San José Police & Fire

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Classic Values, Innovative Advice

A Balanced Approach to Contribution Policy

April 15, 2019

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Agenda

- Background

- California Survey Information

- Contribution Policy

- Discount Rate

- Amortization Policy

- Potential New Policy

- Conclusions

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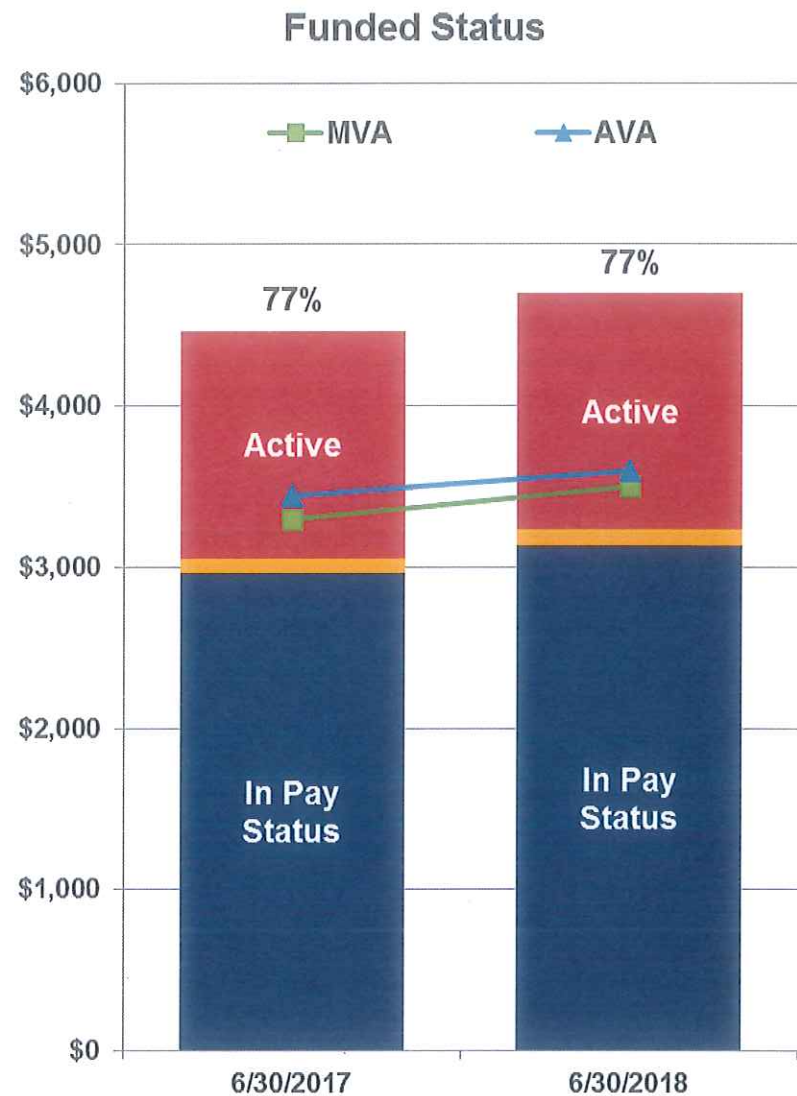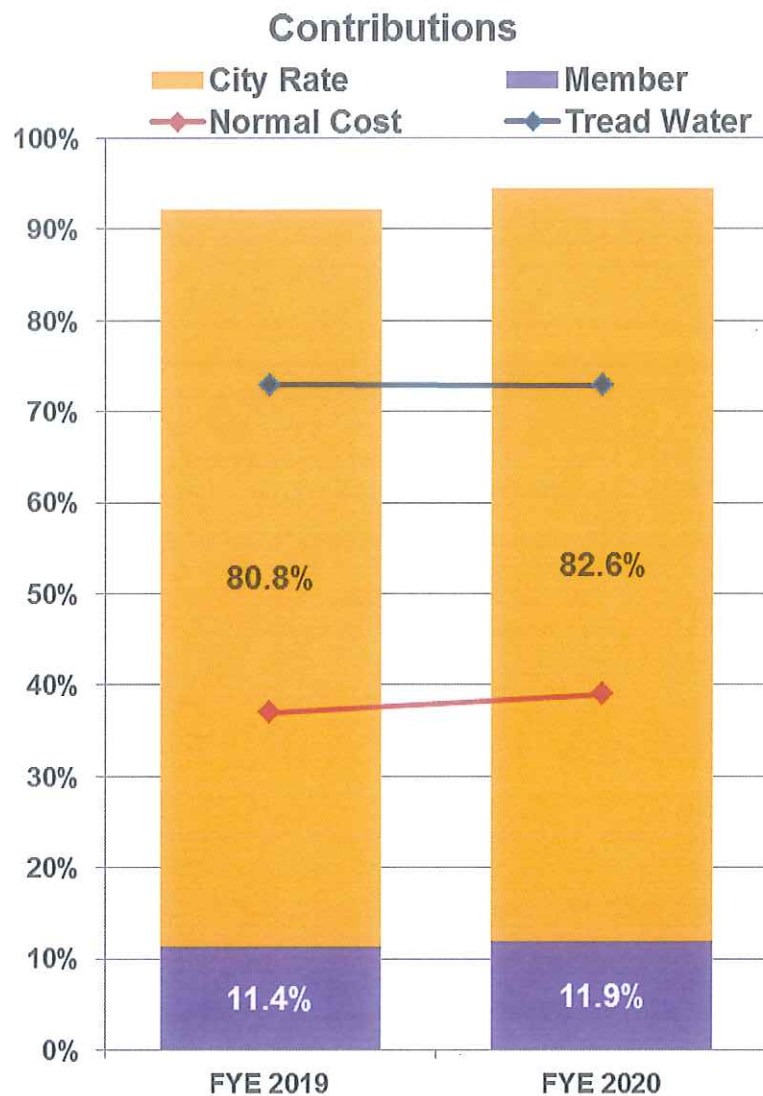Classic Values, Innovative Advice

- No specific Board decisions
- Seeking Board Policy Directions. Should the Board:
  - Select an ultimate discount rate or continue to consider gradual reductions each year?
  - Continue to target contributions as a
    - Level percentage of total payroll,
    - Level percentage of city revenue, or
    - Level dollar amount?
  - Actively smooth short-term fluctuations in contributions or significant declines in contributions?
  - Maintain a relatively aggressive schedule to repay the UAL regardless of the impact on the City or limit the total City contribution while protecting the Plan with an overriding minimum contribution?
- Any direction would require additional analysis for the Board to consider a decision

Background

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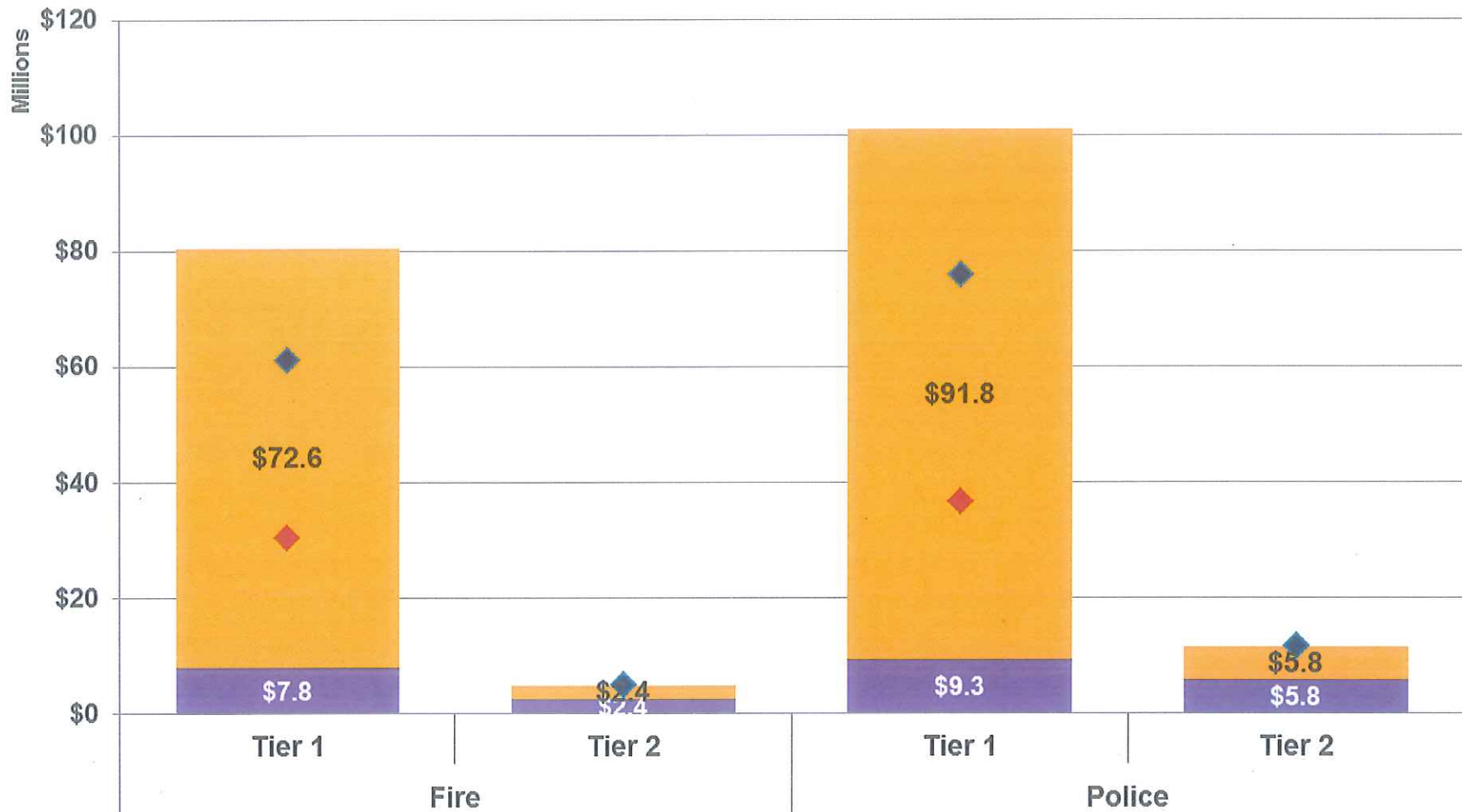Classic Values, Innovative Advice

Background

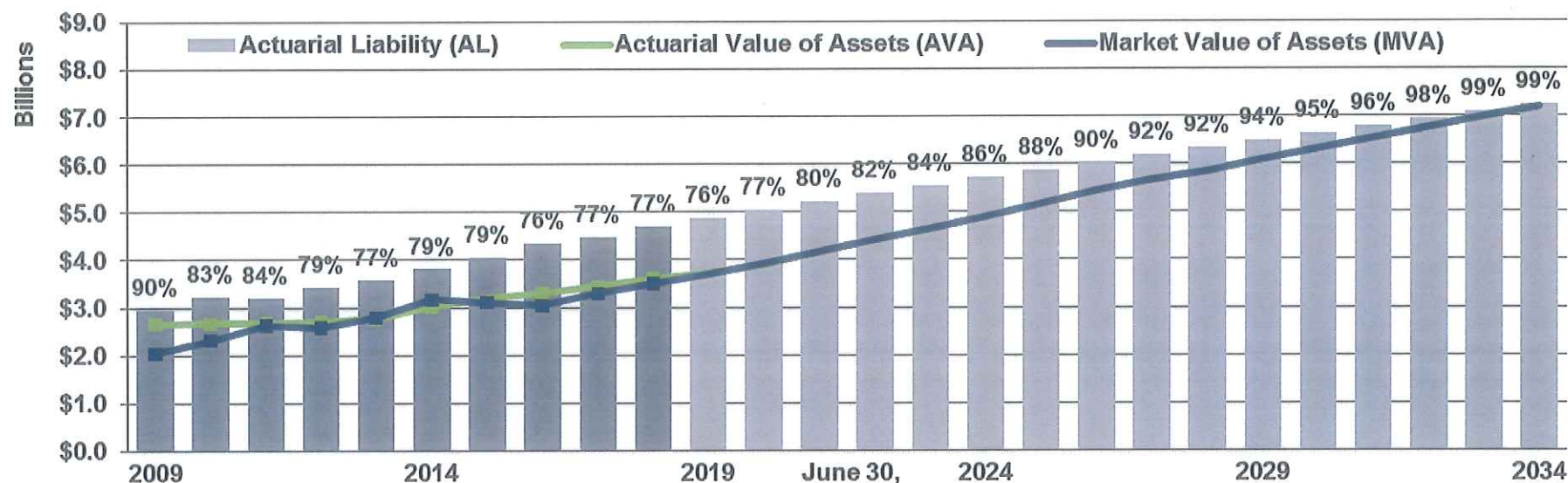CHEIRON · Classic Values, Innovative Advice
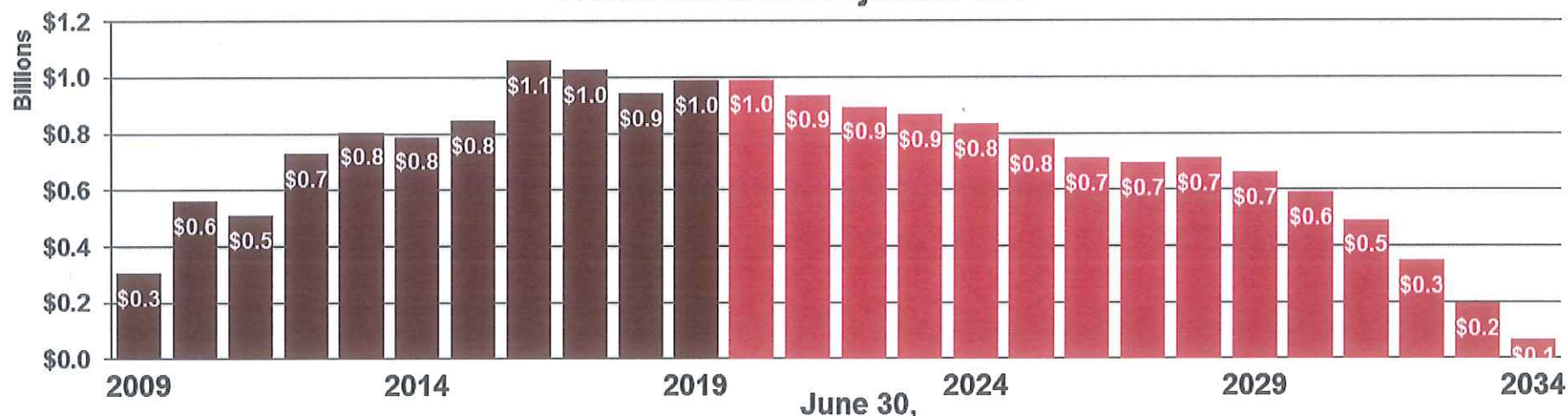
FYE 2020 Contributions by Group and Tier

