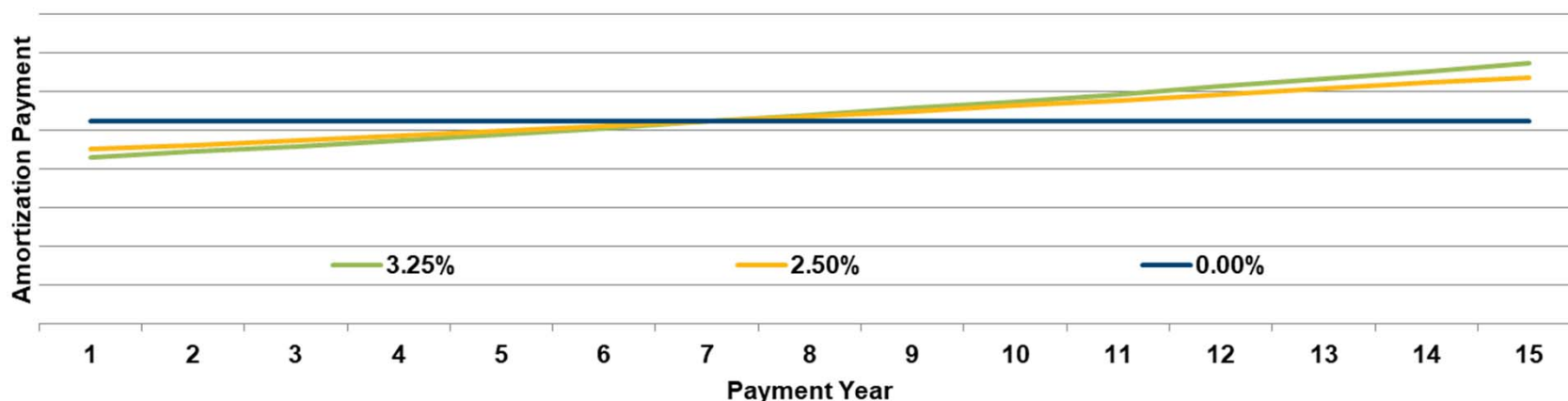


- Amortization payments currently increase each year with wage inflation (3.25%)
 - Remains a level percentage of total expected payroll
 - If total payroll doesn't grow as fast as expected, the amortization payments become a larger percentage of pay
- Alternatives discussed at retreat
 - Projected City revenue growth (2.75% – 3.00%)
 - Inflation (2.5%)
 - Level dollar (0.0%)
- Alternatives would increase UAL payments initially, but lower rate of increase would result in lower payments in the long-term

