San José Police & Fire Department Retirement Plan

CHEIRON

Classic Values, Innovative Advice

2018 Preliminary Valuation Results and Economic Assumptions Review

November 1, 2018

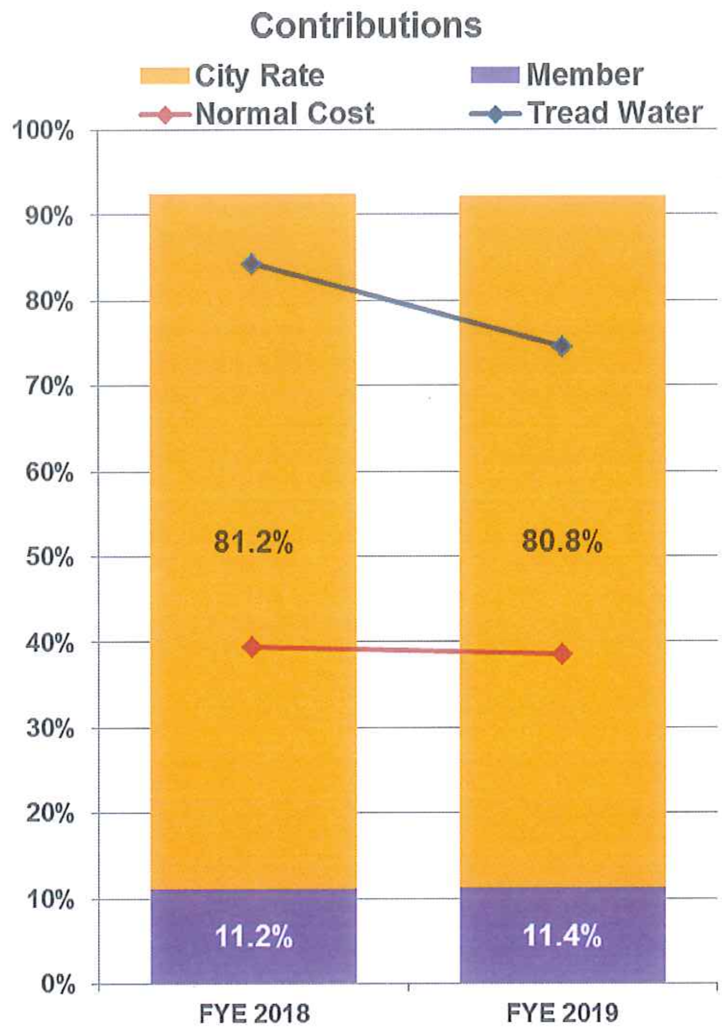
Bill Hallmark, ASA, EA, FCA, MAAA

Anne Harper, FSA, EA, MAAA

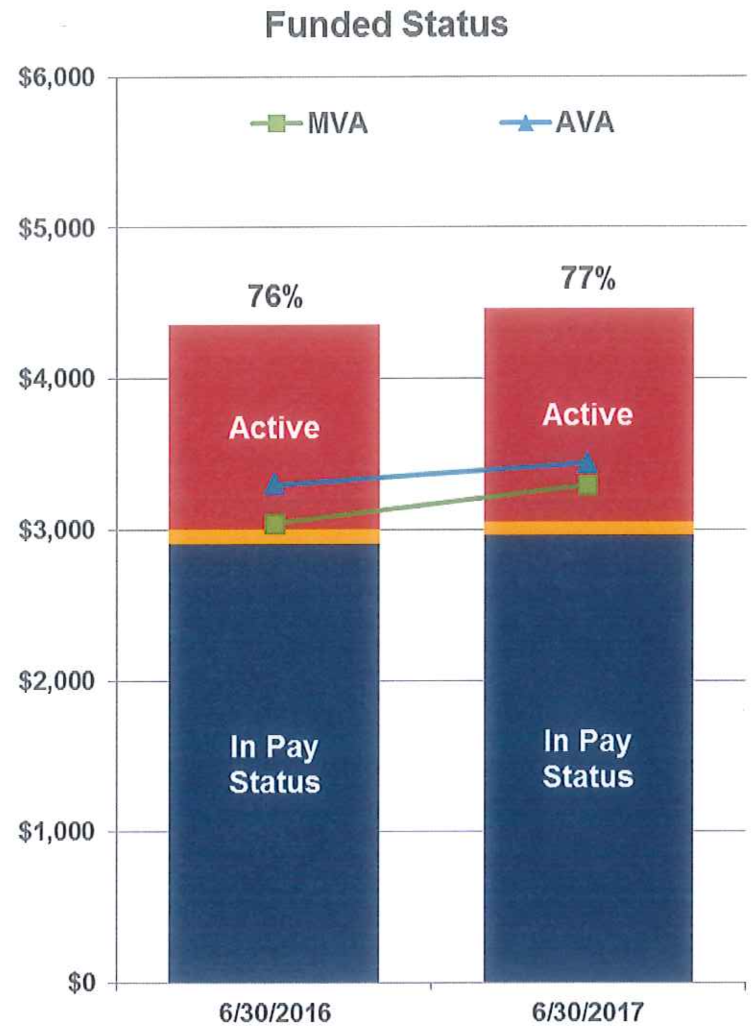
Agenda

- Background
- Economic Assumptions
- Funding Method Alternatives
- Presentation of City Contribution Requirements
- Appendix