■ Member   ■ City   ◆ Normal Cost   ◆ Tread Water

Background – Baseline Projections
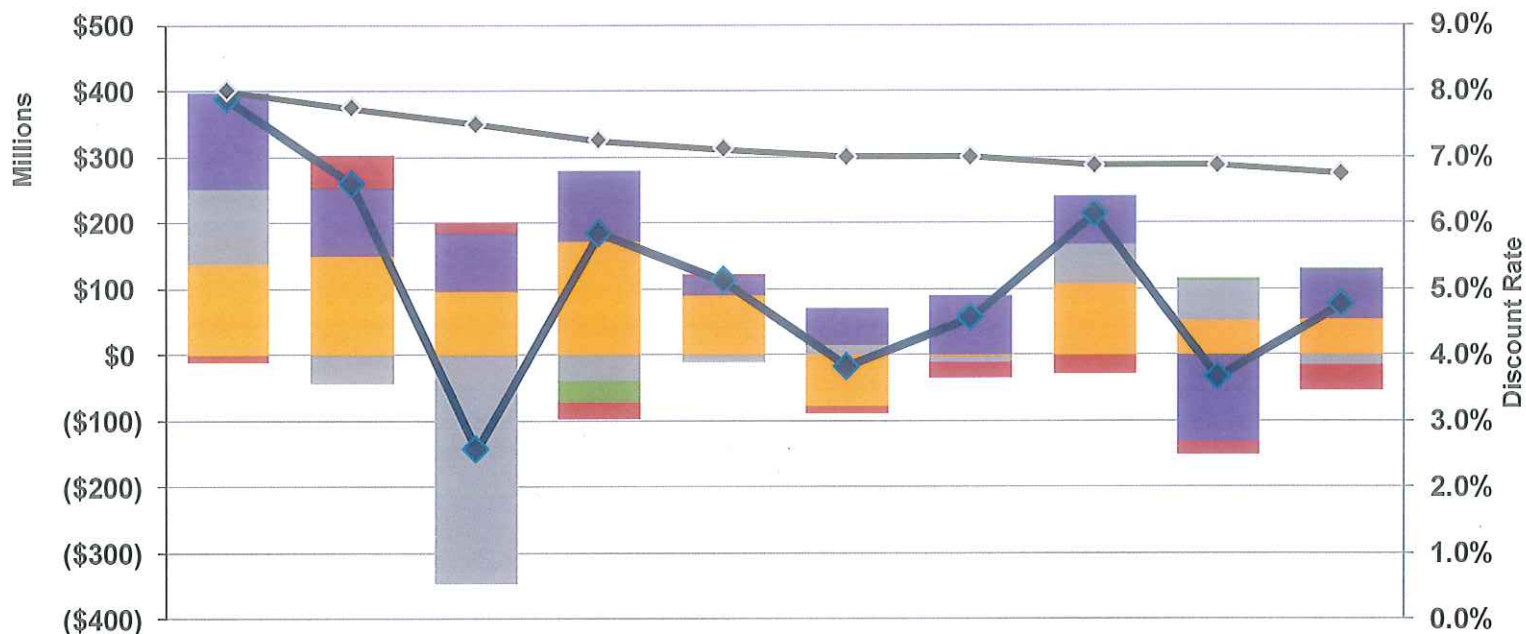

Historical and Projected UAL

Changes in Unfunded Actuarial Liability

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
AVA Investment (G)/L	138.4	149.6	96.5	172.8	91.3	(78.5)	(2.8)	106.8	50.9	53.6	778.5
Liability (G)/L	113.5	(43.9)	(346.1)	(39.4)	(9.9)	14.7	(7.3)	61.3	61.8	(15.1)	(210.5)
Assumption Changes	145.4	104.2	89.1	107.7	28.2	56.3	90.0	72.7	(131.8)	76.4	638.2
Benefit Changes	0.0	0.0	0.0	(32.5)	0.0	0.0	0.0	0.0	4.3	0.2	(28.1)
Contributions	(9.9)	49.9	17.1	(24.6)	2.2	(9.9)	(23.4)	(27.0)	(19.6)	(39.7)	(85.0)
Net Change	387.3	259.8	(143.5)	184.0	111.9	(17.4)	56.5	213.7	(34.4)	75.4	1,093.2
Discount Rate	8.00%	7.75%	7.50%	7.25%	7.13%	7.00%	7.00%	6.88%	6.88%	6.75%	

Background – Baseline Projections

Top chart legend: Aggregate Member Rate, City Contribution Rate, Total NC, 2010 Valuation. Y-axis 0% to 120%, X-axis Fiscal Year Ending 2011–2035.

Top chart values — 2010 Valuation line (red): 39%, 50%, 58%, 71%, 71%, 70%, 72%, 82%, 81%, 83%, 85%, 86%, 79%, 78%, 81%, 81%, 59%, 45%, 57%, 52%, 47%, 50%, 41%, 31%, 28%

Aggregate Member Rate (purple): 10%, 11%, 11%, 12%, 11%, 11%, 11%, 11%, 11%, 12%, 12%, 12%, 13%, 13%, 13%, 13%, 13%, 14%, 14%, 14%, 14%, 14%, 14%, 14%, 14%

Bottom chart legend: Aggregate Member Amount, City Contribution Amount, Total NC, 2010 Valuation. Y-axis $0 to $400 Millions, X-axis Fiscal Year Ending 2011–2035.

City Contribution Amount: $121, $105, $124, $129, $136, $137, $165, $170, $186, $199, $206, $195, $199, $215, $220, $167, $131, $171, $160, $152, $165, $139, $110, $102

Aggregate Member Amount: $30, $19, $20, $21, $21, $22, $21, $24, $25, $27, $28, $30, $31, $33, $35, $36, $38, $40, $41, $43, $45, $47, $48, $50, $52

Projected City Contribution Rates From Historical Valuations

Legend:
- 2010 Valuation
- 2012 Valuation
- 2014 Valuation
- 2016 Valuation
- 2018 Valuation
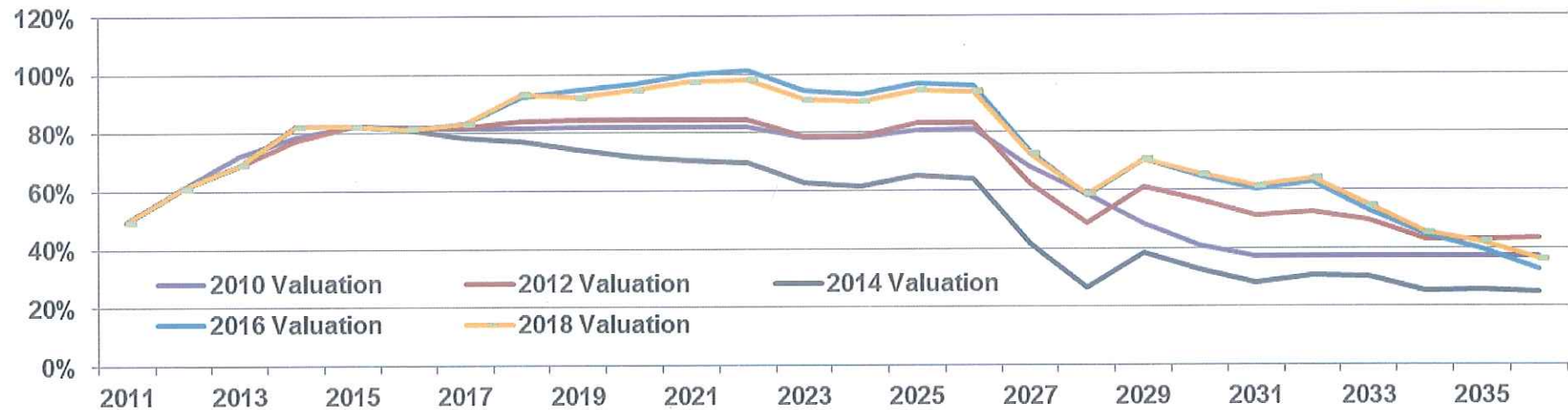
Projected City Contribution Amounts From Historical Valuations

Legend:
- 2010 Valuation
- 2012 Valuation
- 2014 Valuation
- 2016 Valuation
- 2018 Valuation

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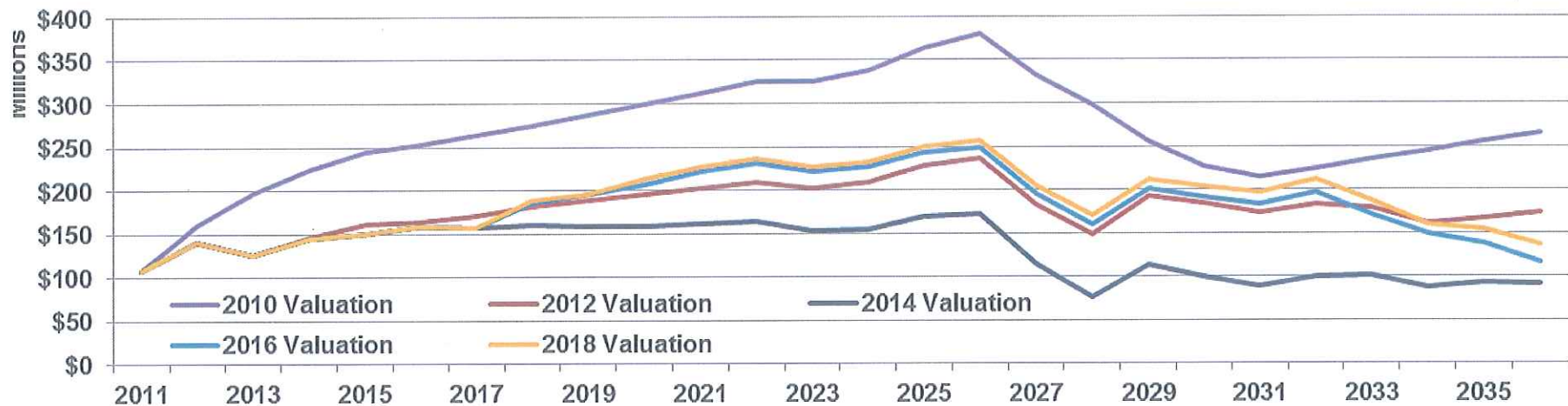
Tier 1 City Contribution Amounts
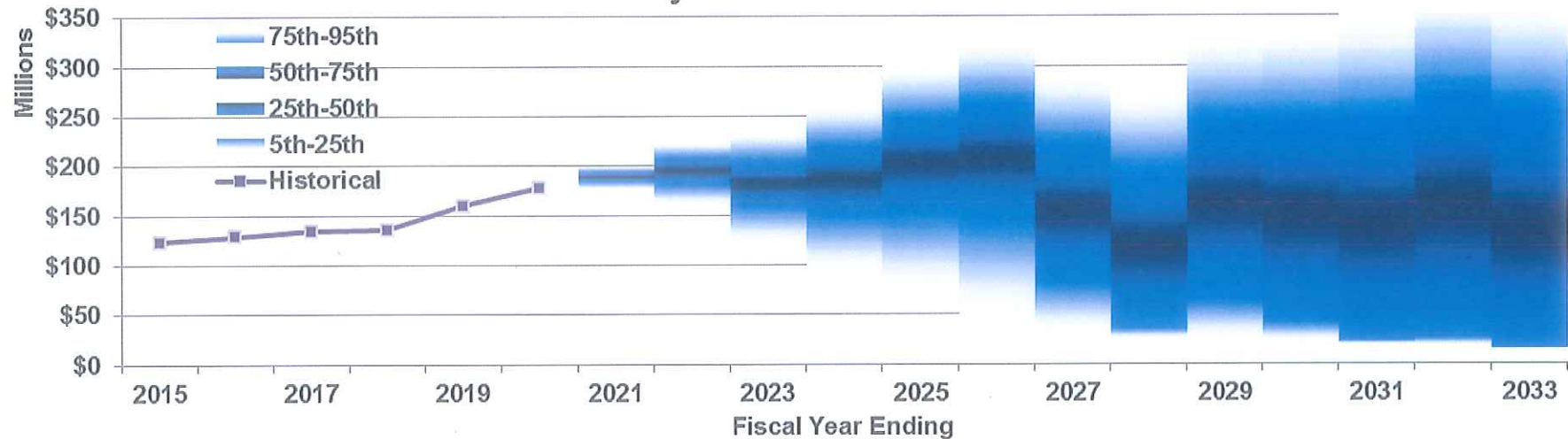
Tier 2 City Contribution Amounts
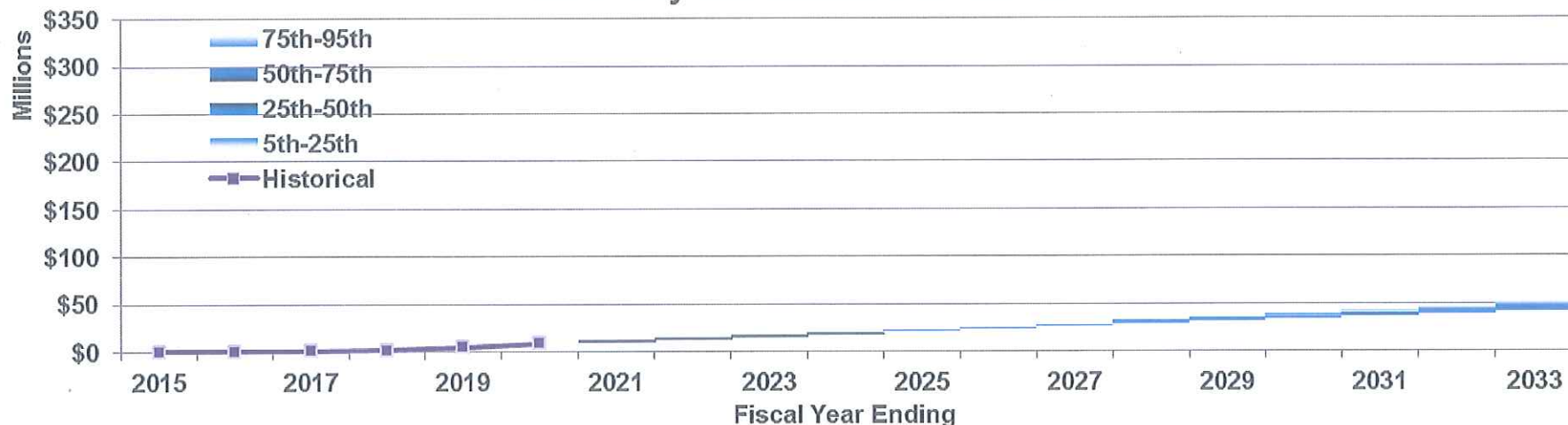
- Retirement costs have increased significantly as a share of the budget (over 25% of General Fund)
- Measure F addressed ongoing structural issues. Remaining concern is the continued rising payments on the Tier 1 UAL
  - 4-year projected revenue growth = 2.85% per year
  - 4-Year projected pension contribution growth = 4.5% per year
- Believes the projections are overly optimistic
  - Expected investment returns
  - Assumption changes

Pension Contributions vs. City Revenue

Cheiron's Survey California Public Retirement Systems

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Distribution of MVA Funded Status
Cheiron Survey of CA Systems

Legend: ■ Min to 25th ■ 25th to 50th ■ 50th to 75th ■ 75th to Max ◆ P&F ◇ Fed

Years: 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Y-axis: 40%, 60%, 80%, 100%, 120%, 140%
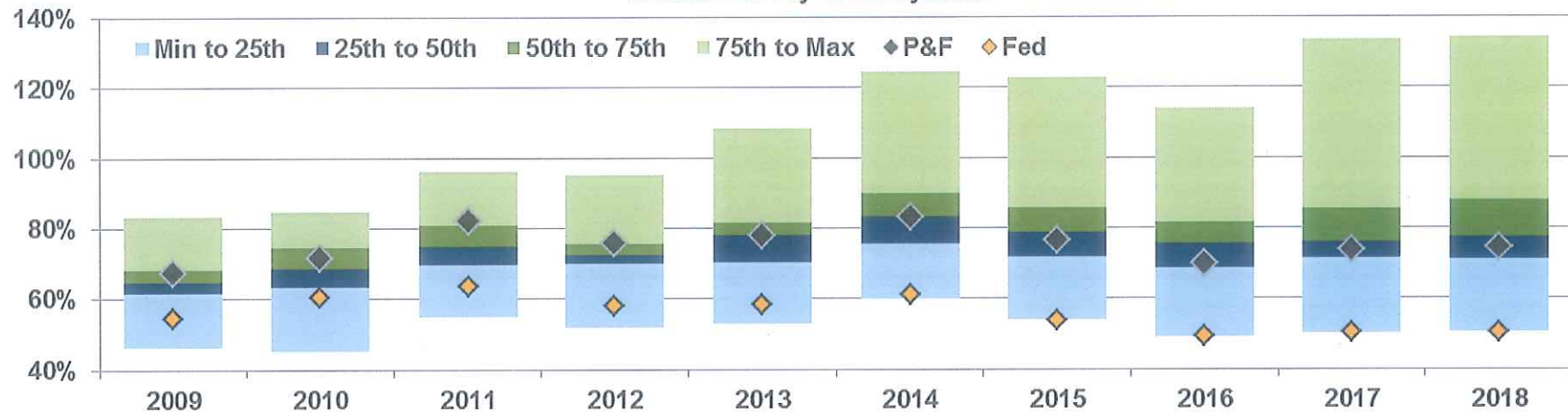
2018 Funded Status – Highest and Lowest

System	Funded %	System	Funded %
Fresno Fire & Police	135%	Merced County	63%
Fresno Employees	129%	Golden Gate Transit	58%
LA Fire & Police	96%	San Diego Transit	55%
Sonoma County	94%	San José Federated	50%