Amortization Payment Increase Rate



Impact of Amortization Payment Increase Rate



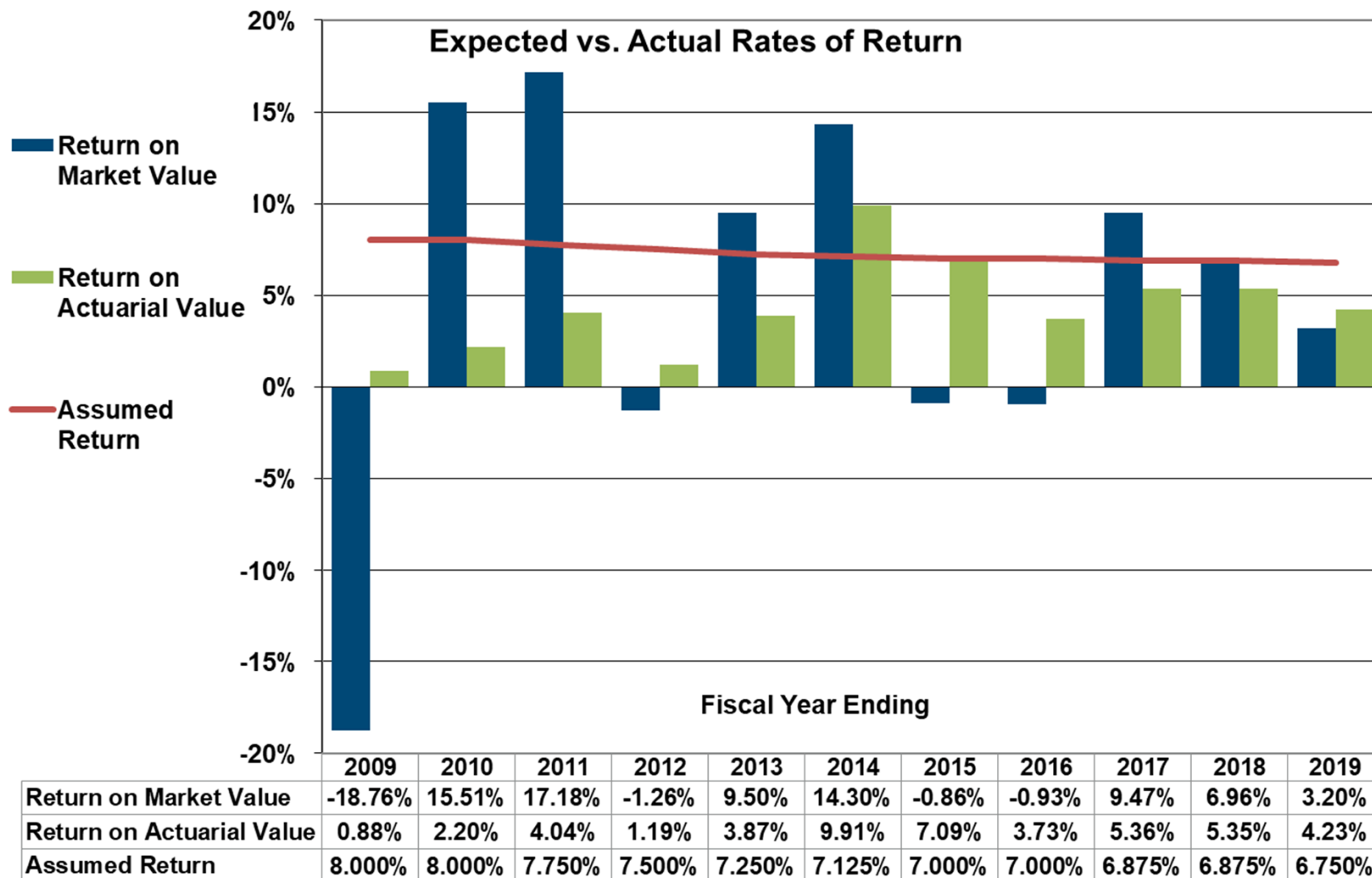
- All of the options are reasonable
- Lower payment growth rates result in a more conservative contribution strategy
- Consider reducing the amortization payment increase rate, particularly if some relief is provided to smooth UAL payments