Background



Contributions
City Rate
Member
Normal Cost
Tread Water
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
81.2%
80.8%
11.2%
11.4%
FYE 2018
FYE 2019



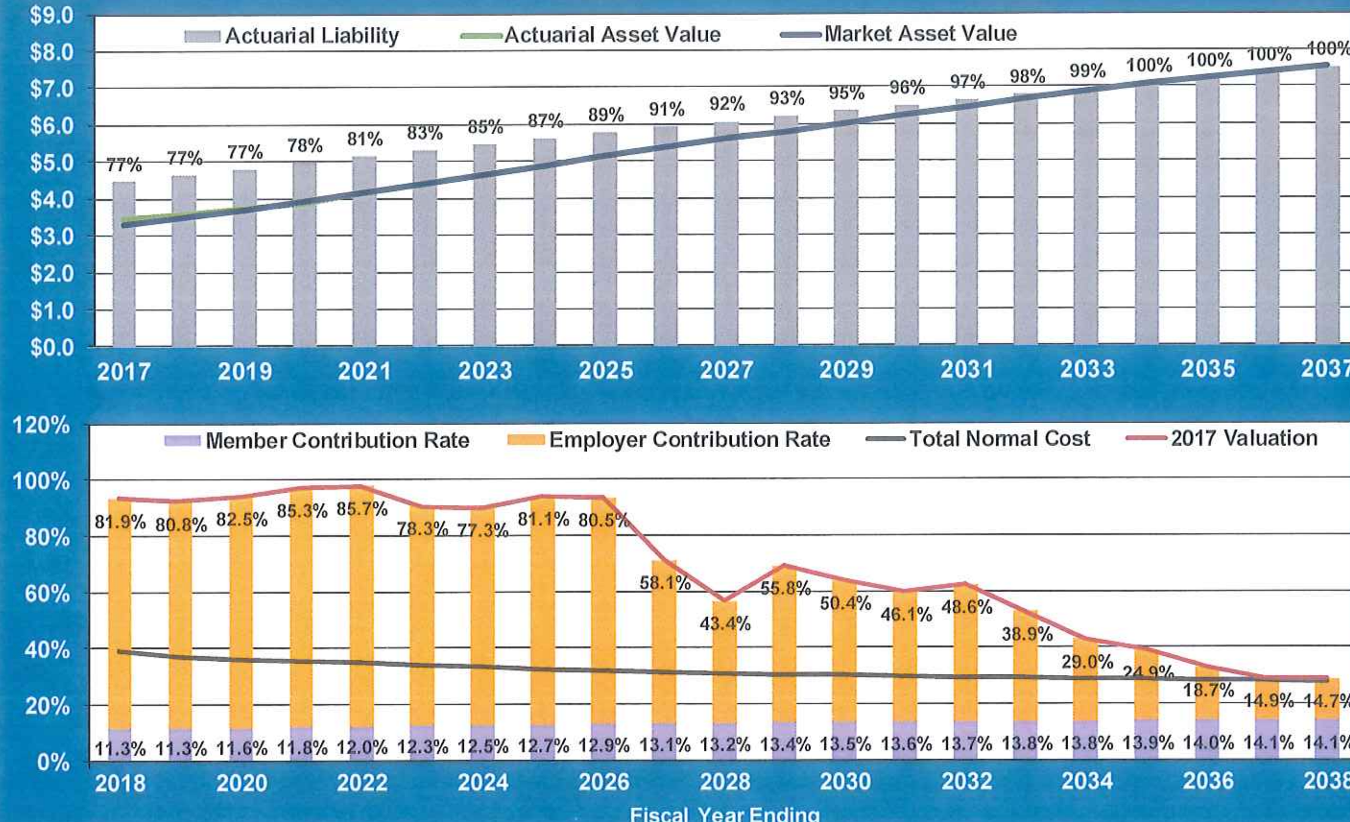
Funded Status
MVA
AVA
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
76%
77%
Active
Active
In Pay Status
In Pay Status
6/30/2016
6/30/2017

Background

CHEIRON | UAL / Dollar | **Stress Testing** | GASB P-scan

Baseline	Prior Benefit Changes	0	Assump Change Period	20	San Jose P&F	
Historical	Prior Gains or Losses	0	G/L Amortization Period	15	Discount Rate	6.875%
1968	Prior Assumption Changes	0	Actual Cash Flows	Y	Baseline	2017

FYE	
2018	6.88%
2019	6.88%
2020	6.88%
2021	6.88%
2022	6.88%
2023	6.88%
2024	6.88%
2025	6.88%
2026	6.88%
2027	6.88%
2028	6.88%
2029	6.88%
2030	6.88%
2031	6.88%
2032	6.88%
2033	6.88%
2034	6.88%
2035	6.88%
2036	6.88%
2037	6.88%
Avg	6.88%