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Survey – Interest Cost

Distribution of Interest Cost Rates
Cheiron Survey of CA Systems

Legend: ■ Min to 25th ■ 25th to 50th ■ 50th to 75th ■ 75th to Max ◆ City of San Jose Police & Fire
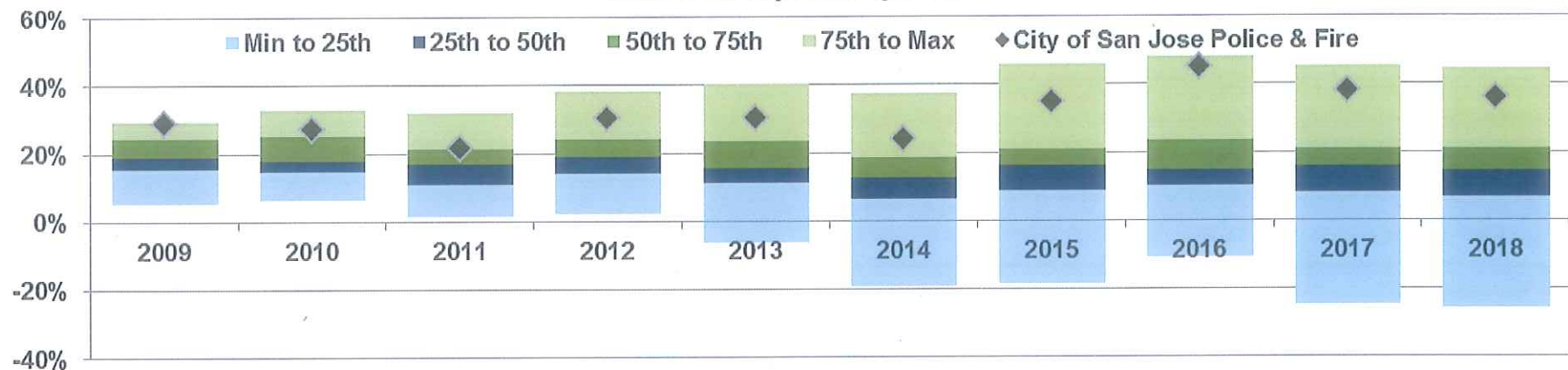
2018 Interest Cost Rates – Highest and Lowest

System	Interest Cost	System	Interest Cost
San José Federated	44%	Los Angeles F&P	4%
San Diego City	38%	Sonoma County	3%
San José P&F	36%	Fresno City	-16%
San Diego Transit	34%	Fresno P&F	-26%

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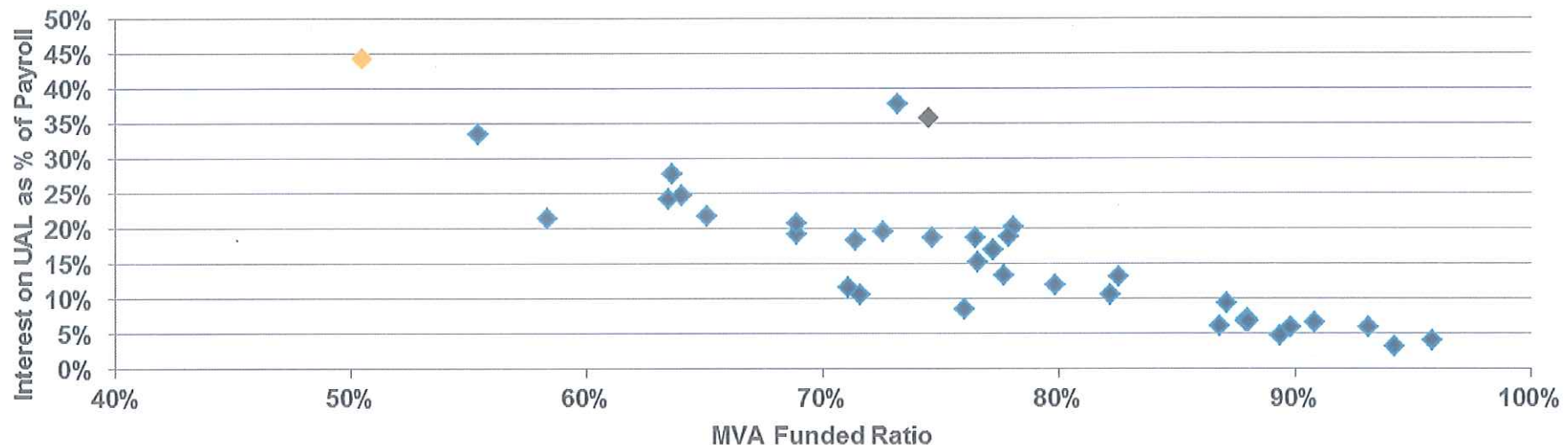
- Funding ratio measures the proportion of the funding target currently in the trust

- Interest cost measures the burden of the UAL

- Plans that are large relative to payroll will have a larger interest cost for the same funded ratio

Survey – Discount Rates

Discount Rate Assumptions
Cheiron Survey of CA Systems

Legend: Min to 25th | 25th to 50th | 50th to 75th | 75th to Max | ◆ P&F

Years: 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018

2018 Valuation Discount Rates

Discount Rate	Number of Plans
6.5%	1
6.75%	3
7.0%	13
7.125%	1
7.25%	20
7.40%	1

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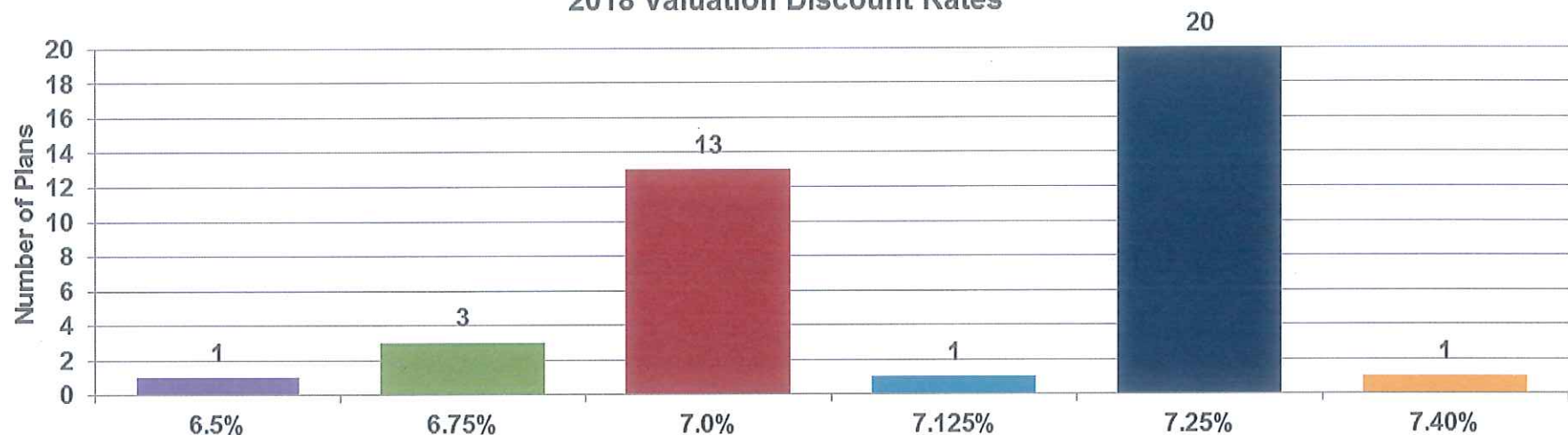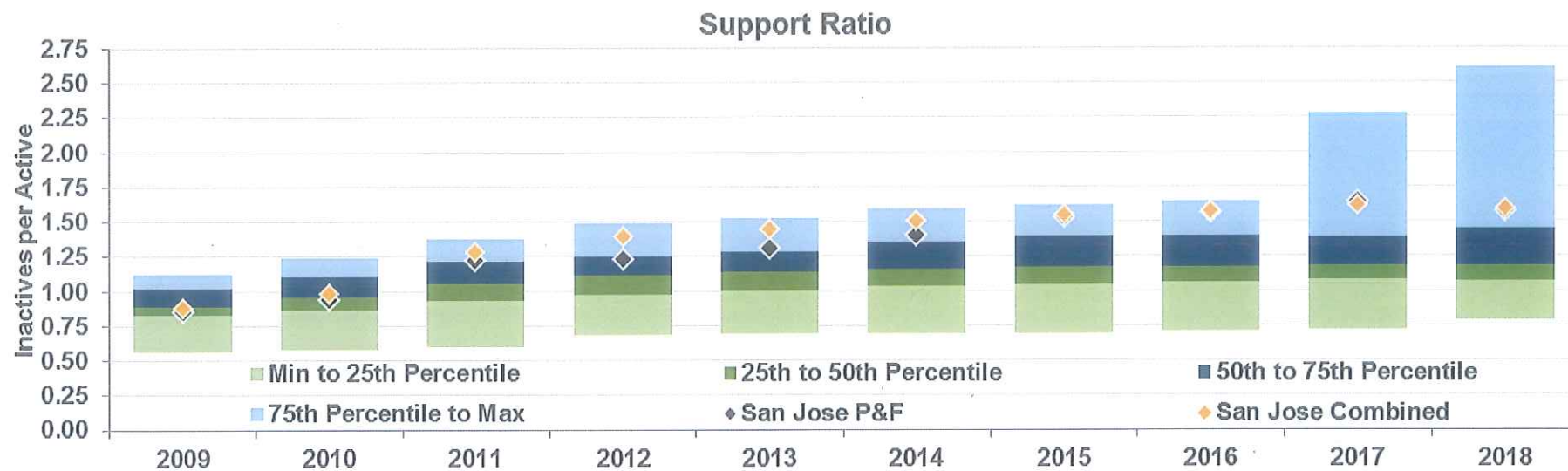
Support Ratio

2018 Support Ratio – Highest and Lowest			
System	**Ratio**	**System**	**Ratio**
San Diego Transit	2.61	Los Angeles Fire & Police	1.00
San Diego City	2.17	San Bernardino County	0.88
Mendocino County	1.71	Los Angeles County	0.81
San José Federated	1.59	Imperial County	0.78

Survey – Asset Leverage Ratio

Asset Leverage Ratio

Legend	
■ Min to 25th Percentile	■ 25th to 50th Percentile
■ 50th to 75th Percentile	■ 75th Percentile to Max
◆ San Jose P&F	◆ San Jose Combined
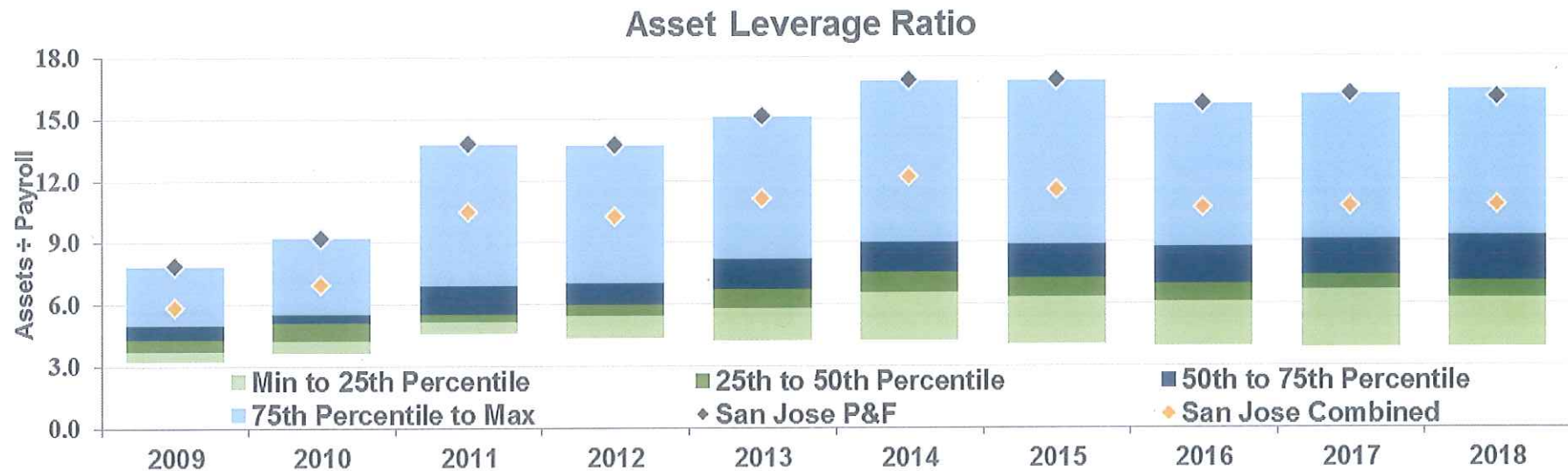
2018 Asset Leverage Ratio – Highest and Lowest

System	Ratio	System	Ratio
San Diego City	16.4	Golden Gate Transit	4.4
San José P&F	16.0	Sacramento Transit	4.1
Fresno Fire and Police	14.4	Valley Transit	4.0
LA Fire & Police	13.2	AC Transit	3.9

Actuarial Liability Leverage Ratio

Legend:
- Min to 25th Percentile
- 25th to 50th Percentile
- 50th to 75th Percentile
- 75th Percentile to Max
- San Jose P&F
- San Jose Combined

X-axis: 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018

Y-axis: Actuarial Liability ÷ Payroll (0.0 to 24.0)

2018 Liability Leverage Ratio – Highest and Lowest			
System	Ratio	System	Ratio
San Diego City	22.4	Tulare County	6.3
San José P&F	21.5	Sacramento Transit	5.7
LA Fire & Police	13.8	AC Transit	5.4
Fresno County	13.6	Valley Transit	5.2

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Net Cash Flow

Legend: Min to 25th Percentile, 25th to 50th Percentile, 50th to 75th Percentile, 75th Percentile to Max, San Jose P&F

Years: 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018

Projected Net Cash Flow
% of Beginning Assets

Legend: Members, City, Benefits, Admin Expenses, Net

Net values by year:
- 2020: -0.9%
- 2021: -0.6%
- 2022: -0.6%
- 2023: -0.7%
- 2024: -1.2%
- 2025: -1.4%
- 2026: -1.3%
- 2027: -1.4%
- 2028: -2.6%
- 2029: -3.3%
- 2030: -2.7%
- 2031: -3.0%
- 2032: -3.1%
- 2033: -3.0%
- 2034: -3.4%
- 2035: -3.9%
- 2036: -4.0%
- 2037: -4.3%
- 2038: -4.5%
- 2039: -4.5%
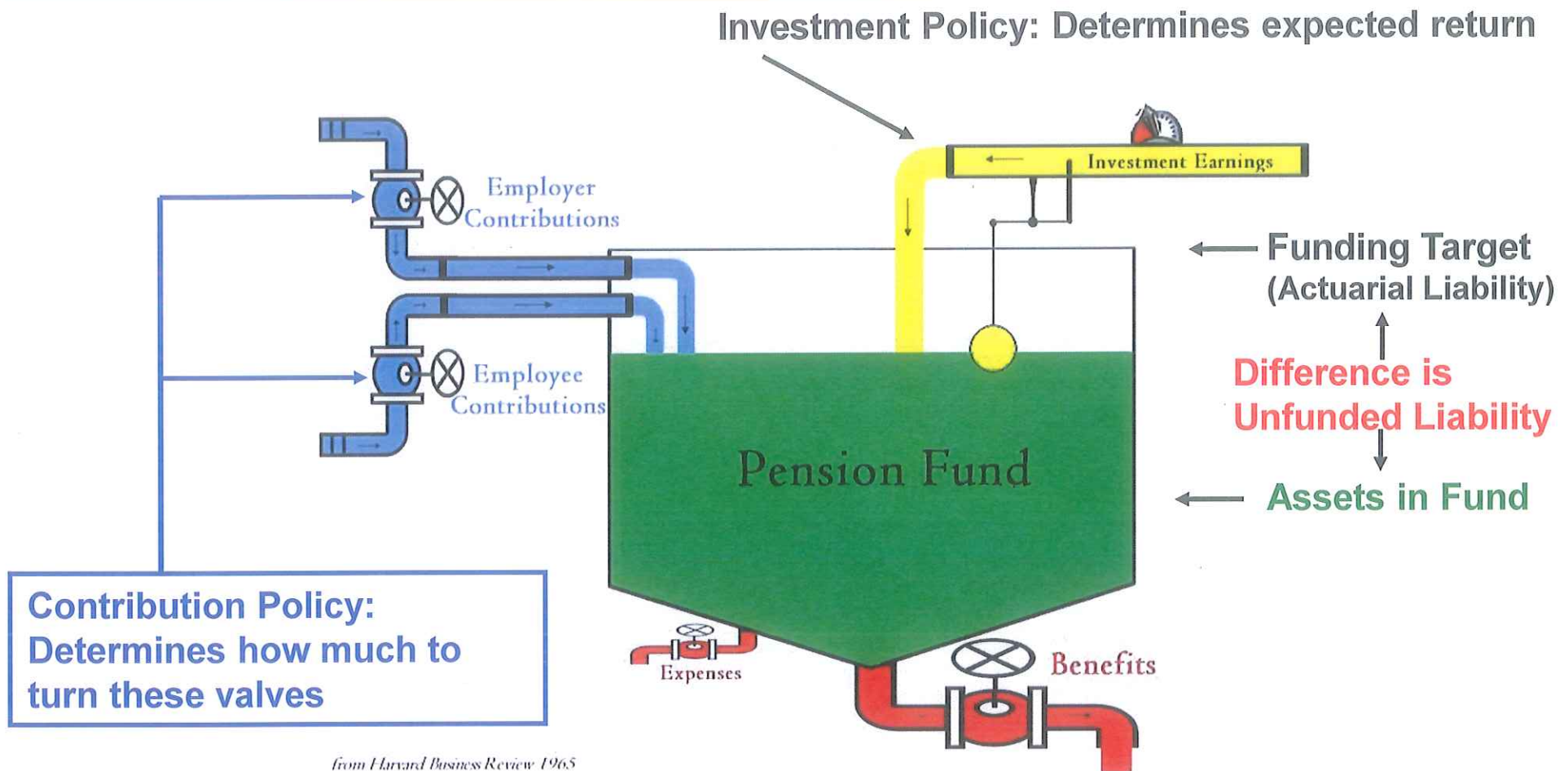- 2040: -4.3%