Discount Rate

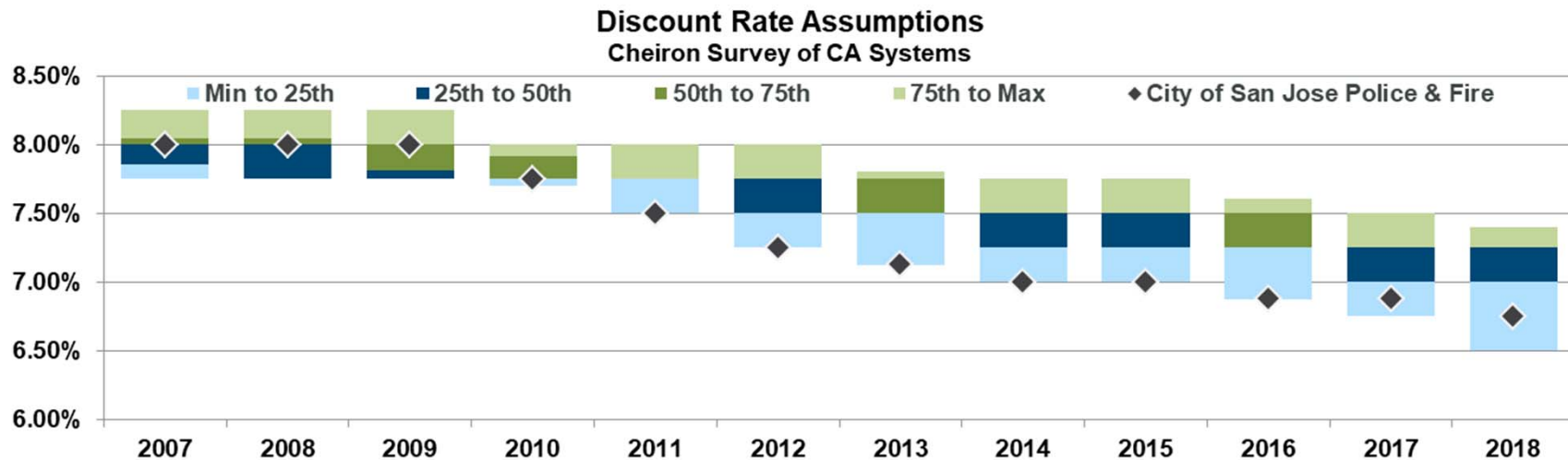


- Most powerful single assumption
 - Higher expected return → Lower expected contributions
 - Over time, actual contributions will depend on actual investment returns (not expected)
 - Current discount rate is 6.75% (historic rates below)
 - 2009: 8.00%
 - 2010: 7.75%
 - 2011: 7.50%
 - 2012: 7.25%
 - 2013: 7.125%
 - 2014: 7.00%
 - 2016: 6.875%
 - 2018: 6.75%
- Context for selecting the discount rate
 - Historical experience
 - Industry trends
- Primary factors considered in selecting the discount rate
 - Expectations for the future
 - Board's risk preference

Historical Performance

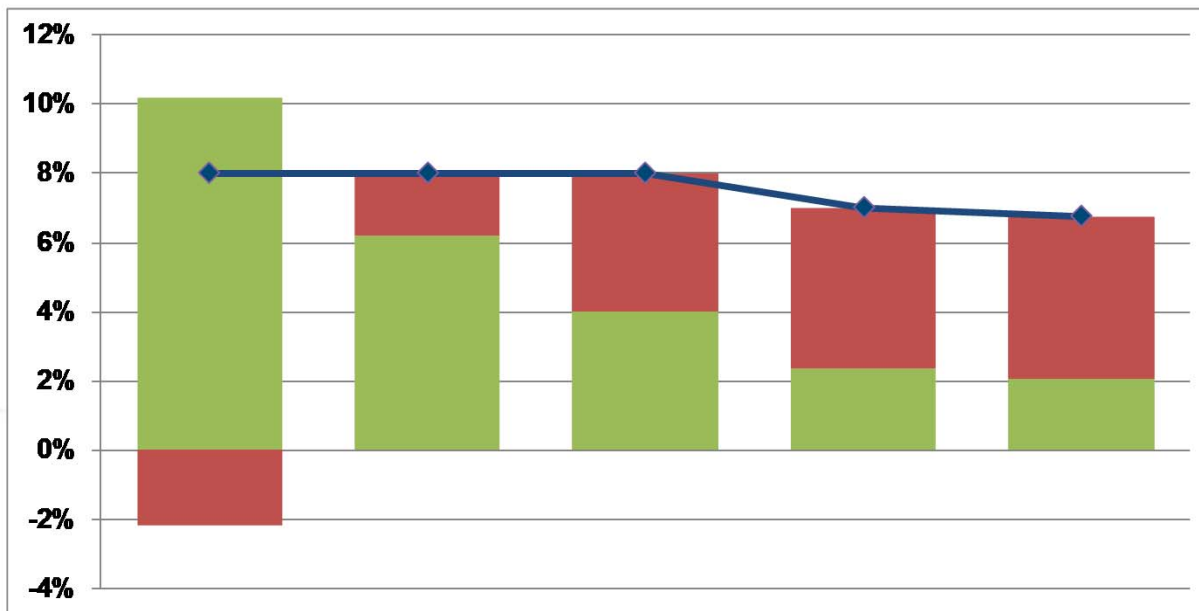


California Survey



- California plans continue to lower their discount rates
- Significant downward trend since 2008
 - Minimum = 6.50% (Four plans less than 7.0%)
 - Median = 7.25% (20 plans)
 - Maximum = 7.40%
- San José plans are no longer the lowest

Declining Interest Rates



	1985	1995	2005	2015	2019
Assumed Investment Return	8.00%	8.00%	8.00%	7.00%	6.75%
Yield on 10-Year Treasury	10.19%	6.21%	4.00%	2.36%	2.07%
Implied Risk Premium	-2.19%	1.79%	4.00%	4.64%	4.68%

- As interest rates have declined, pension plans have taken on more investment risk in order to achieve their assumed return