Review of Economic Assumptions

- Economic assumptions are reviewed every year
- Demographic experience study performed every two years
  - Next study in 2019
- Assumptions adopted will be used for the 2018 actuarial valuation to determine contributions for FYE 2020
  - Price Inflation – Pension and OPEB valuations
  - Wage Inflation – Pension and OPEB valuations
  - Discount Rate – Pension valuation only

Price Inflation

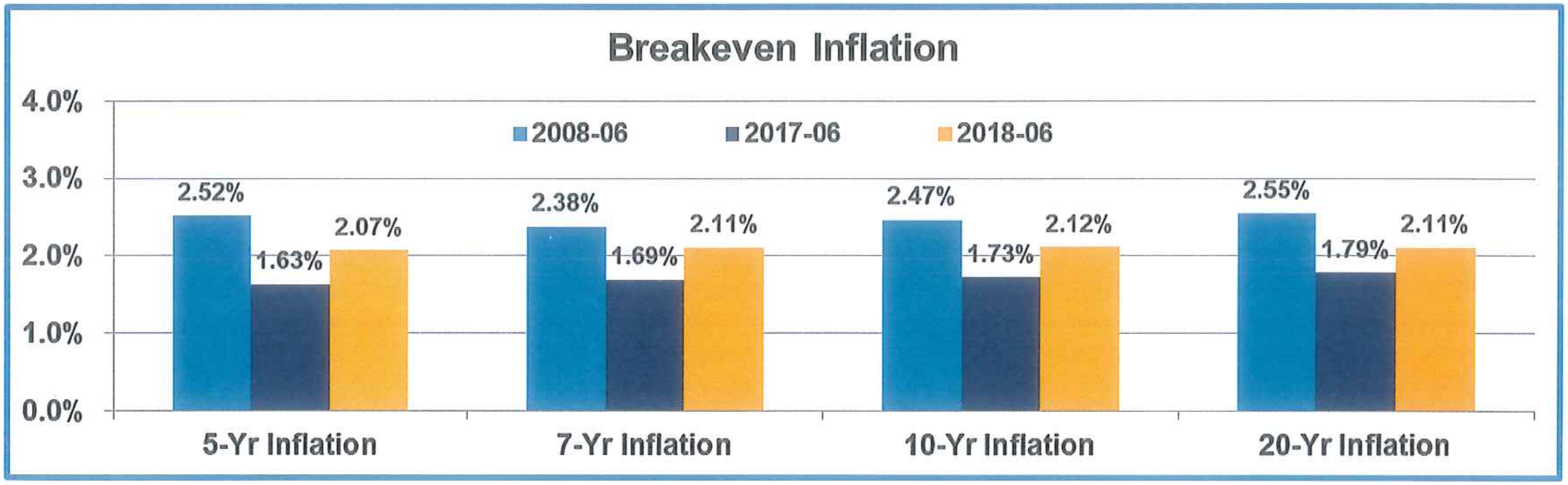
- Price inflation is the foundation for all economic assumptions
  - Wage inflation = Price inflation + Real wage growth
  - Expected return = Price inflation + Real return
  - Ultimate health care trend = Price inflation + Real per capita GDP growth
- Current price inflation assumption = 2.75%
- Very 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

	Economic Forecasters	Horizon Survey	California Plans
Minimum	1.88%	2.20%	2.50%
25th Percentile	2.10%	2.30%	2.75%
50th Percentile	2.20%	2.50%	3.00%
75th Percentile	2.30%	2.60%	3.00%
Maximum	3.40%	2.80%	3.25%

- The Federal Reserve survey of professional economic forecasters shows 10-year forecasts
  - Range = 1.9% to 3.4%
  - Median = 2.2%
  - 75th percentile = 2.3%
- Horizon survey of over a 20-year forecasts
  - Range = 2.2% to 2.8%
  - Median = 2.5%
- California public pension plans
  - Range = 2.5% to 3.25%
  - Median = 3.0%