Contribution Policy

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Funding Strategy

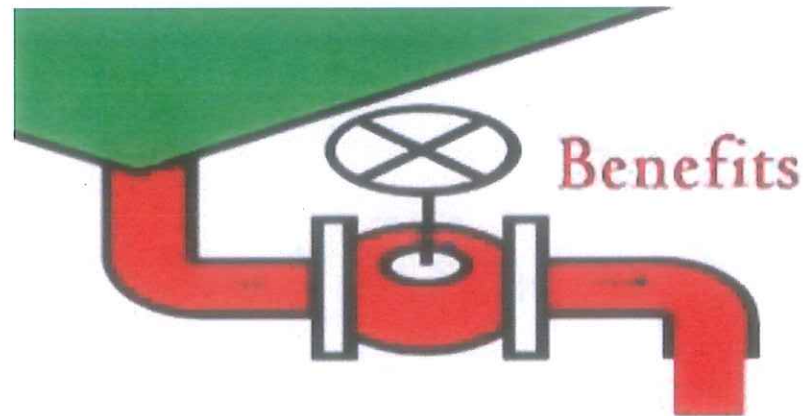The objective of a _**funding strategy**_ is to ensure there are enough assets to pay for promised benefits when they become due.


Investment Policy: Determines expected return

Employer Contributions

Employee Contributions

Investment Earnings

Pension Fund

Funding Target (Actuarial Liability)

Difference is Unfunded Liability

Assets in Fund

Expenses

Benefits

Contribution Policy: Determines how much to turn these valves

from Harvard Business Review 1965

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- The Plan Sponsor agrees to provide certain benefits to their Members

- Board is responsible for establishing a funding strategy to pay for these benefits
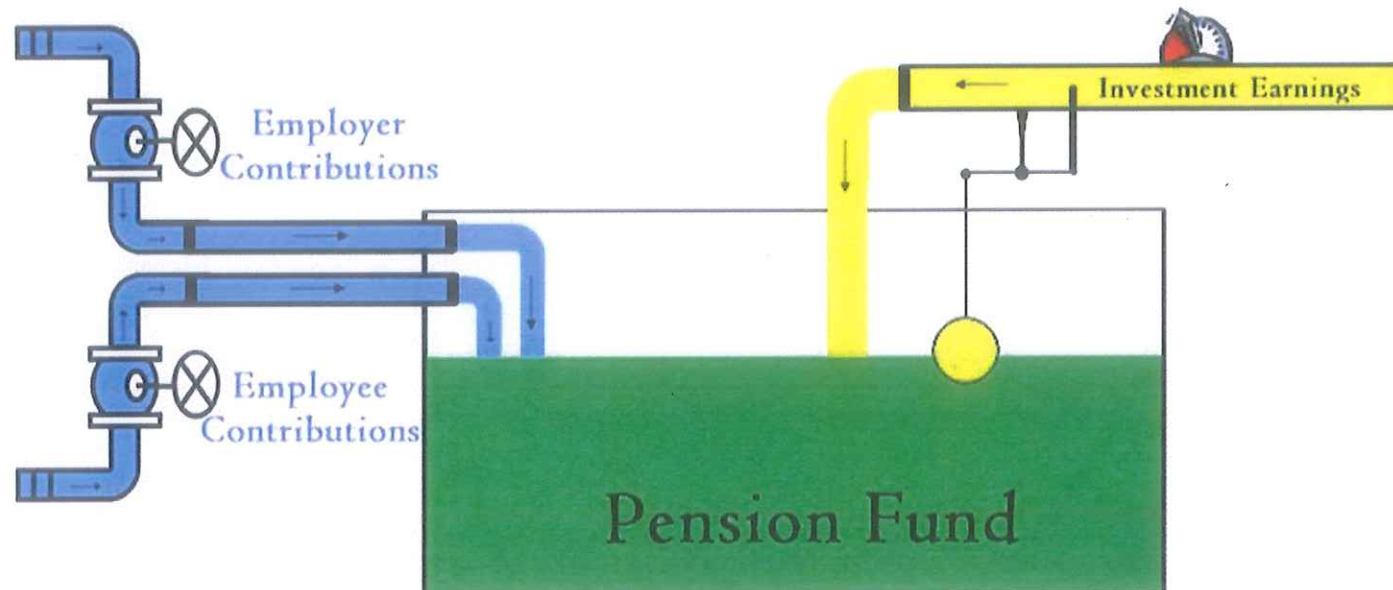
Pension Fund

Expenses

Benefits
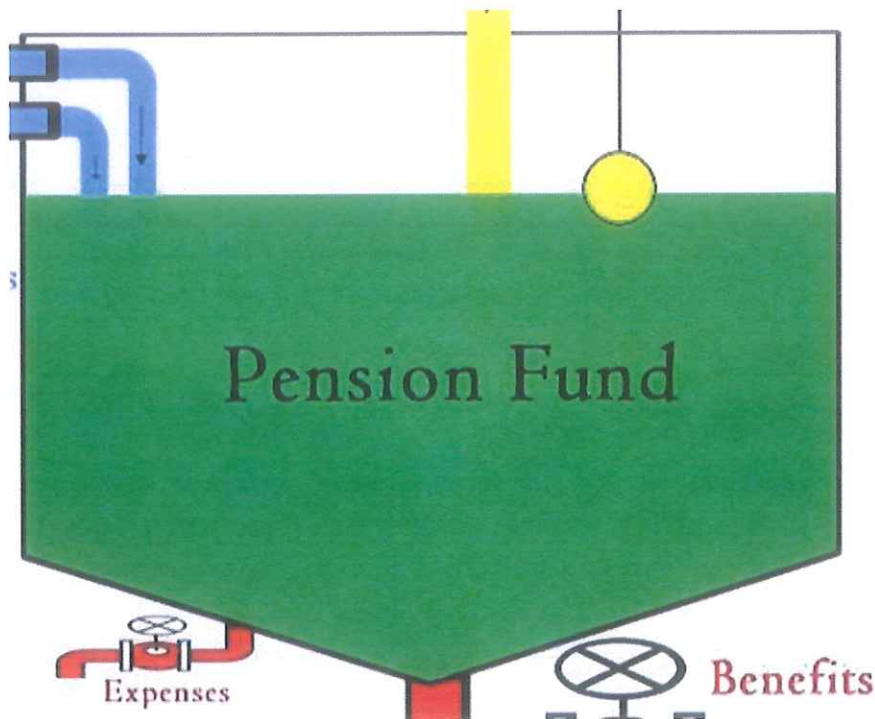
What determines the liability?

- **Actuarial Cost Method**
  - Projected Unit Credit
  - Entry Age Normal

- **Actuarial Assumptions**
  - Economic Assumptions
    - Investment Return

  - Demographic Assumptions
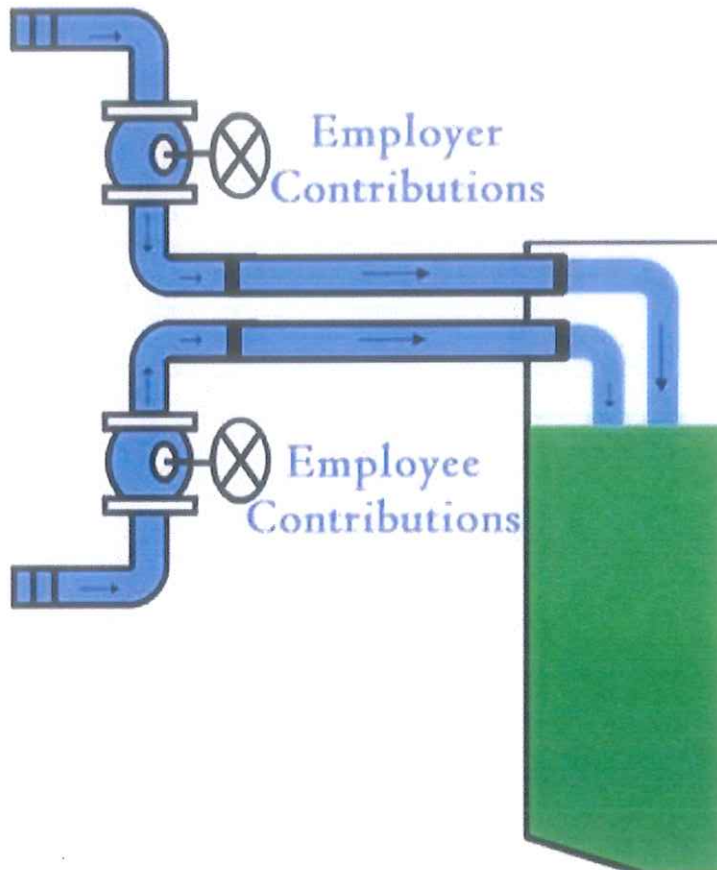
- **Investment Earnings**
  - Driven by the investment policy
  - Investment expenses expected to be paid from investment earnings
- **Contributions**
  - Approved by Board and guided by professional standards
  - Employer and Employee

Components of Contribution

- *Total Normal Cost*
  - Determined by **Actuarial Cost Method**
- *Administrative Expenses*
- *Amortization Payment of Unfunded Actuarial Liability (UAL)*
  - **Amortization Periods**
  - **Open or Closed**
  - **Level % or Level $**
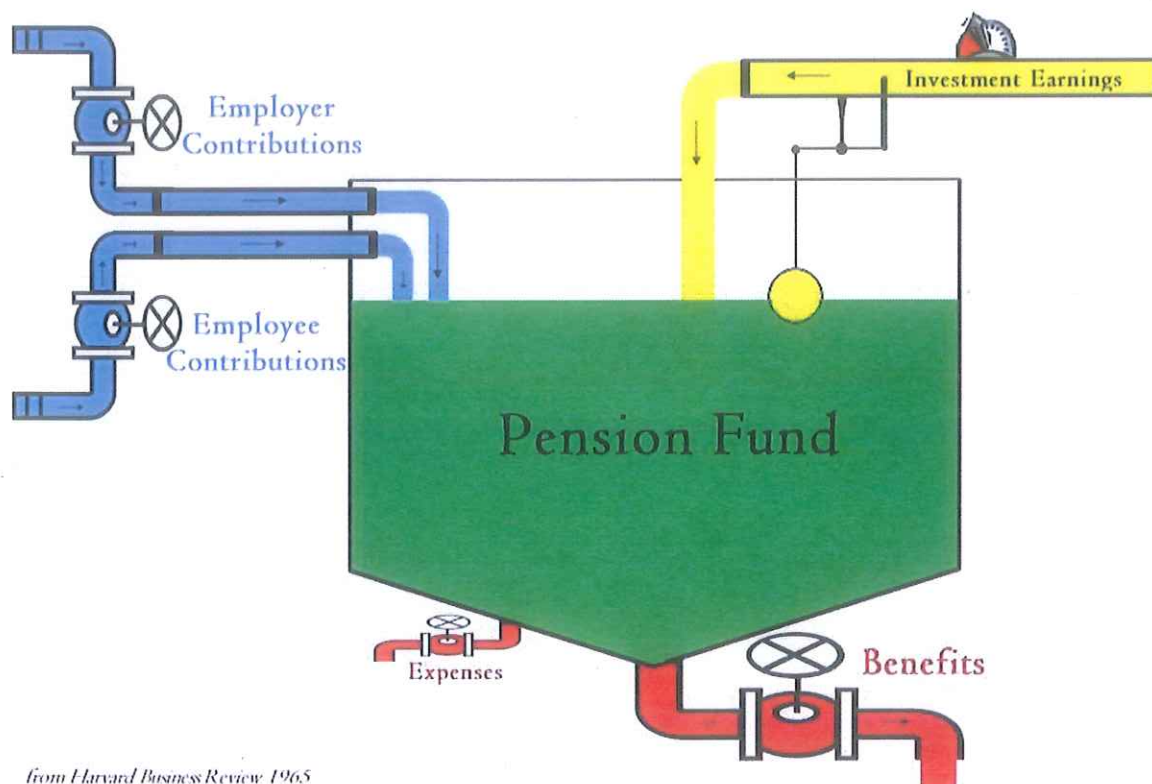
from Harvard Business Review 1965

- *Actuarial Cost Method*

- *Asset Smoothing Method*

- *Amortization of UAL*
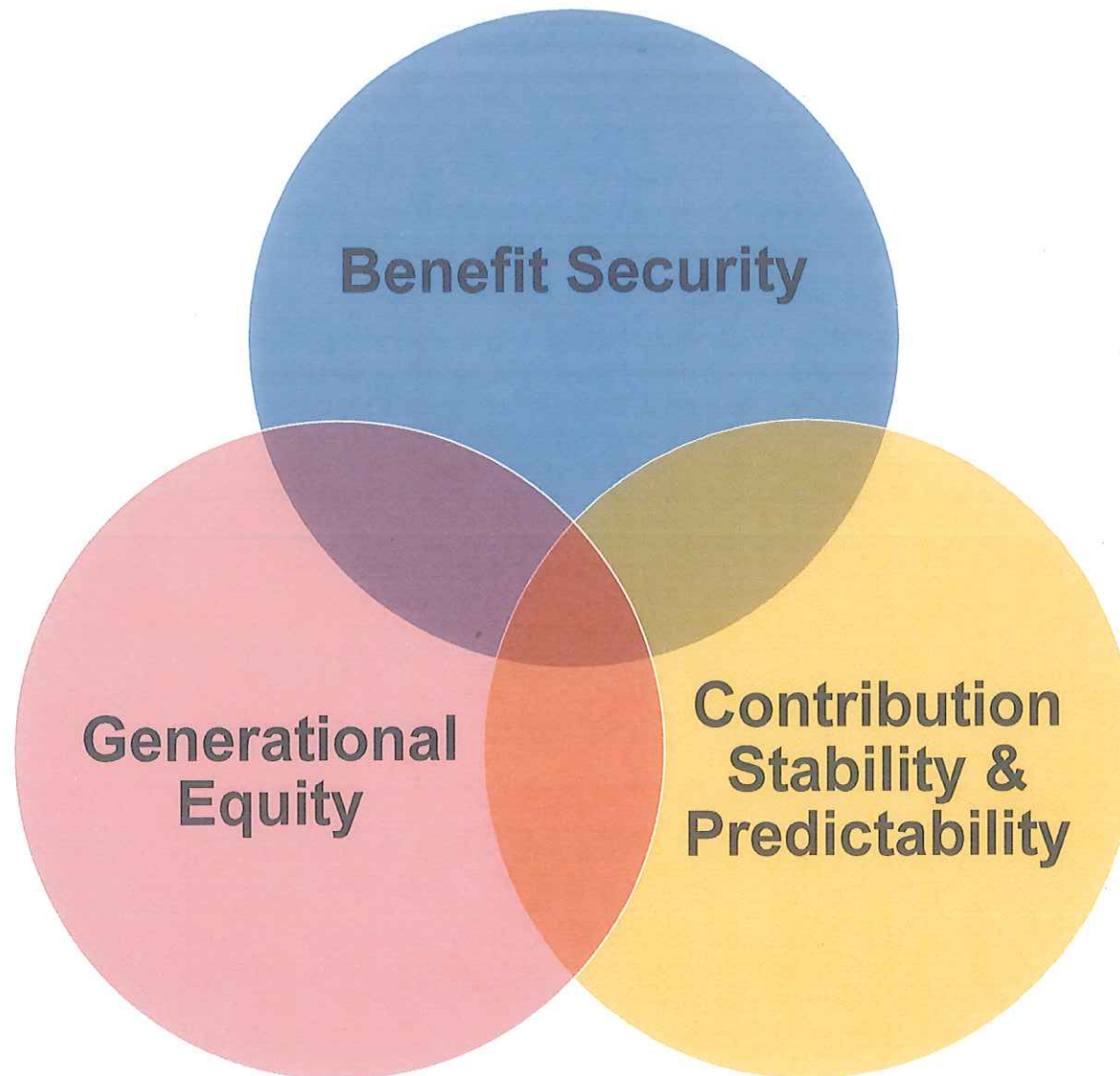
- *Actuarial Assumptions*

