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Presentation of April 30, 2019 Actuarial Valuation Results

Presented by:
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September 12, 2019





Purposes of an Actuarial Valuation

- Measure assets and liabilities
- Determine actuarial contribution rates
- Analyze experience (actual vs. expected) during prior year
- Report on trends and evaluate risk considerations



April 30, 2019 Actuarial Valuations

- Snapshot measurement at valuation date
- No changes in benefit provisions
- Reflects changes from the Experience Study completed in 2018
 - No change to the actuarial methods
 - Several assumption changes including lowering investment return assumption (see next slide)
- Unfunded Actuarial Accrued Liability increased for both Systems, but funded ratios held fairly steady
- New Actuarial Standard applies this year (ASOP 51)



Economic Assumption Changes

	Previous Assumptions	New Assumptions
Price Inflation	3.00%	2.50%
Investment Return	7.50%	Step down to 7.25%*
General Wage Growth	3.75%	3.00%
Payroll Growth	3.75%	3.00%
Cost of Living Adjustment	2.50%	2.50%

* Anticipated decrease of 5 basis points in the investment return assumption each year for five years until reaching 7.25%. Investment return assumption in 2019 valuation is 7.45%.

Summary of Changes to Demographic Assumptions



Assumption	New Assumptions - POLICE
Mortality	No change to base table, but change the mortality improvement scale prospectively to MP-2017 ultimate rates
Retirement	Modify retirement rates to better reflect actual experience
Disability	Increase disability rates
Termination	Adopt service-based assumption
Probability of Refund	No change
Individual Salary Scale	Decrease general wage increase component by 0.75%. No change to merit scale

Summary of Changes to Demographic Assumptions



Assumption	New Assumptions - CIVILIANS
Mortality	No change to base table, but strengthen by changing the mortality improvement scale prospectively to MP-2017 ultimate rates
Retirement	Modify retirement rates to better reflect actual experience
Disability	No change
Termination	Modify to better match actual experience
Probability of Refund	No change
Individual Salary Scale	Decrease general wage increase component by 0.75% and also modify merit scale

Impact of Assumption Changes (Using 4/30/19 valuation)



Police	Previous Assumptions	New Assumptions
Unfunded Actuarial Accrued Liability (UAAL)	\$290.8M	\$297.3M
Funded Ratio (Actuarial Assets)	76%	75%
<u>Actuarial Contribution Rate:</u>		
City Normal Cost Rate*	14.28%	13.70%
UAAL Amortization Rate	<u>16.90%</u>	<u>18.90%</u>
Total Contribution Rate	31.18%	32.60%
City Contribution Amount	\$31.8M	\$32.8M

*Net of employee contribution rate of 11.55% of pay

Impact of Assumption Changes (using 4/30/19 valuation)



Civilians	Previous Assumptions	New Assumptions
Unfunded Actuarial Accrued Liability (UAAL)	\$34.1M	\$38.4M
Funded Ratio (Actuarial Assets)	81%	80%
<u>Actuarial Contribution Rate:</u>		
City Normal Cost Rate*	10.48%	9.79%
UAAL Amortization Rate	<u>6.57%</u>	<u>8.26%</u>
Total Contribution Rate	17.05%	18.05%
City Contribution Amount	\$5.1M	\$5.4M

*Net of employee contribution rate of 5.00% of pay



Summary of Key Valuation Results

Police	4/30/2019 Valuation	4/30/2018 Valuation
Unfunded Actuarial Accrued Liability (UAAL)	\$297.3M	\$275.1M
Funded Ratio (Actuarial Assets)	75%	76%
<u>Actuarial Contribution Rate:</u>		
Total Contribution Rate	44.15%	41.91%
Employee Contribution Rate	<u>(11.55%)</u>	<u>(11.55%)</u>
City Contribution Rate	32.60%	30.36%
City Contribution Amount	\$32,797,288	\$30,157,170



Summary of Key Valuation Results

Civilians	2019	2018
Unfunded Actuarial Accrued Liability (UAAL)	\$38.4M	\$32.9M
Funded Ratio (Actuarial Assets)	80%	81%
<u>Actuarial Contribution Rate:</u>		
Total Contribution Rate	23.05%	22.15%
Employee Contribution Rate	<u>(5.00%)</u>	<u>(5.00%)</u>
City Contribution Rate	18.05%	17.15%
City Contribution Amount	\$5,358,552	\$4,849,708