Price Inflation

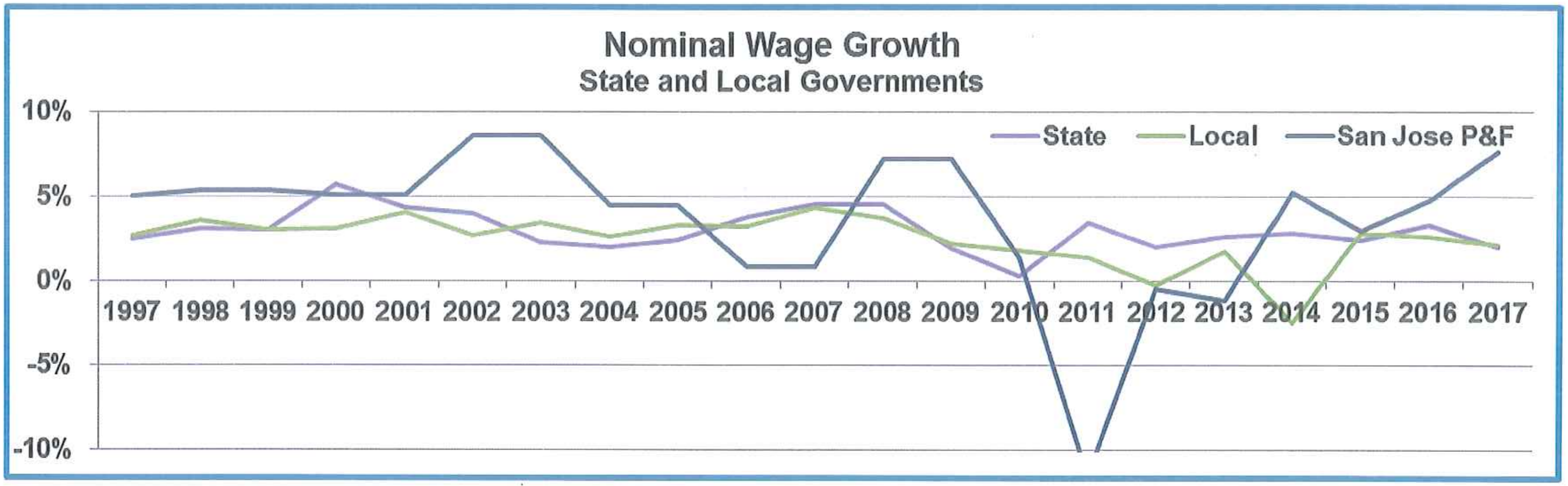


- 10 and 20-year breakeven inflation (Yield on Treasury securities minus TIPS) is 2.1%
- Meketa assumes 2.3% over 10 years and 2.7% over 20 years
- Verus assumes 2.1% over 10 years
- The current assumption of 2.75% is reasonable, but could also be reduced to 2.5%

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, and
  - The rate of payroll growth for purposes of the amortization of the unfunded liability
- The current assumption is 3.25%
  - 2.75% price inflation + **0.50% real wage growth**

Wage Inflation



- Over the last 10 years, average wage growth has been:
  - 1.5% for local governments, 1.3% for San José Police & Fire
- Over the last 20 years, average wage growth has been:
  - 2.4% for local governments, 3.4% for San José Police & Fire
- 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

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 6.875% (historic rates below)

    2009: 8.00%
    2010: 7.75%
    2011: 7.50%
    2012: 7.25%
    2013: 7.125%
    2014: 7.00%
    2016: 6.875%
- 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

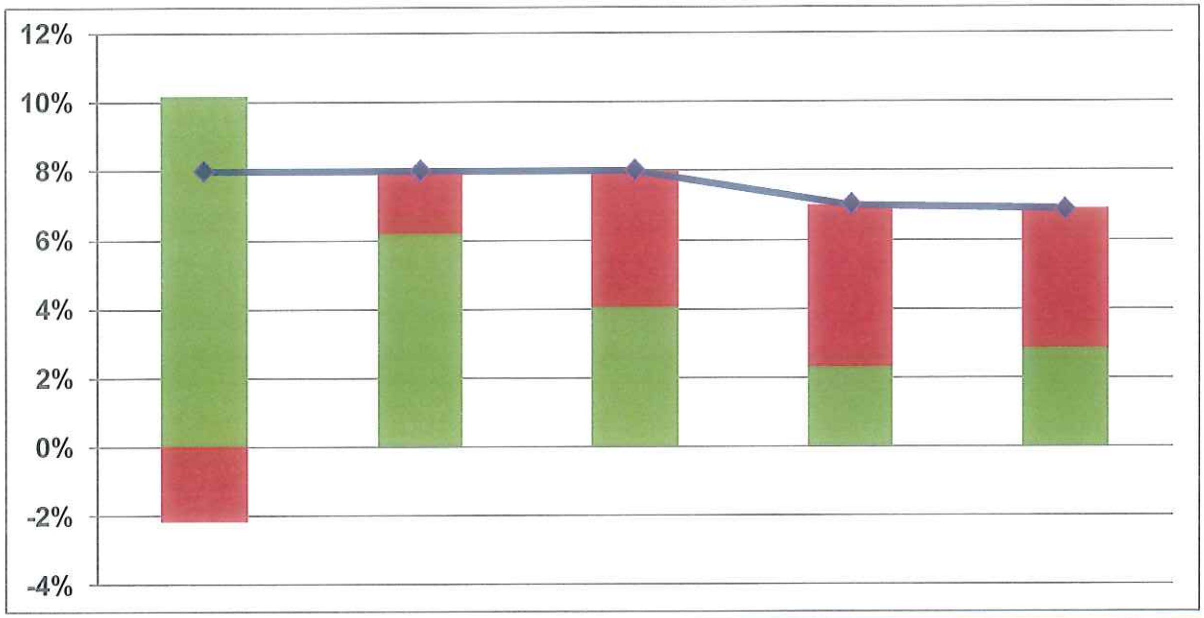
Historical Performance

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Return on Market Value	-5.9%	-18.8%	15.5%	17.2%	-1.3%	9.5%	14.3%	-0.9%	-0.9%	9.5%	7.0%
Return on Actuarial Value	9.8%	0.9%	2.2%	4.0%	1.2%	3.9%	9.9%	7.1%	3.7%	5.4%	5.3%
Assumed Return	8.000%	8.000%	8.000%	7.750%	7.500%	7.250%	7.125%	7.000%	7.000%	6.875%	6.875%