- Accumulate assets by retirement
  - Individual actuarial cost methods are designed to accumulate assets over each employee's career to pay for that employee's retirement benefits
  - Entry age method spreads costs as a level percentage of payroll
- Adjustments for unexpected experience
  - Amortization methods
  - Asset smoothing methods
  - Other direct rate smoothing methods

Contribution Calculations
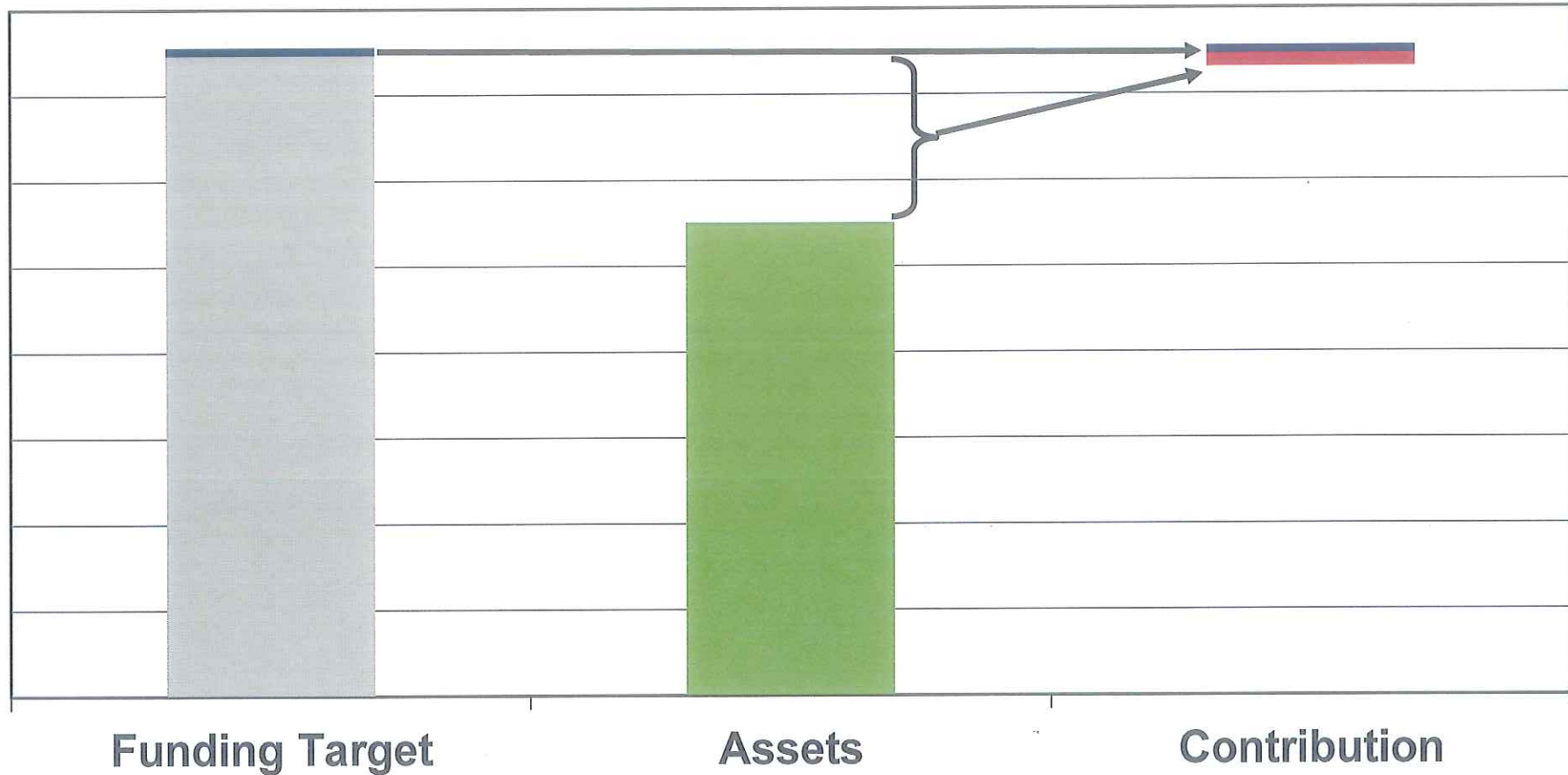
- Select an ultimate discount rate, or

- Continue to consider gradual reductions each year?

Establishing a Funding Target

Total Projected Benefits Attributable to Past Service

Funding Target	Risk Premium Return	Risk-Free Return
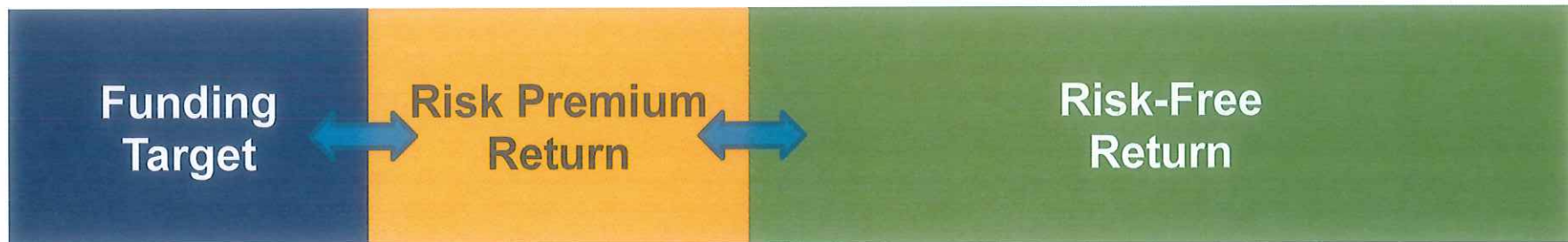
- Funding Target =
  - ❑ Total Benefits – Expected Investment Income
- Expected Investment Income =
  - ❑ Risk-Free Return + Expected Risk Premium Return
- Market sets the risk-free return
- Changing the discount rate shifts the expected source of funding between the Funding Target and the Expected Risk Premium Return
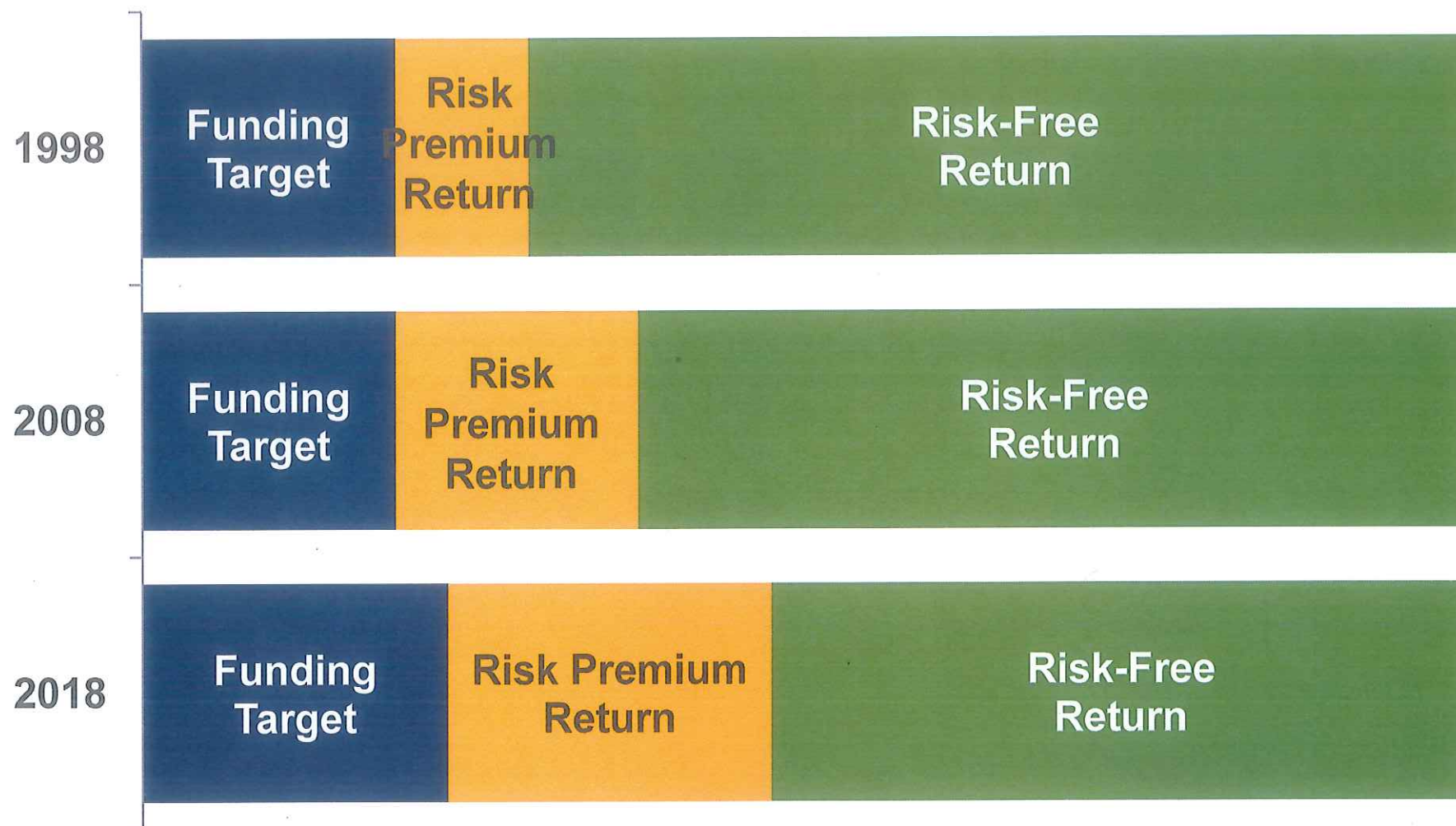
Discount Rate Impact

Discount Rate Change Impact FYE 2020 Total Plan Contributions (percentage chart)

City Total 82.6% (at 6.75%):
- UAL Principal 21.6%
- Int on UAL 33.9%
- City Normal Cost 27.1%
- Member 11.9%

City Total 107.6% (at 5.75%):
- UAL Principal 25.8%
- Int on UAL 47.5%
- City Normal Cost 34.4%
- Member 15.4%

Discount Rate: 6.75% | 5.75%

Discount Rate Change Impact FYE 2020 Total Plan Contributions (Millions chart)

City Total $186.3 (at 6.75%):
- UAL Principal $53.9
- Int on UAL $76.4
- City Normal Cost $56.0
- Member $26.9

City Total $242.7 (at 5.75%):
- UAL Principal $63.2
- Int on UAL $107.1
- City Normal Cost $72.4
- Member $34.7
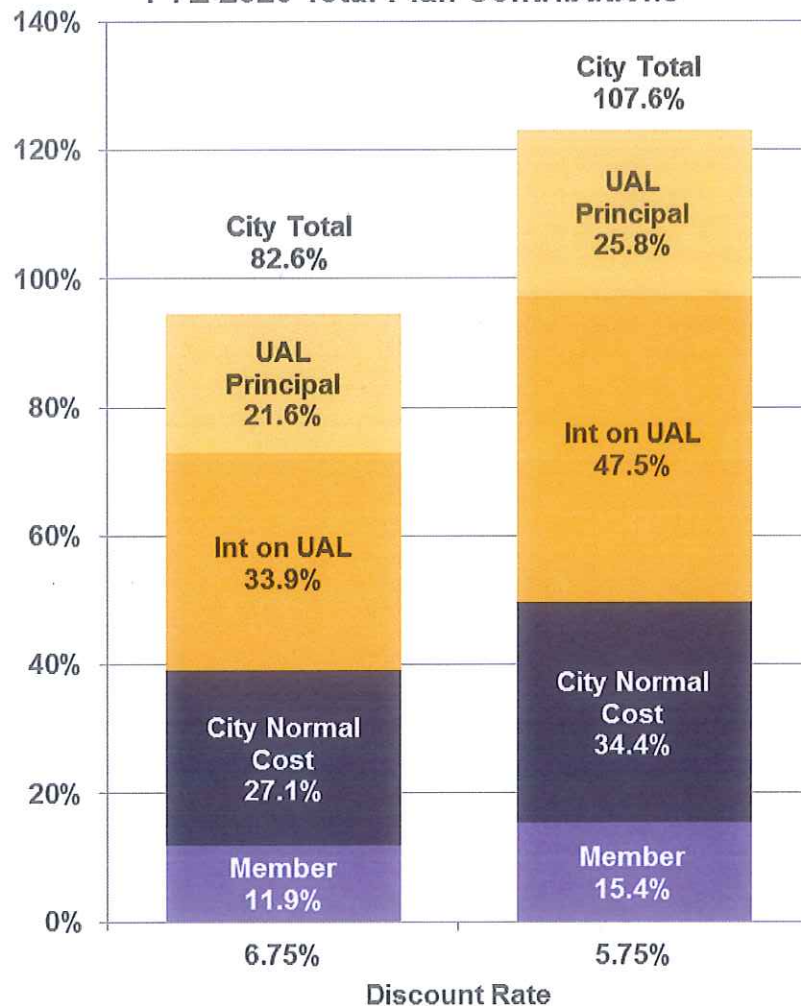
Discount Rate: 6.75% | 5.75%
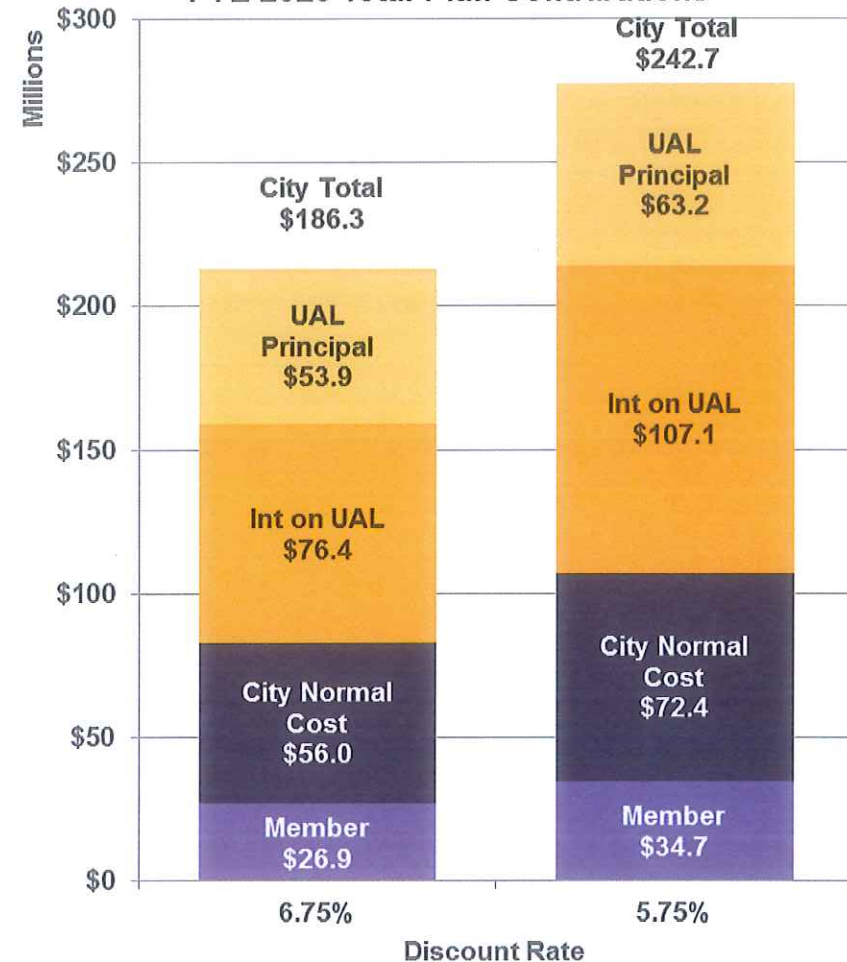
Discount Rate