Discount Rate vs. Expected Return



- Historically, public plans set the discount rate equal to expected return on assets over a long-time horizon
- Increasing trend to set a lower discount rate
 - Significant uncertainty over future investment returns
 - Board preference may be to meet the assumption more often than 50% of the time
- There is also some movement to give the short-term more consideration, particularly for mature plans like San José's where much of the present value of future benefits is paid in the nearer term
 - 10 years ~ 40% of the present value
 - 20 years ~ 70% of the present value

Expected Return on Assets



- Meketa provided forward-looking capital market assumptions
 - 10-Year Horizon
 - 20-Year Horizon
- Expectations are significantly higher than last year's assumptions due to:
 - Change in capital market assumptions
 - Changes to asset allocation (Increase in standard deviation from 11.0% to 11.9%)
- Appendix shows comparison of Meketa's assumptions by asset class to other investment consultants in the 2019 Horizon survey

Expected Distribution of Average Annual Passive Returns		
Percentile	Time Horizon	
	10 Years	20 Years
95th	13.5%	12.2%
75th	9.7%	9.6%
60th	8.1%	8.4%
55th	7.7%	8.1%
50th	7.2%	7.8%
45th	6.7%	7.4%
40th	6.3%	7.1%
25th	4.7%	6.0%
5th	1.3%	3.5%

We did not exactly match Meketa's calculations for the 10-year time horizon. Meketa's calculations are about 20 basis points higher

Changes in Capital Market Expectations



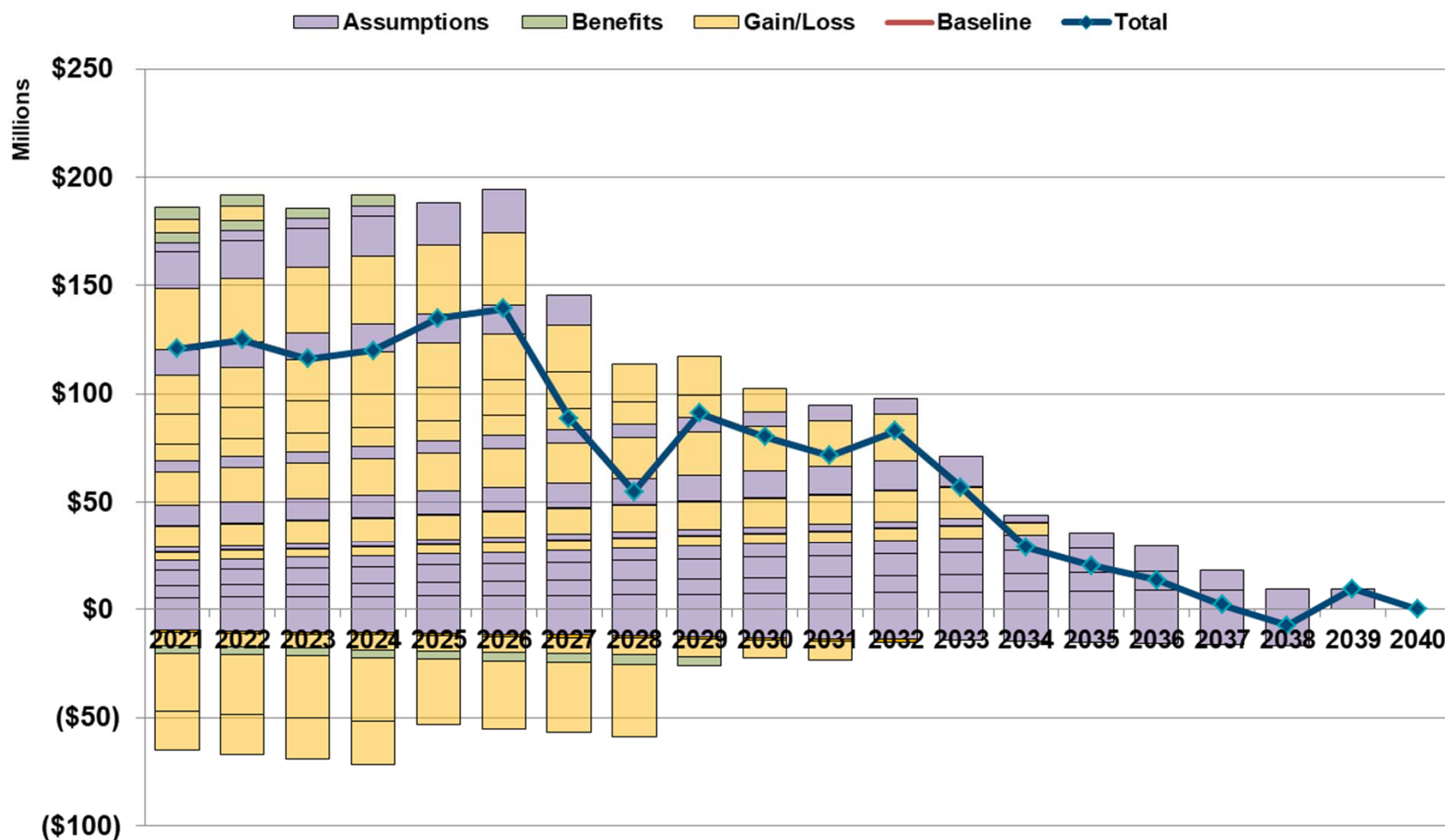
- Meketa's capital market assumptions are developed in December each year
- Market conditions in December 2018 were quite different than either December 2017 or June 2019
- Expected returns from June 2019 are likely to be lower than December 2018
- Current assumption of 6.75% remains reasonable