California Survey

- California plans continue to lower their discount rates
- Significant downward trend in the discount rate assumption from 2013 to 2017
  - Minimum = 6.75% (Four plans less than 7.0%)
  - Median = 7.25%
  - Maximum = 7.50%
- San José plans are no longer the lowest
  - Some plans will be at 6.5% in 2018

Declining Interest Rates



	1985	1995	2005	2015	2018
Assumed Investment Return	8.00%	8.00%	8.00%	7.00%	6.875%
Yield on 10-Year Treasury	10.19%	6.21%	4.06%	2.32%	2.85%
Implied Risk Premium	-2.19%	1.79%	3.94%	4.68%	4.03%

- 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 risk 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
- Verus's assumptions are similar over a 10-year time horizon
- Appendix shows comparison of Meketa's assumptions by asset class to other investment consultants in the Horizon survey

Expected Distribution of Average Annual Passive Returns

	Time Horizon	
Percentile	**10 Years**	**20 Years**
95th	12.2%	11.4%
75th	8.5%	8.8%
60th	6.9%	7.7%
55th	**6.5%**	**7.4%**
50th	**6.0%**	**7.0%**
45th	**5.5%**	**6.7%**
40th	5.1%	6.4%
25th	3.5%	5.3%
5th	0.1%	2.8%

Discount Rate

- The current assumption of 6.875% remains reasonable
- Given maturity of plan and shorter term expectations, consider a reduction in discount rate
  - If discount rate reduced, consider extending Tier 1 amortization periods to control the impact on City contributions
  - Limit any extensions so City contribution does not go down and UAL is still being paid down

Estimated Impact of Discount Rate

Estimated FYE 2020 Contributions				
Group	2017 Valuation	Actual FYE 2018 Assets	6.75%	6.50%
Employee Rate				
Fire Tier 1	11.1%	11.1%	11.4%	12.2%
Fire Tier 2	15.1%	15.0%	15.5%	16.6%
Police Tier 1	10.3%	10.3%	10.6%	11.3%
Police Tier 2	13.6%	13.7%	14.1%	15.1%
City Amount (millions)				
Tier 1 UAL	122	122	127	137
Tier 1 NC + Admin	49	49	51	54
Tier 2	8	8	8	9
Total City Amount	$ 179	$ 179	$ 186	$ 200

Contributions at alternative discount rates are estimated by adjusting 2017 valuation results based on duration and projecting amounts to 2018. Actual contributions will differ.

- Extending amortization periods could eliminate any immediate cost impact to the City
- Employee contribution rates, however, would not be affected by extending the amortization periods

Different Discount Rates by Tier?

- Tier 1 UAL is paid by City
  - Over 2/3 of City Tier 1 contribution is for UAL
  - Most volatile part of the contribution, fluctuating primarily with investment returns
- Tier 2 UAL is paid 50% by City and 50% by members
  - Currently represents a very small portion of contribution
  - When Tier 2 matures, the UAL and changes in the UAL will likely have a significant impact on contributions
  - With members paying 50% of the UAL costs, may not be sustainable to maintain the same level of volatility of investment returns
  - While no changes to investment policy are needed now, should anticipate changes as Tier 2 matures
    - Anticipating changes now will result in higher contributions now
    - Waiting for Tier 2 to mature and investments to actually change before recognizing the change will result in a more significant change at that time

Tier 2 Discount Rate Approaches

- Same as Tier 1
- Reduce from Tier 1 by a margin
  - Anticipate changes in investment policy as Tier 2 matures
- Separate pre- and post decrement discount rates
  - Pre-decrement discount rate is same as Tier 1
  - Post-decrement discount rate reduced from Tier 1 to anticipate a more conservative investment policy for retirees
  - Effective discount rate will automatically adjust as the plan matures

Funding Method Alternatives

- The current aggregate City contribution rate is about 81% of pay or $170.1 million
- Consider implementing a City contribution cap as long as contribution still pays down UAL
  - Effectively automatically extends amortizations when there is bad experience
  - Protects plan by maintaining strong amortization policy in other situations and limits the amount of relief provided to the City

Impact of Contribution Cap on Key Metrics

	Proposed	15-Year Probability	
Metric	**Board Limit**	**Current**	**100% of Pay Cap**
AVA Funded Ratio	60%	12%	14%
City Contributions	100% of Pay	40%	0%
Interest on UAL	75% of Pay	7%	8%