Expected Distribution of Average Annual Passive Returns

Percentile	Time Horizon	
	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%

Distribution of investment returns is based on San José Police & Fire Department Retirement Plan's asset allocation and Meketa's 2018 forward-looking capital market assumptions

- There is a significant difference between 10 and 20-year expectations
- Which should we use?
- Basis for capital market assumptions (verify with Meketa)
  - 10-year expectations are developed based on current market conditions
  - 20-year expectations are a blend of 10-year expectations and historical norms

Projected Benefit Payments

Projected Benefit Payments for Current Members
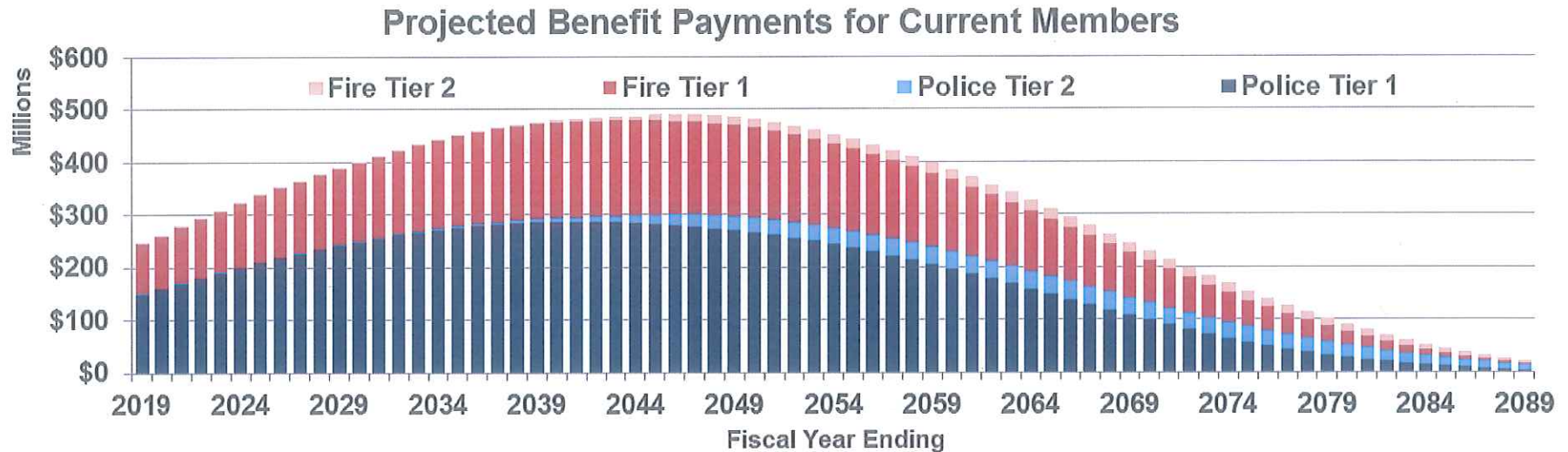
- Benefit payments for current members are projected to be paid out for more than 70 years
- Present value of benefit payments is much more heavily weighted to the early years
  - 40% of present value is paid out in the next 10 years
  - 70% of present value is paid out in the next 15 years
  - 80% of present value is paid out in the next 20 years

Projections – 6% vs. 7% Returns

Projected Funded Ratio
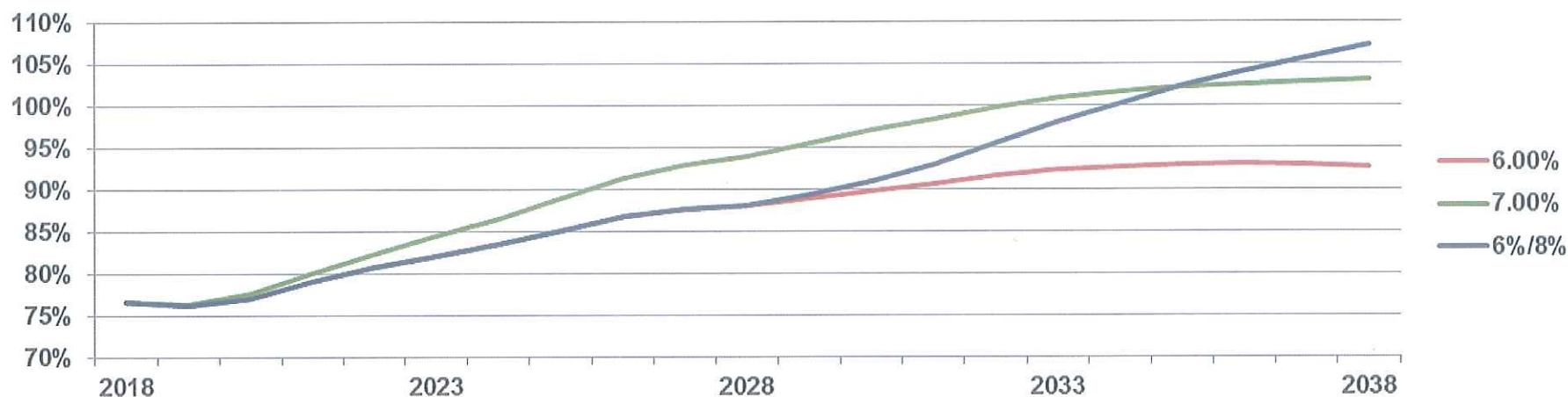
Projected Tier 1 Contributions

Funding Target

Billions

- $5.2 at 6.00%
- $5.0 at 6.25%
- $4.9 at 6.50%
- $4.7 at 6.75%
- $4.5 at 7.00%

Discount Rate

Member Rates by Tier

Tier 1 ■ Tier 2

- 6.00%: Tier 1 13.3%, Tier 2 17.5%
- 6.25%: Tier 1 12.5%, Tier 2 16.4%
- 6.50%: Tier 1 11.7%, Tier 2 15.4%
- 6.75%: Tier 1 11.0%, Tier 2 14.4%
- 7.00%: Tier 1 10.4%, Tier 2 13.5%
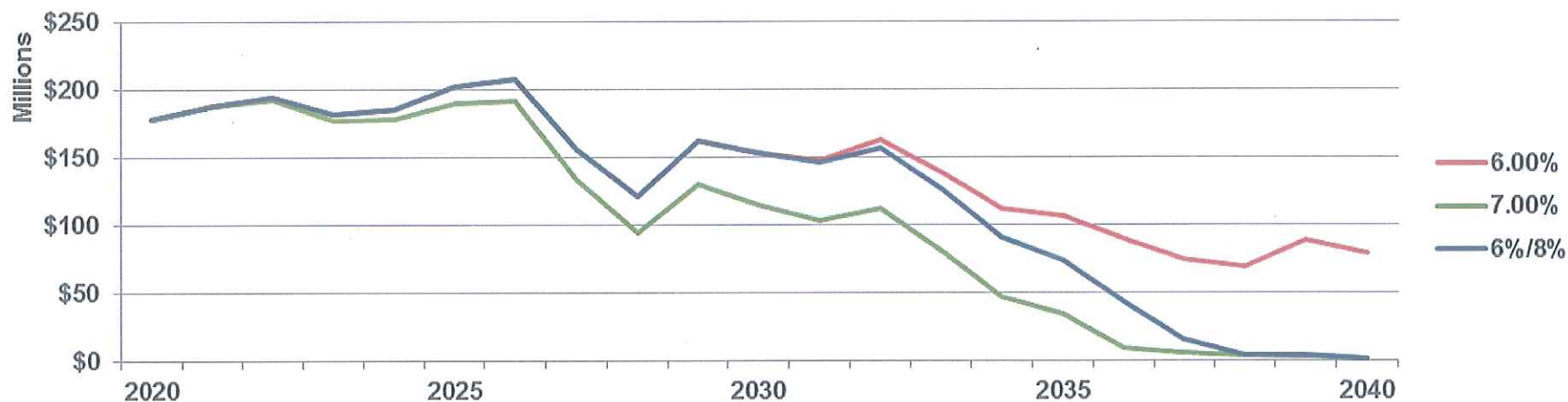
Discount Rate
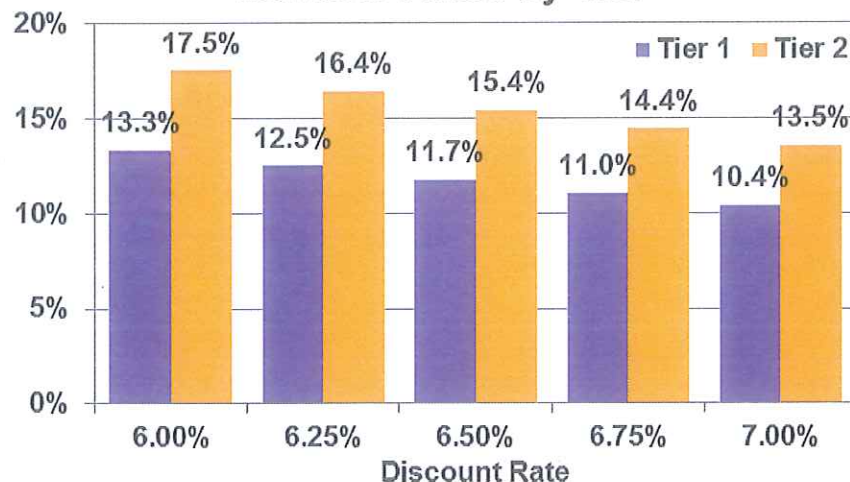
- **Establishes funding target. Continued tweaks:**
  - Change the goal
  - Make it hard to communicate expectations

- **Affects member contribution rates. Significant changes are hard adjustments**

Asset Smoothing

- Since investment returns can be particularly volatile from year-to-year, one technique used to stabilize contribution rates is to smooth asset values

- Objective is to smooth out short-term volatility while reflecting long-term trends

- Variety of methods used, but there are two key parameters
  - Length of smoothing period
  - Corridor limit on variation from market value

- Police & Fire uses a 5-year smoothing period with an 80%/120% corridor
  - Corridor prevents smoothed value from being too far from market value
  - As long as the smoothing period is reasonably short, no corridor is required
  - When outside the corridor, the smoothing method actually increases volatility

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Asset Smoothing

Development of Actuarial Value of Assets

		2014		2015		2016		2017		2018		Total
Market Value of Assets											$	3,496,190
Earnings		**2014**		**2015**		**2016**		**2017**		**2018**		**Total**
Actual	$	404,979	$	(27,690)	$	(29,206)	$	292,733	$	233,474	$	874,291
Expected		202,301		225,302		221,094		212,514		230,741		1,091,952
Gain or (Loss)	$	202,678	$	(252,992)	$	(250,300)	$	80,220	$	2,733	$	(217,661)
Deferred %		0%		20%		40%		60%		80%		
Deferred Amount	$	0	$	(50,598)	$	(100,120)	$	48,132	$	2,187	$	(100,400)
Preliminary Actuarial Value of Assets											$	3,596,590
Minimum (80% of Market Value)												2,796,952
Maximum (120% of Market Value)												4,195,428
Final Actuarial Value of Assets											$	**3,596,590**

Amounts in Thousands

Actuarial vs. Market Value of Assets

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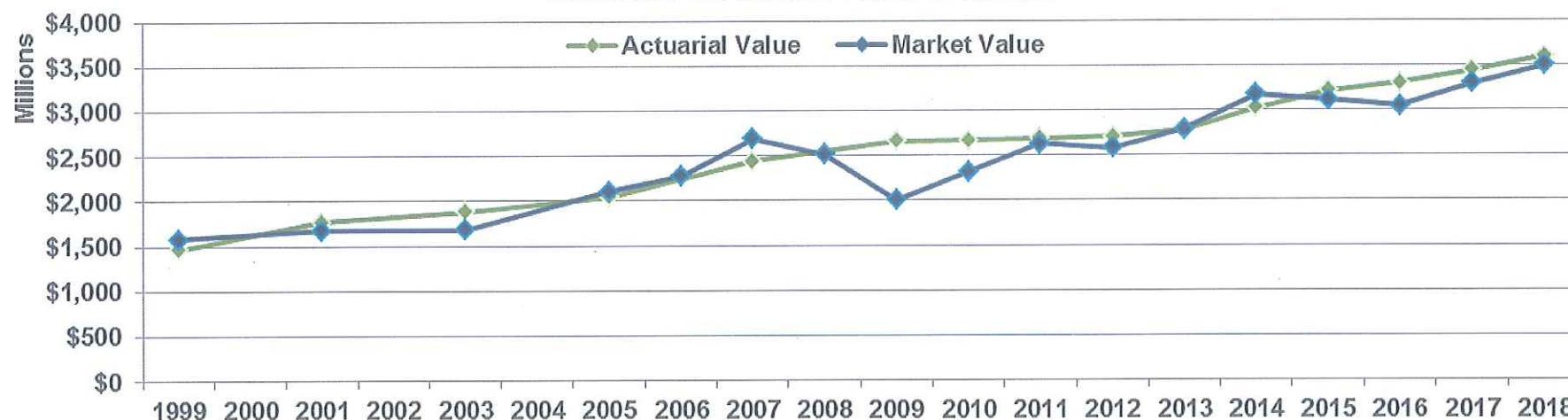
Should the Board:

- Continue to target contributions as a
  - Level percentage of total payroll,
  - Level percentage of city revenue, or
  - Level dollar amount?

- Actively smooth short-term fluctuations in contributions or significant declines in contributions?