	Dec 2017	Dec 2018	June 2019
Market Conditions			
10-Yr Treasury	2.40%	2.83%	2.07%
S&P 500	7,342	7,020	8,321
CAPE	32.1	28.3	29.5
Arithmetic Expected Returns – 10 Years			
Short-Term Bonds	1.83%	2.79%	?
US Large Cap	7.1%	7.6%	?
US Small Cap	7.8%	10.0%	?
Developed Non-US	8.1%	10.4%	?
Emerging Markets	12.1%	13.4%	?

Current Amortization Schedule



Tier 1 City Amortization Payments



Potential Amortization Adjustments



Current Amortization Schedule			
Valuation Year	Remaining Amortization Period		
	Gains and Losses	Assumption Changes	Benefit Changes
2005	2		2
2007	4	4	4
2009	6	6	
2010	7	7	
2011	8	12	
2012	9	13	9
2013	10	14	
2014	11	15	
2015	12	16	
2016	12	17	
2017	13	18	13
2018	14	19	14

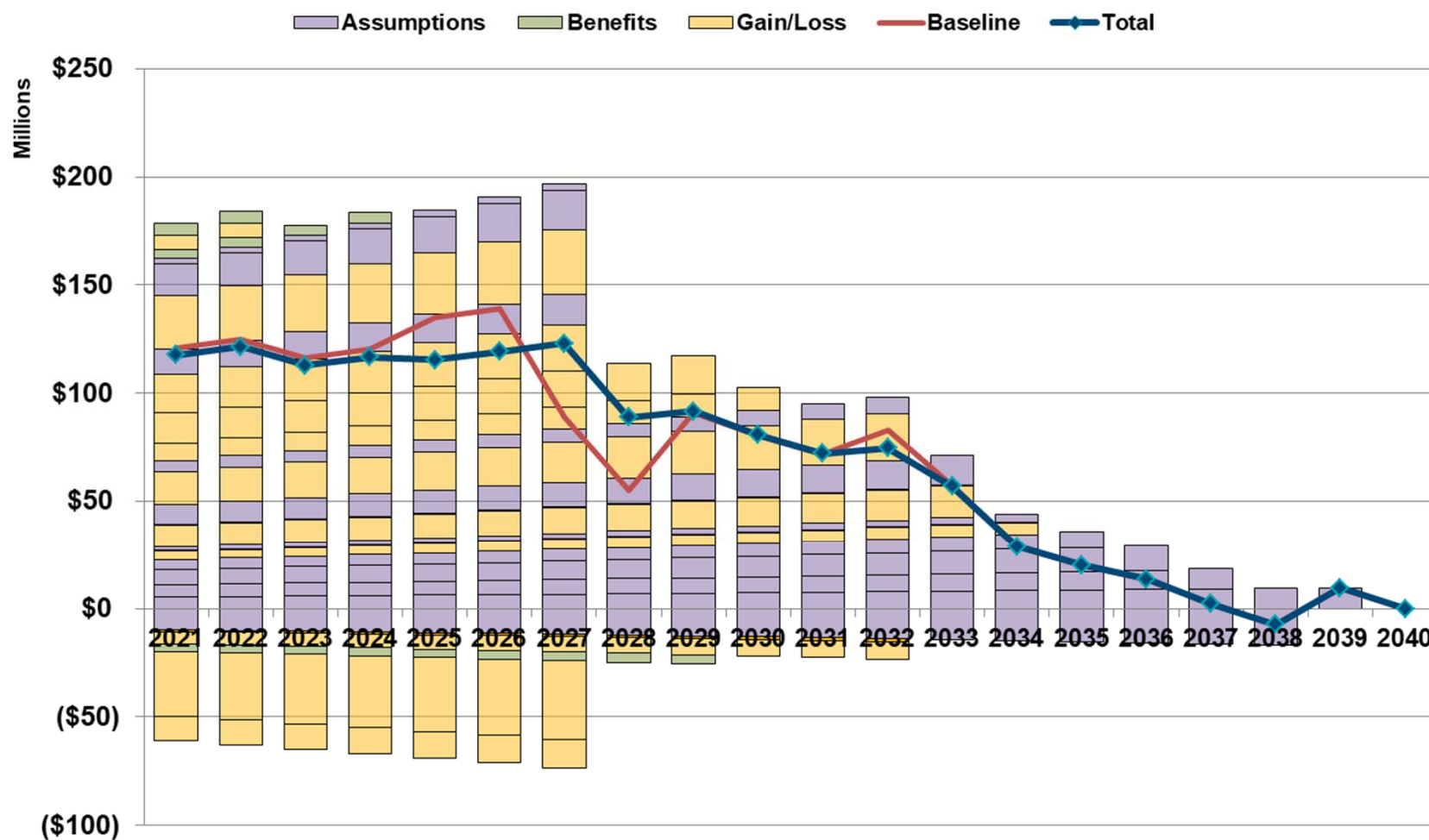
Suggested Amortization Schedule			
Valuation Year	Remaining Amortization Period		
	Gains and Losses	Assumption Changes	Benefit Changes
2005	2		2
2007	7	7	4
2009	7	7	
2010	7	7	
2011	7	12	
2012	9	13	9
2013	10	14	
2014	12	15	
2015	12	16	
2016	12	17	
2017	13	18	13
2018	14	19	14

- Many options available
- Align gain periods with loss periods to smooth patterns of decreases followed by increases or significant changes
- Minimize changes

Potential Amortization Adjustments



Tier 1 City Amortization Payments



Board Decisions



- Price Inflation
 - Consider reducing assumption from 2.75% to 2.50%
- Wage inflation
 - Consider retaining assumption of 3.25%
- Amortization payment increases
 - Retain wage inflation rate of 3.25%, or
 - Reduce to inflation or revenue growth
- Discount rate
 - Consider retaining 6.75%
- Amortization adjustments
 - Consider suggested amortization adjustments to smooth pattern of payments

Certification



- The purpose of this presentation is to review the economic assumptions for the City of San José Police and Fire Department Retirement Plan.
- In preparing our presentation, we relied on information (some oral and some written) supplied by the Plan. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.
- This presentation and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this presentation. This presentation does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.
- This presentation was prepared exclusively for the City of San José Police and Fire Department Retirement Plan for the purpose described herein. Other users of this presentation are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

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Classic Values, Innovative Advice