Presentation of Contribution Rates

- Board adopts Tier 1 contribution rates based on Tier 1 payroll
  - FYE 2019 Rates
    - Police = 97.5%
    - Fire = 98.5%
  - Projected FYE 2026 Rates
    - Police = 198%
    - Fire = 196%
- As Tier 1 members retire, the rates for the remaining Tier 1 members increase because the UAL payments are spread over a smaller payroll
- Creates impression that pensions for the remaining Tier 1 members are very expensive when most of the payment is for members who are already retired

Presentation of Contribution Rates

- Based on the contribution policy, the Tier 1 UAL payment is charged to the City as a dollar amount – not a percent of Tier 1 payroll
- Alternative approach
  - Report Tier 1 UAL payment as a dollar amount
    - City pays the dollar amount
  - Report Tier 1 City normal cost (and administrative expenses) as a percent of pay and a dollar amount
    - City pays the greater of the dollar amount or the rate multiplied by actual payroll
  - Report Tier 2 contribution as a rate and a dollar amount
    - City pays the rate multiplied by actual payroll
  - Report aggregate City contribution rate as a percent of aggregate payroll and a dollar amount

Presentation of Contribution Rates

FYE 2019 City Contributions			
	Fire	**Police**	**Total**
Tier 1 UAL Payment	$ 50,365	$ 62,305	$ 112,670
Tier 1 Normal Cost	$ 23,346 31.2%	$ 28,040 30.3%	$ 51,386 30.7%
Tier 2 Contribution	$ 1,723 15.1%	$ 4,330 13.7%	$ 6,053 14.1%
Aggregate Contribution	**$ 75,434 87.5%**	**$ 94,676 76.2%**	**$170,110 80.8%**

- Costs for current active employees are more transparent
- City can still allocate costs for budget purposes however they like, but it doesn't automatically follow that the Tier 1 UAL payment should be allocated to current Tier 1 employees

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.
- To the best of our knowledge, this presentation and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this 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.

William R. Hallmark, ASA, EA, FCA, MAAA Consulting Actuary	Anne. D. Harper, FSA, EA, MAAA Consulting Actuary