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Amortization Method

- Each year we identify the new components of the UAL to be amortized
    - Gains or losses are amortized over 15 years
    - Assumption changes are amortized over 20 years
- All amortization payments increase 3.25% per year
    - Targeted to remain a level percentage of expected payroll
    - Some trend to target a lower rate or level dollar amount
        - Projected revenue growth
        - Inflation
    - Lower increase rate produces higher initial payments, but more likely to not increase as a percent of payroll

2018 Amortization Layers

Amortization Layers Established with 2018 Valuation
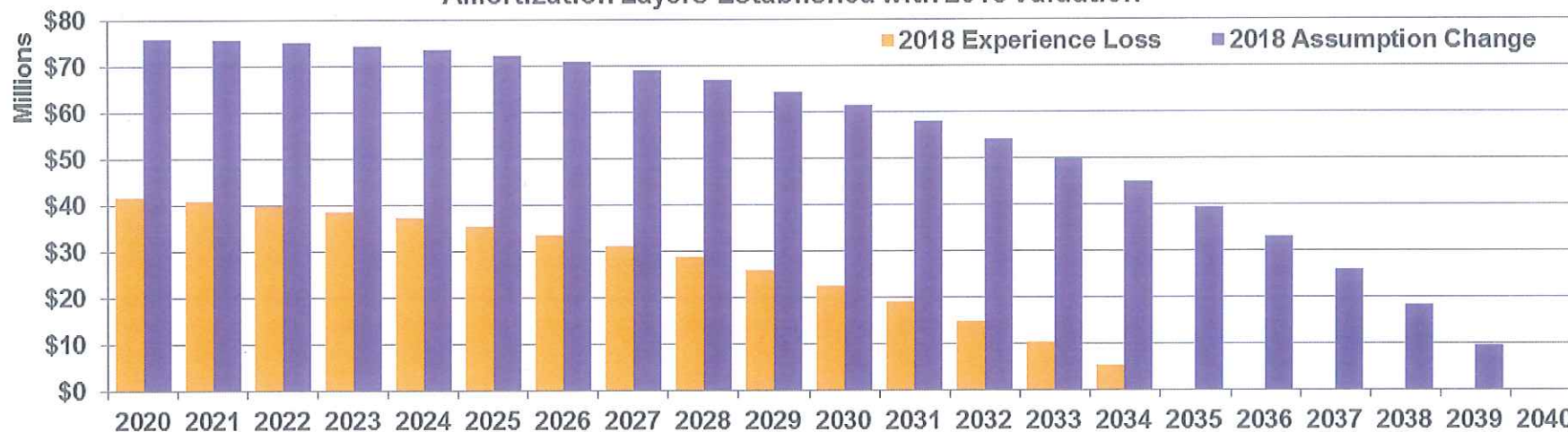
Amortization Payments Established with 2018 Valuation

Tier 1 UAL Amortization Bases and Payments

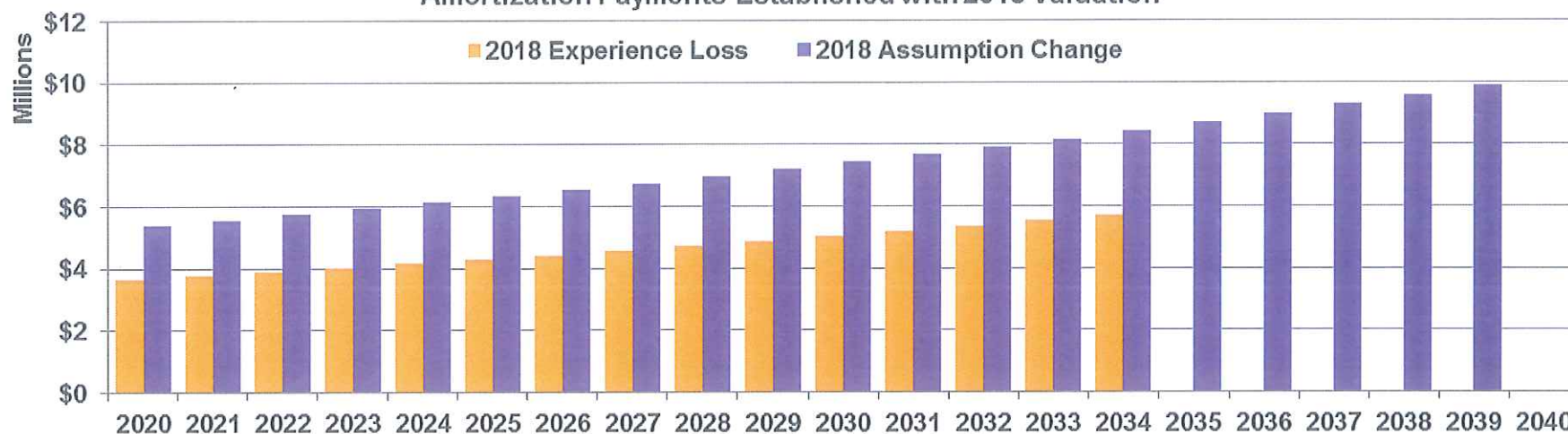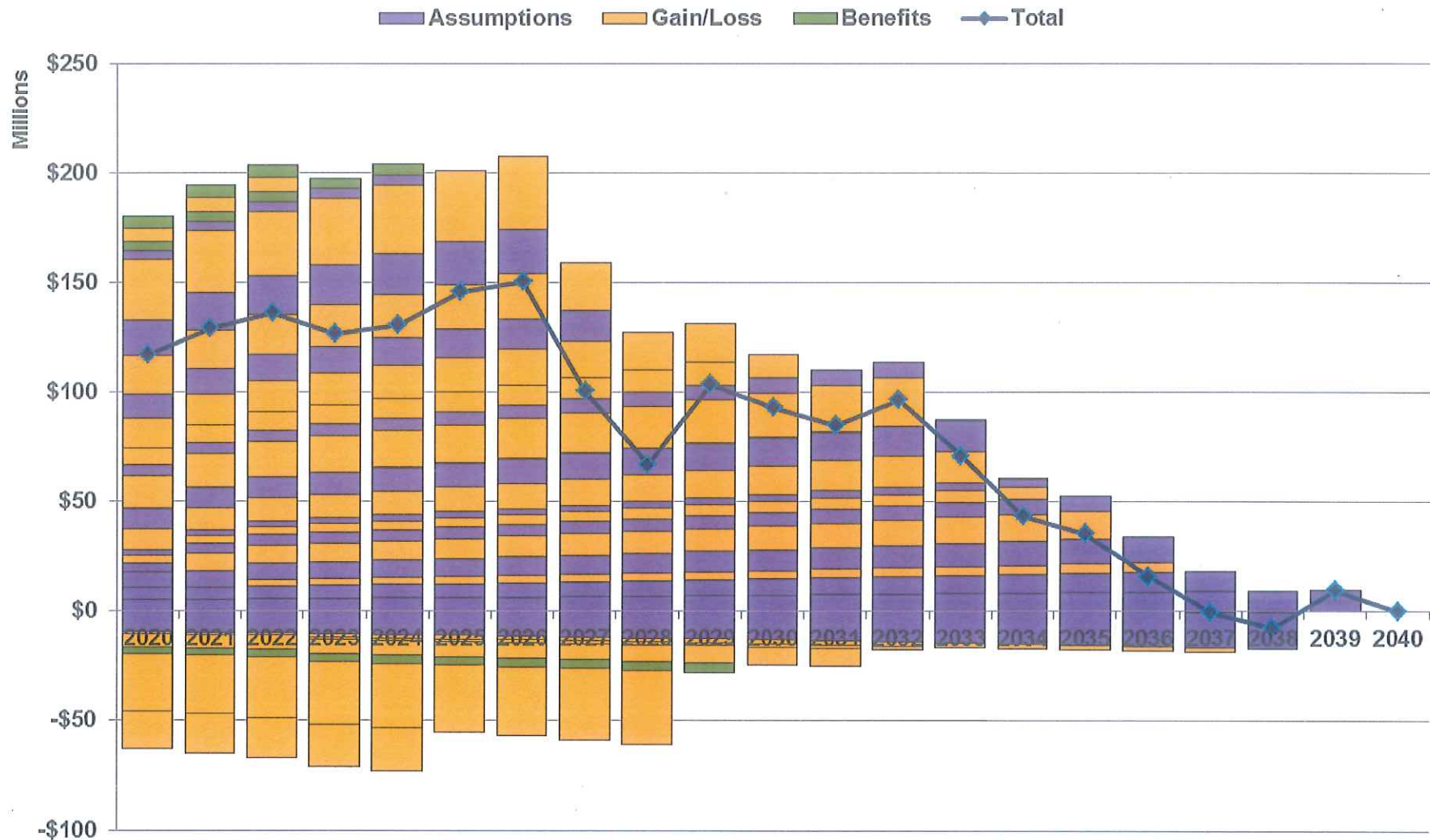| Source	Date	Balance Total	Remaining Period	Amortization Payment Fire	Police	Total
City						
Experience Loss	6/30/2005	$ 17,710	3.0	$ 2,867	$ 3,646	$ 6,513
Ben Improvement	6/30/2005	14,506	3.0	0	5,335	5,335
Ben Improvement	6/30/2007	18,972	5.0	4,325	0	4,325
Experience Gain	6/30/2007	(79,185)	5.0	(7,946)	(10,105)	(18,051)
Assumption Change	6/30/2007	18,409	5.0	1,847	2,349	4,197
Experience Loss	6/30/2009	169,113	7.0	12,518	15,921	28,439
Assumption Change	6/30/2009	100,938	7.0	7,472	9,503	16,974
Experience Loss	6/30/2010	119,170	8.0	7,843	9,975	17,818
Assumption Change	6/30/2010	78,028	8.0	5,135	6,531	11,666
Experience Gain	6/30/2011	(198,474)	9.0	(11,797)	(15,003)	(26,800)
Assumption Change	6/30/2011	51,014	13.0	2,235	2,842	5,077
Experience Loss	6/30/2012	111,804	10.0	6,076	7,727	13,803
SRBR Elimination	6/30/2012	(27,267)	10.0	(1,482)	(1,885)	(3,366)
Assumption Change	6/30/2012	100,941	14.0	4,170	5,303	9,473
Experience Loss	6/30/2013	71,333	11.0	3,580	4,553	8,133
Assumption Change	6/30/2013	26,942	15.0	1,055	1,342	2,396
Experience Gain	6/30/2014	(57,960)	12.0	(2,708)	(3,444)	(6,153)
Assumption Change	6/30/2014	54,014	16.0	2,013	2,560	4,573
Experience Gain	6/30/2015	(9,535)	13.0	(418)	(531)	(949)
Assumption Change	6/30/2015	88,247	17.0	3,143	3,997	7,139
Experience Gain	6/30/2016	154,038	13.0	6,748	8,582	15,330
Assumption Change	6/30/2016	71,806	18.0	2,452	3,118	5,570
Measure F (Rehires)	6/30/2016	2,985	14.0	38	242	280
Experience Loss	6/30/2017	105,326	14.0	4,351	5,534	9,885
Assumption/Method Change	6/30/2017	(130,675)	19.0	(4,291)	(5,457)	(9,747)
Measure F (Classic/Fed)	6/30/2018	95	15.0	1	8	8
Experience Loss	6/30/2018	41,722	15.0	1,634	2,077	3,711
Assumption/Method Change	6/30/2018	75,863	20.0	2,402	3,055	5,456
7/1 UAL Payment		108,987				
Total City		$ 1,098,869		$ 53,263	$ 67,774	$ 121,037

Dollar amounts in thousands

April 15, 2019

Tier 1 Amortization Payments

Amortization Adjustments

Adjusting Amortizations to Smooth Contribution Rates

■ Current ■ Smoothed

Year	Current	Smoothed
2020	83%	83%
2021	85%	85%
2022	86%	86%
2023	79%	84%
2024	78%	79%
2025	81%	78%
2026	81%	78%
2027	59%	72%
2028	45%	60%
2029	57%	48%
2030	52%	42%
2031	47%	38%
2032	50%	45%
2033	41%	41%
2034	31%	31%
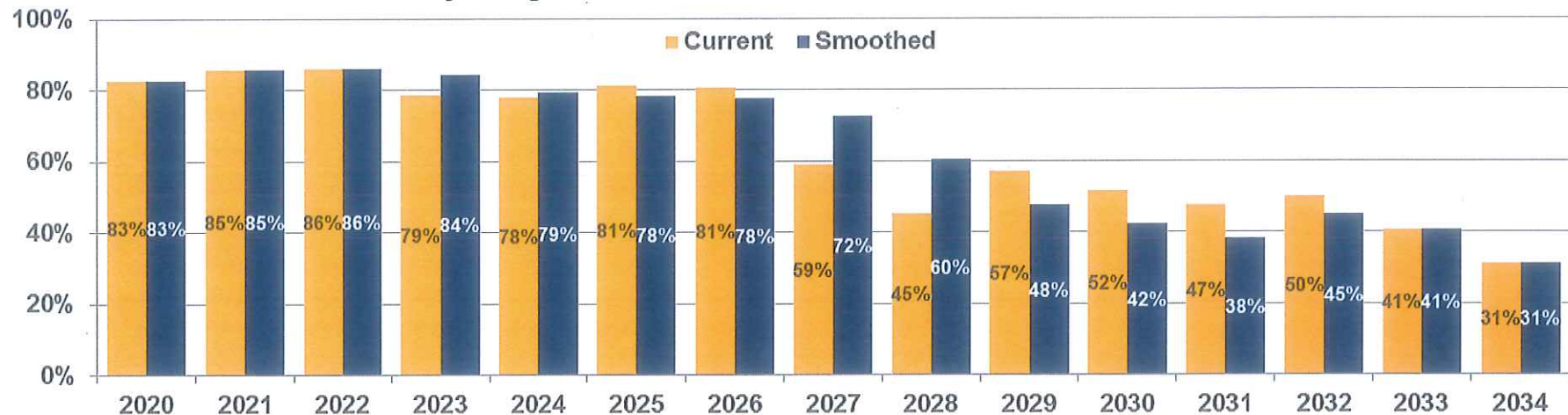
- Adjust amortizations to achieve desired stability or smoothness
  - Consider smoothing certain patterns within the next 5-10 years
    - Increases followed by decreases, or
    - Decreases followed by increases
  - Consider smoothing annual changes greater than 10% of payroll
- Any adjustments should have a negligible impact on funding levels

- Maintain a relatively aggressive schedule to repay the UAL regardless of the impact on the City, or

- Limit the total City contribution while protecting the Plan with an overriding minimum contribution?

Potential Contribution Policy

- Objectives

  - Maintain aggressive repayment of UAL up to tolerable limits

  - When limits reached, provide relief to City as long as minimum contribution level is met

Legend: —— UAL Payment   — Tolerable Limit

(Chart: y-axis "Payment Level", x-axis "UAL")
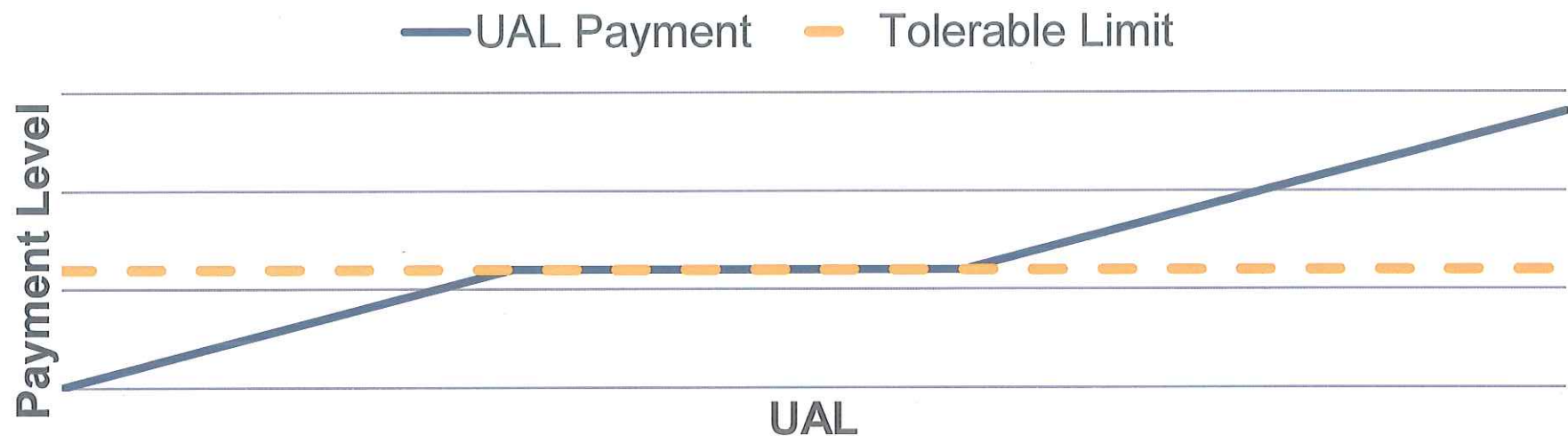
Potential Contribution Policy

- Preliminary contribution is similar to current method
  - Normal cost
  - UAL amortization
    - 15 year layers (20 years for assumption changes)
    - Reduce payment growth rate to align with expected revenue growth rates
      - Potential range is from 0% (level dollar) to 3.25% (level percent of payroll)
- Set tolerable contribution level limit
  - X% of Payroll?
  - Y% of revenue?
- Minimum UAL payment = Interest on UAL
  - UAL not expected to increase
  - Positive growth makes payment more affordable in future
  - In a recent Society of Actuaries study, only 40% of public plans met this standard

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Classic Values, Innovative Advice

Impact of -17% Return for 1 Year

Current Policy

Chart: Current Policy — Aggregate Member Rate, City Contribution Rate, Total NC, 2018 Valuation, by Fiscal Year Ending (2020–2040).

2018 Valuation line values: 83%, 96%, 100%, 100%, 106%, 116%, 115%, 94%, 80%, 91%, 86%, 82%, 84%, 75%, 66%, 62%, 46%, 37%, 28%, 25%, 16%

Aggregate Member Rate: 12%, 12%, 12%, 13%, 13%, 13%, 13%, 14%, 14%, 14%, 14%, 14%, 14%, 14%, 14%, 14%, 15%, 15%, 15%, 15%, 15%

85% Cap Policy

Chart: 85% Cap Policy — Aggregate Member Rate, City Contribution Rate, Total NC, 2018 Valuation, by Fiscal Year Ending (2020–2040).