October 3, 2019

24

Appendix – California Survey



Cheiron's 2018 Survey of Public Retirement Systems in California

System Name	Discount Rate	Wage Inflation	Price Inflation	Valuation Date	System Name	Discount Rate	Wage Inflation	Price Inflation	Valuation Date
AC Transit	7.125%	3.00%	3.00%	1/1/2018	SACRT - Sacramento Regional Transit	7.250%	3.00%	3.00%	7/1/2018
ACERA - Alameda County	7.250%	3.50%	3.00%	12/31/2017	SamCERA - San Mateo County	6.750%	3.00%	2.50%	6/30/2018
CalPERS - State	7.250%	3.00%	2.75%	6/30/2017	SBCERA - San Bernardino County	7.250%	3.50%	3.00%	6/30/2018
CalSTRS - Defined Benefit	7.000%	3.50%	2.75%	6/30/2017	SBCERS - Santa Barbara County	7.000%	3.00%	2.75%	6/30/2018
City of Fresno - Employee System	7.250%	3.50%	3.00%	6/30/2018	SCERA - Sonoma County	7.250%	3.50%	3.00%	12/31/2017
City of Fresno - Fire & Police	7.250%	3.50%	3.00%	6/30/2018	SCERS - Sacramento County	7.000%	3.25%	3.00%	6/30/2018
City of San Jose Federated	6.750%	3.25%	2.50%	6/30/2018	SDCERA - San Diego County	7.250%	3.50%	3.00%	6/30/2018
City of San Jose Police & Fire	6.750%	3.25%	2.75%	6/30/2018	SDCERS - San Diego City	6.500%	3.05%	3.05%	6/30/2018
Contra Costa County ERA	7.000%	3.25%	2.75%	12/31/2017	San Diego Transit	7.000%	2.75%	2.75%	7/1/2018
East Bay Municipal Utility District	7.250%	3.50%	3.00%	6/30/2018	SFERS - San Francisco	7.400%	3.50%	2.75%	7/1/2018
FCERA - Fresno County	7.000%	3.50%	3.00%	6/30/2017	SJCERA - San Joaquin County	7.250%	3.15%	2.90%	1/1/2018
Golden Gate Transit	7.000%	3.25%	3.25%	1/1/2017	SLOCPT - San Luis Obispo county	7.000%	2.75%	2.50%	1/1/2018
ICERS - Imperial County	7.250%	3.50%	3.00%	6/30/2018	StanCERA - Stanislaus County	7.000%	3.00%	2.75%	6/30/2018
KCERA - Kern County	7.250%	3.50%	3.00%	6/30/2018	TCERA - Tulare County	7.250%	3.00%	3.00%	6/30/2018
LACERA - Los Angeles County	7.250%	3.25%	2.75%	6/30/2018	University of California	7.250%	3.50%	3.00%	7/1/2018
LACERS - Los Angeles City	7.250%	3.50%	3.00%	6/30/2018	Valley Transit Authority	7.000%	3.00%	2.75%	1/1/2018
Los Angeles Fire & Police Pension	7.250%	3.50%	3.00%	6/30/2018	VCERA - Ventura County	7.250%	3.25%	2.75%	6/30/2018
Los Angeles Water and Power	7.250%	3.50%	3.00%	7/1/2018					
MCERA - Marin County	7.000%	3.00%	2.75%	6/30/2018					
MCERA - Mendocino County	7.000%	3.50%	3.00%	6/30/2018					
MCERA - Merced County	7.250%	2.75%	2.50%	6/30/2018					
OCERS - Orange County	7.000%	3.25%	2.75%	12/31/2017					
					Minimum	6.50%	2.75%	2.50%	1/1/2017
					Median (50th Percentile)	7.25%	3.25%	3.00%	6/30/2018
					Maximum	7.40%	3.50%	3.25%	7/1/2018