Appendix – California Survey

Economic Assumptions Used by Public Retirement Systems in California

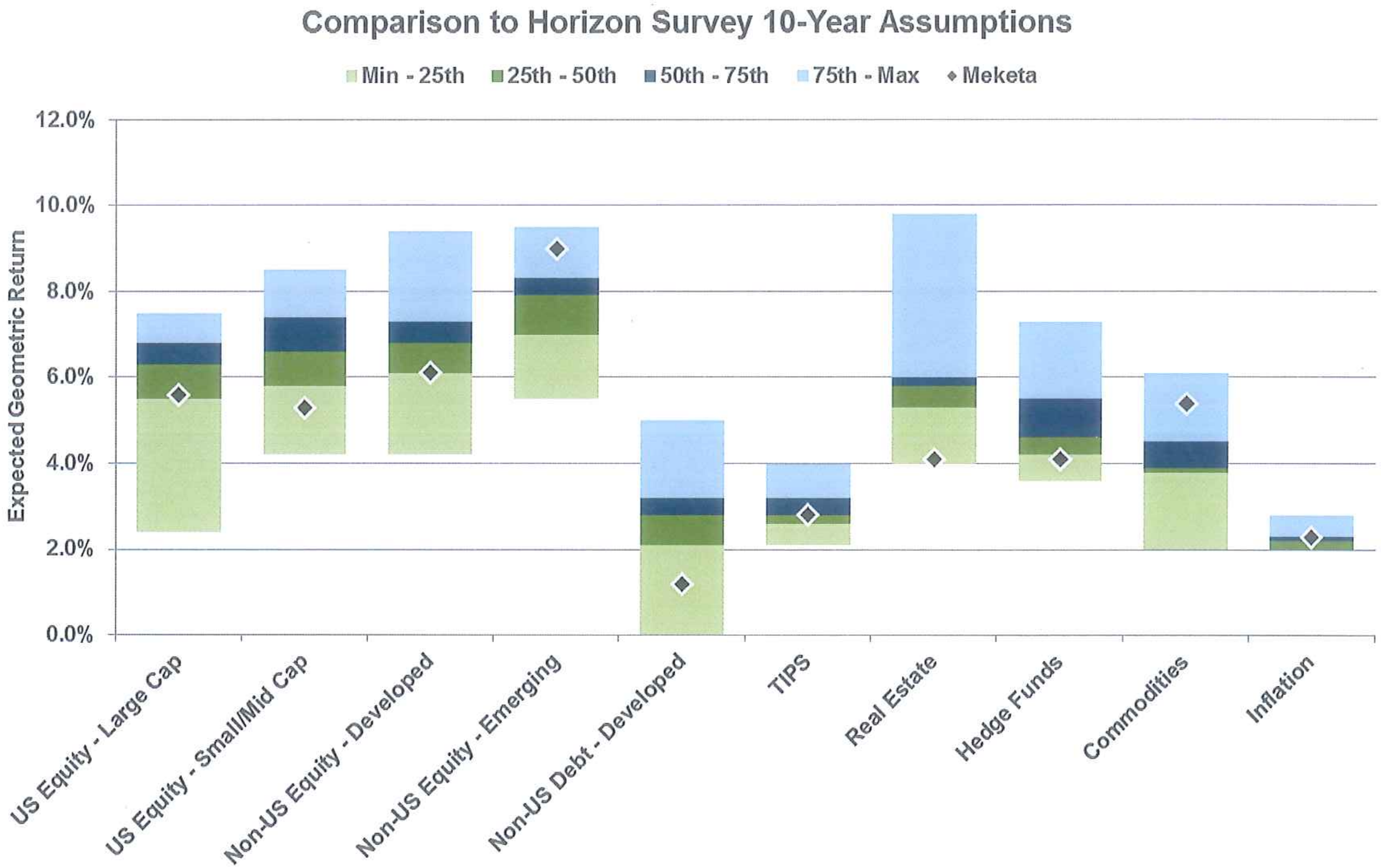
System Name	Discount Rate	Wage Inflation	Price Inflation	Valuation Date	System Name	Discount Rate	Wage Inflation	Price Inflation	Valuation Date
AC Transit	7.125%	3.00%	3.00%	1/1/2018	SACRT - Sacramento Regional Transit	7.250%	3.15%	3.00%	7/1/2017
ACERA - Alameda County	7.250%	3.50%	3.00%	12/31/2017	SamCERA - San Mateo County	6.750%	3.00%	2.50%	6/30/2017
CalPERS - State	7.250%	3.00%	2.75%	6/30/2017	SBCERA - San Bernardino County	7.250%	3.50%	3.00%	6/30/2017
CalSTRS - Defined Benefit	7.000%	3.50%	2.75%	6/30/2017	SBCERS - Santa Barbara County	7.000%	3.00%	2.75%	6/30/2017
City of Fresno - Employee System	7.250%	3.50%	3.00%	6/30/2017	SCERA - Sonoma County	7.250%	3.50%	3.00%	12/31/2017
City of Fresno - Fire & Police	7.250%	3.50%	3.00%	6/30/2017	SCERS - Sacramento County	7.000%	3.25%	3.00%	6/30/2017
City of San Jose Federated	6.875%	3.25%	2.50%	6/30/2017	SDCERA - San Diego County	7.250%	3.50%	3.00%	6/30/2017
City of San Jose Police & Fire	6.875%	3.25%	2.75%	6/30/2017	SDCERS - San Diego City	6.750%	3.05%	3.05%	6/30/2017
Contra Costa County ERA	7.000%	3.25%	2.75%	12/31/2017	San Diego Transit	7.000%	3.00%	2.75%	6/30/2017
East Bay Municipal Utility District	7.250%	3.50%	3.00%	6/30/2017	SFERS - San Francisco	7.500%	3.50%	3.00%	7/1/2017
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%	3.00%	2.50%	1/1/2018
ICERS - Imperial County	7.250%	3.50%	3.00%	6/30/2017	StanCERA - Stanislaus County	7.250%	3.25%	3.00%	6/30/2017
KCERA - Kern County	7.250%	3.50%	3.00%	6/30/2017	TCERA - Tulare County	7.250%	3.00%	3.00%	6/30/2017
LACERA - Los Angeles County	7.250%	3.25%	2.75%	6/30/2017	University of California	7.250%	3.50%	3.00%	7/1/2017
LACERS - Los Angeles City	7.250%	3.50%	3.00%	6/30/2017	VCERA - Ventura County	7.500%	3.50%	3.00%	6/30/2017
Los Angeles Fire & Police Pension	7.250%	3.50%	3.00%	6/30/2017	Valley Transit Authority	7.000%	3.50%	3.00%	1/1/2018
Los Angeles Water and Power	7.250%	3.50%	3.00%	7/1/2017					
MCERA - Marin County	7.000%	3.00%	2.75%	6/30/2017					
MCERA - Mendocino County	7.000%	3.50%	3.00%	6/30/2017	**Minimum**	**6.75%**	**2.75%**	**2.50%**	1/1/2017
MCERA - Merced County	7.250%	2.75%	2.50%	6/30/2017	**Median (50th Percentile)**	**7.25%**	**3.25%**	**3.00%**	6/30/2017
OCERS - Orange County	7.000%	3.25%	2.75%	12/31/2017	**Maximum**	**7.50%**	**3.50%**	**3.25%**	1/1/2018