2018 Valuation line values: 83%, 86%, 85%, 85%, 85%, 85%, 85%, 85%, 85%, 85%, 85%, 85%, 85%, 85%, 85%, 83%, 67%, 58%, 48%, 44%, 34%

Aggregate Member Rate: 12%, 12%, 12%, 13%, 13%, 13%, 13%, 14%, 14%, 14%, 14%, 14%, 14%, 14%, 14%, 14%, 15%, 15%, 15%, 15%, 15%

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Classic Values, Innovative Advice

April 15, 2019

Impact of -17% Return for 1 Year

Current Policy

Legend: Aggregate Member Amount · City Contribution Amount · Total NC · 2018 Valuation

City Contribution Amounts (top labels): $186, $224, $241, $249, $272, $307, $315, $264, $232, $275, $267, $263, $279, $257, $232, $228, $172, $144, $111, $104, $70

Aggregate Member Amounts (bottom labels): $27, $28, $30, $32, $33, $35, $37, $38, $40, $42, $43, $45, $47, $49, $51, $53, $55, $57, $58, $60, $62

Fiscal Year Ending: 2020 – 2040

85% Cap Policy

Legend: Aggregate Member Amount · City Contribution Amount · Total NC · 2018 Valuation

City Contribution Amounts (top labels): $186, $200, $204, $211, $218, $225, $232, $240, $248, $256, $264, $273, $281, $291, $300, $303, $250, $225, $191, $181, $143

Aggregate Member Amounts (bottom labels): $27, $28, $30, $32, $33, $35, $37, $38, $40, $42, $43, $45, $47, $49, $51, $53, $55, $57, $58, $60, $62

Fiscal Year Ending: 2020 – 2040

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Classic Values, Innovative Advice

Stochastic Comparisons

City Contribution Rate

Legend: 85% Cap Policy, Current Policy

City Contribution Amount

Legend: 85% Cap Policy, Current Policy

Stochastic Comparisons

UAL/(Surplus)

Chart legend: ■ 85% Cap Policy ■ Current Policy

Y-axis (Billions): $4.0, $3.0, $2.0, $1.0, $0.0, ($1.0), ($2.0), ($3.0), ($4.0), ($5.0)

X-axis years: 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032
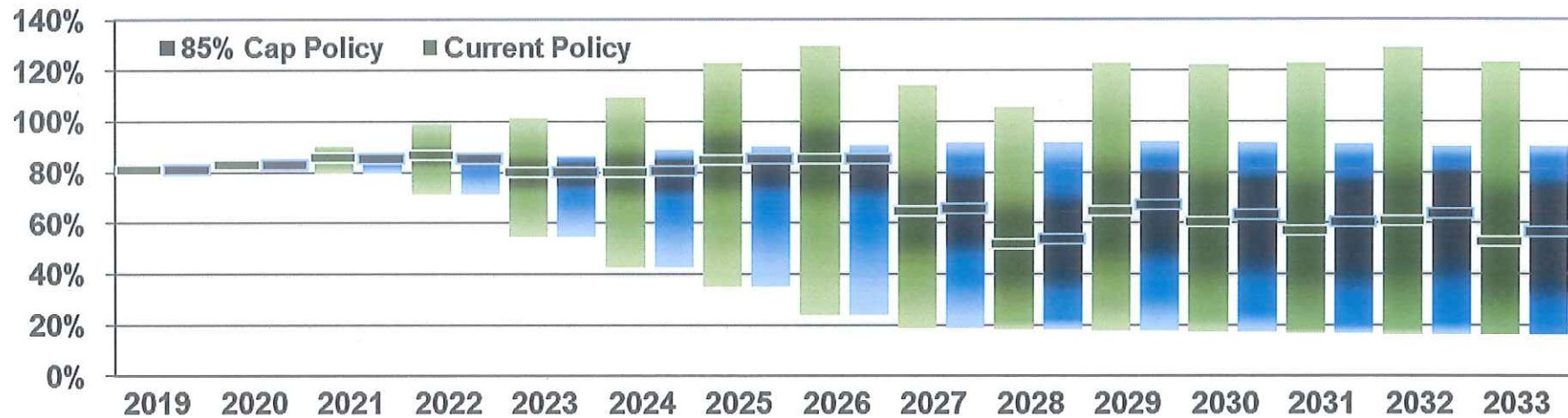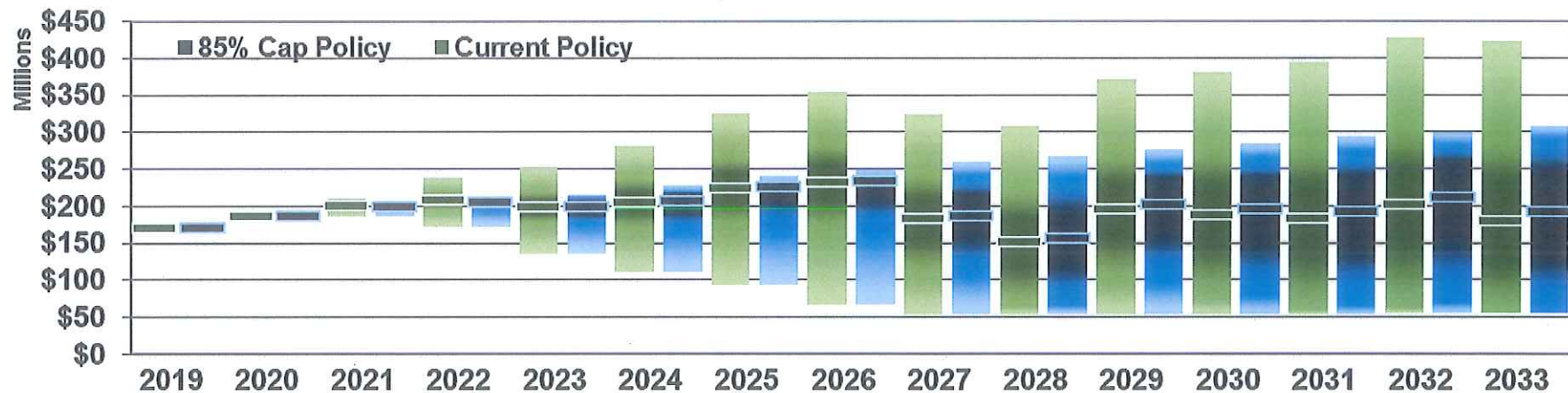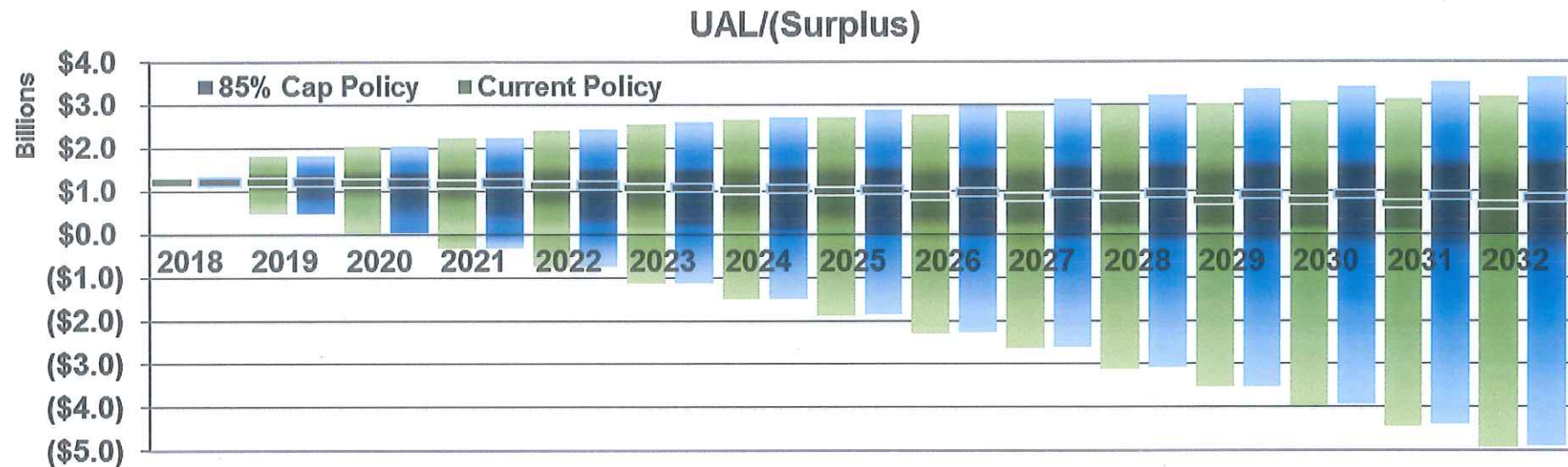
- Any cap needs to be set so that it does not materially impact the sustainability of the plan

    - Minimum contribution provides significant protection, but cap still results in slightly higher UAL in the worst scenarios

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Classic Values, Innovative Advice

- Should the Board:
  - Select an ultimate discount rate or continue to consider gradual reductions each year?
  - Continue to target contributions as a
    - Level percentage of total payroll,
    - Level percentage of city revenue, or
    - Level dollar amount?
  - Actively smooth short-term fluctuations in contributions or significant declines in contributions?
  - Maintain a relatively aggressive schedule to repay the UAL regardless of the impact on the City or limit the total City contribution while protecting the Plan with an overriding minimum contribution?

- Any policy direction would require additional analysis for the Board to consider a decision

Certification

- The purpose of this presentation is to review options and policies for managing contributions to 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.

William R. Hallmark, ASA, EA, FCA, MAAA
Consulting Actuary

Anne. D. Harper, FSA, EA, MAAA
Consulting Actuary

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 – Survey Data

Cheiron's 2018 Survey of Public Retirement Systems in California

System Name	Discount Rate	Funded Ratio	Interest Cost	Valuation Date	System Name	Discount Rate	Funded Ratio	Interest Cost	Valuation Date
AC Transit	7.125%	71.6%	10.6%	1/1/2018	SACRT - Sacramento Regional Transit	7.250%	71.1%	11.6%	7/1/2018
ACERA - Alameda County	7.250%	77.7%	13.3%	12/31/2017	SamCERA - San Mateo County	6.750%	88.0%	7.2%	6/30/2018
CalPERS - State	7.250%	65.1%	21.7%	6/30/2017	SBCERA - San Bernardino County	7.250%	79.9%	12.0%	6/30/2018
CalSTRS - Defined Benefit	7.000%	68.9%	19.2%	6/30/2017	SBCERS - Santa Barbara County	7.000%	77.2%	17.0%	6/30/2018
City of Fresno - Employee System	7.250%	128.7%	-15.6%	6/30/2018	SCERA - Sonoma County	7.250%	94.2%	3.2%	12/31/2017
City of Fresno - Fire & Police	7.250%	134.1%	-25.7%	6/30/2018	SCERS - Sacramento County	7.000%	82.5%	13.2%	6/30/2018
City of San Jose Federated	6.750%	50.5%	44.4%	6/30/2018	SDCERA - San Diego County	7.250%	77.9%	18.9%	6/30/2018
City of San Jose Police & Fire	6.750%	74.4%	35.9%	6/30/2018	SDCERS - San Diego City	6.500%	73.2%	37.8%	6/30/2018
Contra Costa County ERA	7.000%	90.8%	6.7%	12/31/2017	San Diego Transit	7.000%	55.4%	33.6%	7/1/2018
East Bay Municipal Utility District	7.250%	76.4%	18.7%	6/30/2018	SFERS - San Francisco	7.400%	89.8%	5.9%	7/1/2018
FCERA - Fresno County	7.000%	78.1%	20.2%	6/30/2017	SJCERA - San Joaquin County	7.250%	64.0%	24.7%	1/1/2018
Golden Gate Transit	7.000%	58.3%	21.5%	1/1/2017	SLOCPT - San Luis Obispo county	7.000%	68.9%	20.8%	1/1/2018
ICERS - Imperial County	7.250%	88.0%	6.7%	6/30/2018	StanCERA - Stanislaus County	7.000%	76.6%	15.3%	6/30/2018
KCERA - Kern County	7.250%	63.6%	27.9%	6/30/2018	TCERA - Tulare County	7.250%	89.4%	4.7%	6/30/2018
LACERA - Los Angeles County	7.250%	82.2%	10.6%	6/30/2018	University of California	7.250%	86.9%	6.2%	7/1/2018
LACERS - Los Angeles City	7.250%	71.4%	18.4%	6/30/2018	Valley Transit Authority	7.000%	76.0%	8.5%	1/1/2018
Los Angeles Fire & Police Pension	7.250%	95.9%	4.0%	6/30/2018	VCERA - Ventura County	7.250%	88.0%	6.7%	6/30/2018
Los Angeles Water and Power	7.250%	93.1%	5.9%	7/1/2018					
MCERA - Marin County	7.000%	87.1%	9.4%	6/30/2018					
MCERA - Mendocino County	7.000%	72.5%	19.6%	6/30/2018	Minimum	6.50%	50.5%	-25.7%	1/1/2017
MCERA - Merced County	7.250%	63.5%	24.2%	6/30/2018	Median (50th Percentile)	7.25%	77.2%	14.3%	6/30/2018
OCERS - Orange County	7.000%	74.6%	18.6%	12/31/2017	Maximum	7.40%	134.1%	44.4%	7/1/2018

Cheiron's 2018 Survey of Public Retirement Systems in California

System Name	Support Ratio	Asset Leverage	Liability Leverage	Net Cash Flow	System Name	Support Ratio	Asset Leverage	Liability Leverage	Net Cash Flow
AC Transit	1.0	3.9	5.4	-0.5%	SACRT - Sacramento Regional Transit	1.2	4.1	5.7	-1.5%
ACERA - Alameda County	1.1	6.6	8.5	-2.1%	SamCERA - San Mateo County	1.3	8.1	9.2	1.4%
CalPERS - State	1.1	5.8	8.9	-1.5%	SBCERA - San Bernardino County	0.9	6.8	8.5	-0.2%
CalSTRS - Defined Benefit	1.1	6.3	9.1	-2.0%	SBCERS - Santa Barbara County	1.5	8.5	11.0	-0.6%
City of Fresno - Employee System	1.1	10.0	7.8	-2.5%	SCERA - Sonoma County	1.5	7.4	7.9	-2.1%
City of Fresno - Fire & Police	1.0	14.4	10.8	-2.3%	SCERS - Sacramento County	1.2	9.2	11.1	-1.8%
City of San Jose Federated	1.6	6.9	13.7	-1.0%	SDCERA - San Diego County	1.4	9.5	12.2	-0.3%
City of San Jose Police & Fire	1.6	16.0	21.5	-0.9%	SDCERS - San Diego City	2.2	16.4	22.4	-2.3%
Contra Costa County ERA	1.3	9.7	10.7	-0.4%	San Diego Transit	2.6	6.2	11.1	-2.5%
East Bay Municipal Utility District	1.1	8.7	11.4	-0.6%	SFERS - San Francisco	1.2	7.3	8.1	-1.6%
FCERA - Fresno County	1.4	10.7	13.6	-0.5%	SJCERA - San Joaquin County	1.2	6.3	9.8	0.8%
Golden Gate Transit	1.5	4.4	7.6	-6.7%	SLOCPT - San Luis Obispo county	1.2	6.8	9.9	-1.4%
ICERS - Imperial County	0.8	7.0	8.0	-1.1%	StanCERA - Stanislaus County	1.1	7.4	9.6	-1.1%
KCERA - Kern County	1.2	7.0	11.0	-0.8%	TCERA - Tulare County	1.1	5.6	6.3	-1.9%
LACERA - Los Angeles County	0.8	7.0	8.5	-2.1%	University of California	1.3	5.8	6.7	-0.3%
LACERS - Los Angeles City	1.1	6.5	9.2	-1.4%	Valley Transit Authority	1.1	4.0	5.2	-1.6%
Los Angeles Fire & Police Pension	1.0	13.2	13.8	-1.8%	VCERA - Ventura County	1.2	7.1	8.1	-0.1%
Los Angeles Water and Power	1.1	11.4	12.3	-0.3%					
MCERA - Marin County	1.4	9.4	10.8	-1.5%					
MCERA - Mendocino County	1.7	7.7	10.6	-1.7%	Minimum	0.8	3.9	5.2	-6.7%
MCERA - Merced County	1.5	6.0	9.5	0.3%	Median (50th Percentile)	1.2	7.1	9.6	-1.4%
OCERS - Orange County	1.0	8.1	10.8	0.6%	Maximum	2.6	16.4	22.4	1.4%