Appendix – Meketa's CMAs



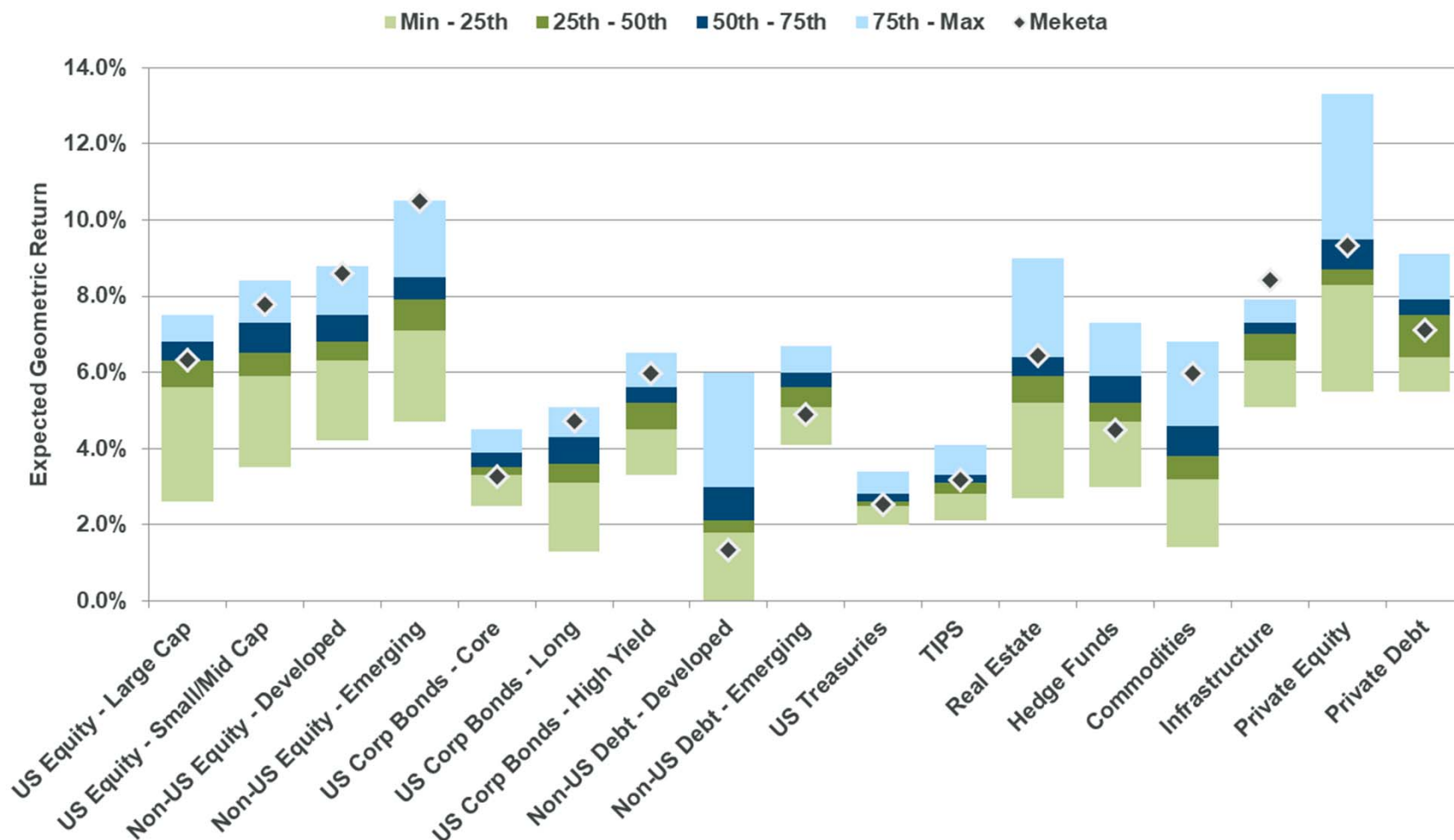
Police & Fire Pension Portfolio Meketa's Capital Market Assumptions

Asset Class	Allocation	Standard Deviation	Arithmetic Return	
			10-Year	20-Year
Cash Equivalents	5.0%	1.0%	2.5%	2.9%
Short-term Investment Grade Bonds	17.0%	1.0%	2.8%	3.4%
TIPS	2.0%	7.0%	3.4%	3.8%
Foreign Bonds	3.0%	8.0%	1.7%	2.6%
Emerging Market Bonds (major)	1.5%	11.0%	5.5%	5.8%
Emerging Market Bonds (local)	1.5%	14.0%	6.4%	6.3%
US Equity	13.0%	17.0%	7.8%	9.5%
Developed Market Equity (non-US)	10.0%	19.0%	10.4%	10.3%
Emerging Market Equity	13.0%	24.0%	13.4%	13.3%
Global Equity	0.0%	17.0%	9.2%	10.0%
Buyouts	8.0%	24.0%	12.3%	13.0%
Venture Capital	4.0%	34.0%	14.8%	15.8%
Private Debt Composite	4.0%	15.0%	8.2%	8.4%
Real Estate	3.0%	15.0%	7.6%	8.1%
Core Private Real Estate	5.0%	11.0%	5.3%	6.4%
Natural Resources (Private)	3.0%	21.0%	11.8%	11.7%
Commodities: Real Return	2.0%	20.0%	8.0%	7.2%
Hedge Funds	5.0%	7.0%	4.7%	5.7%
Total	100.0%	11.8%	7.8%	8.4%
		Geometric Return	7.2%	7.8%

Appendix – Meketa CMA Comparisons



Comparison to Horizon 10-Year Assumptions



Appendix – Meketa CMA Comparisons



Comparison to Horizon 20-Year Assumptions