Appendix – Meketa's CMAs

Police & Fire Pension Portfolio
Meketa's Capital Market Assumptions

Asset Class	Allocation	Standard Deviation	Arithmetic Return 10-Year	Arithmetic Return 20-Year
Short-term Investment Grade Bonds	25.0%	1.5%	1.8%	3.1%
TIPS	2.0%	7.5%	3.1%	3.6%
Private Debt Composite	4.0%	17.0%	7.4%	8.2%
Foreign Bonds	3.0%	9.0%	1.6%	2.5%
Emerging Market Bonds (major)	1.5%	11.5%	4.9%	5.6%
Emerging Market Bonds (local)	1.5%	14.5%	6.7%	6.5%
US Large Cap	10.0%	17.5%	7.1%	8.9%
US Small Cap	3.0%	22.5%	7.8%	9.7%
Developed Market Equity (non-US)	8.0%	20.0%	8.1%	9.1%
Emerging Market Equity	10.0%	25.0%	12.1%	12.5%
Buyouts	8.0%	25.0%	11.9%	12.4%
Venture Capital	4.0%	35.0%	13.4%	15.3%
Core Private Real Estate	5.0%	12.0%	4.8%	6.2%
Value-Added Real Estate	2.0%	19.0%	7.8%	8.7%
Opportunistic Real Estate	1.0%	25.0%	10.6%	11.6%
Natural Resources (Private)	3.0%	23.0%	11.2%	11.5%
Commodities (naive)	2.0%	18.0%	7.0%	6.2%
Hedge Funds	7.0%	8.5%	4.5%	5.5%
Total	**100.0%**	**11.8%**	**6.6%**	**7.7%**
		Geometric Return	**6.0%**	**7.0%**

Appendix – Meketa CMA Comparisons



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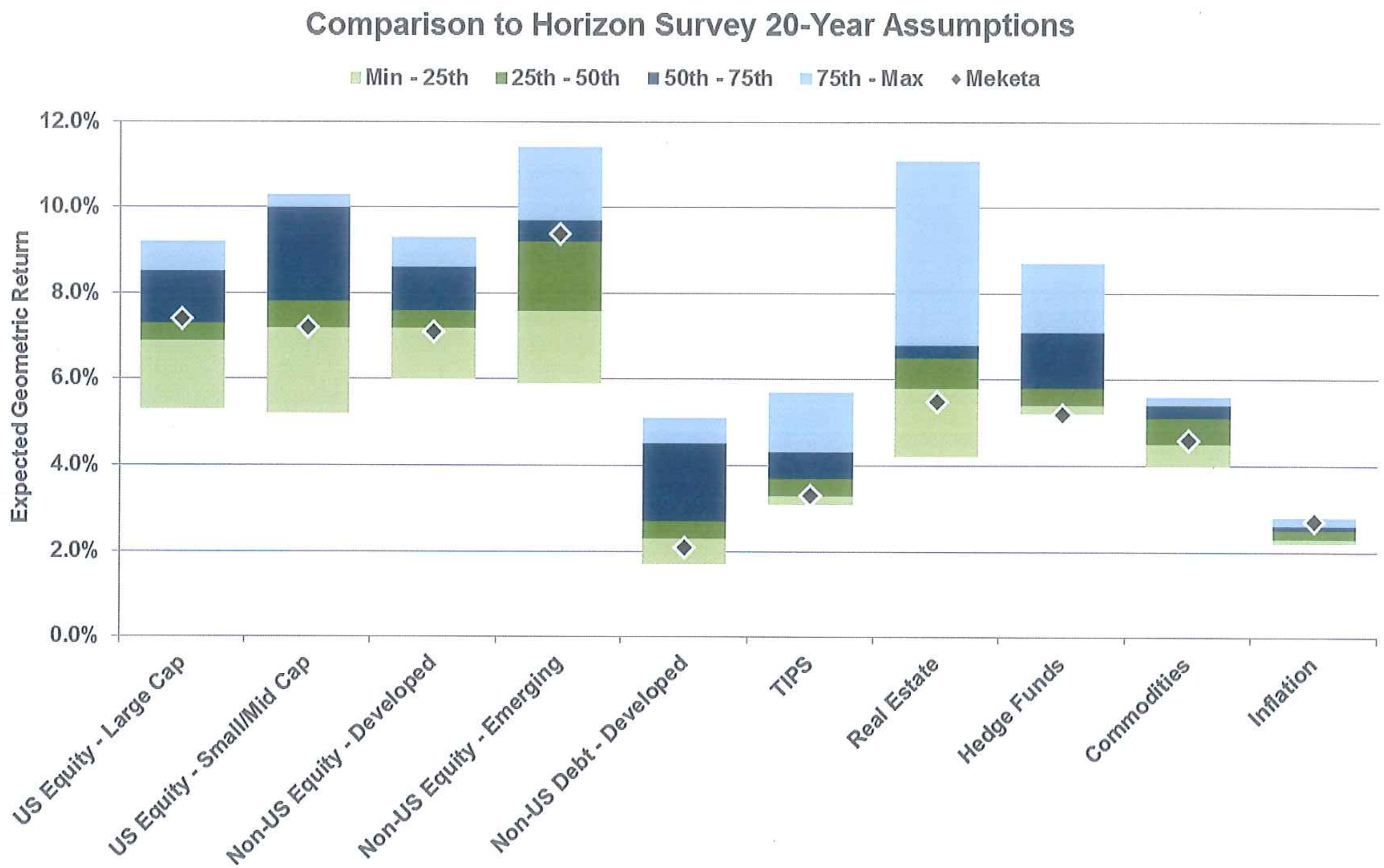

Appendix – Projected Net Cash Flows