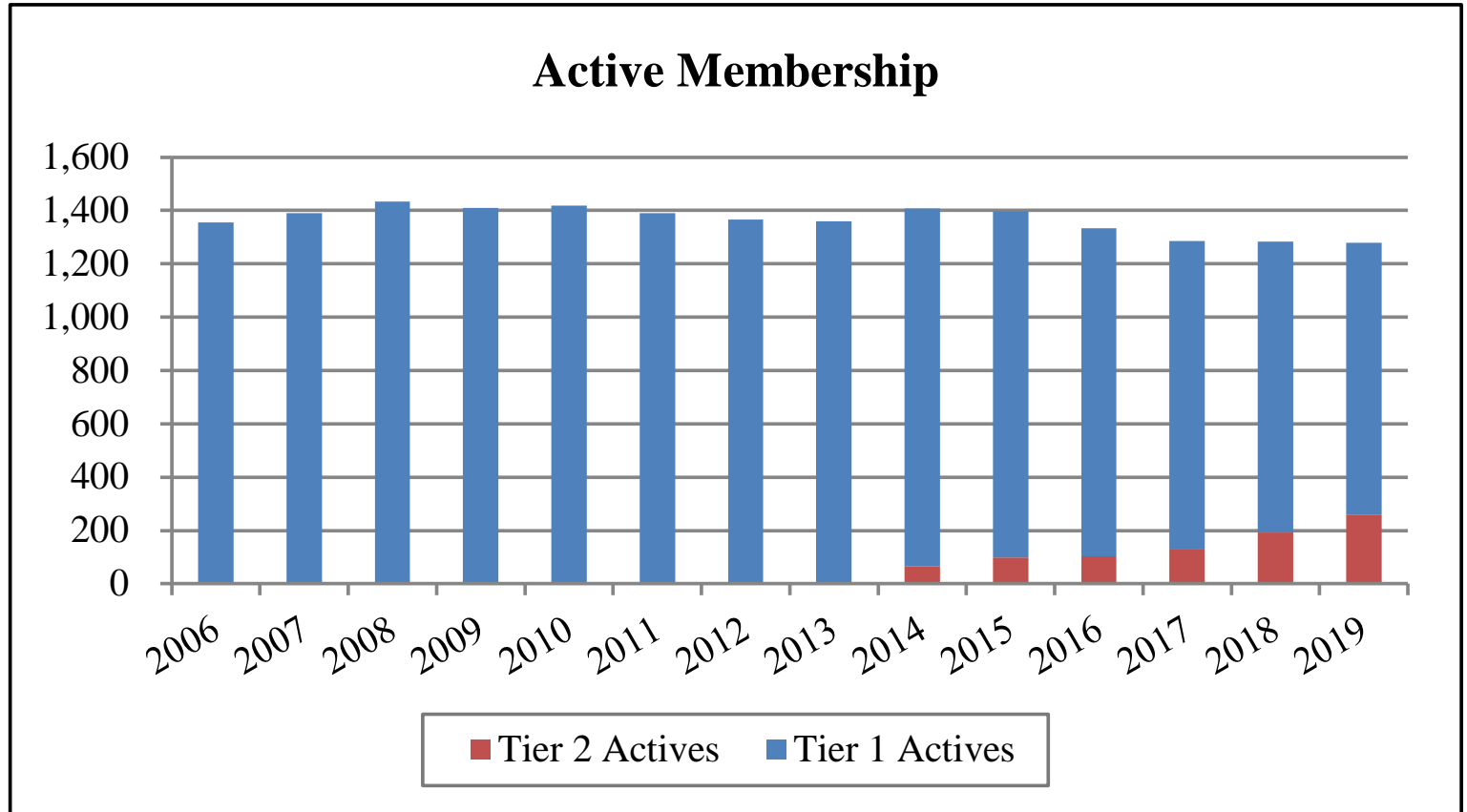
Membership Statistics

	Police	Civilians
Active Members		
• April 30, 2019	1,279	543
• April 30, 2018	1,284	511
• % Change	(0.4%)	6.3%
Payroll (\$M)		
• April 30, 2019	\$ 97.67	\$ 28.82
• April 30, 2018	\$ 95.74	\$ 27.26
• % Change	2.0%	5.7%
Retired Members		
• April 30, 2019	1,369	282
• April 30, 2018	1,332	272
• % Change	2.8%	3.7%
Average Benefit *		
• April 30, 2019	\$43,503	\$26,870
• April 30, 2018	\$42,586	\$26,150
• % Change	2.2%	2.8%

* Excludes supplemental benefit



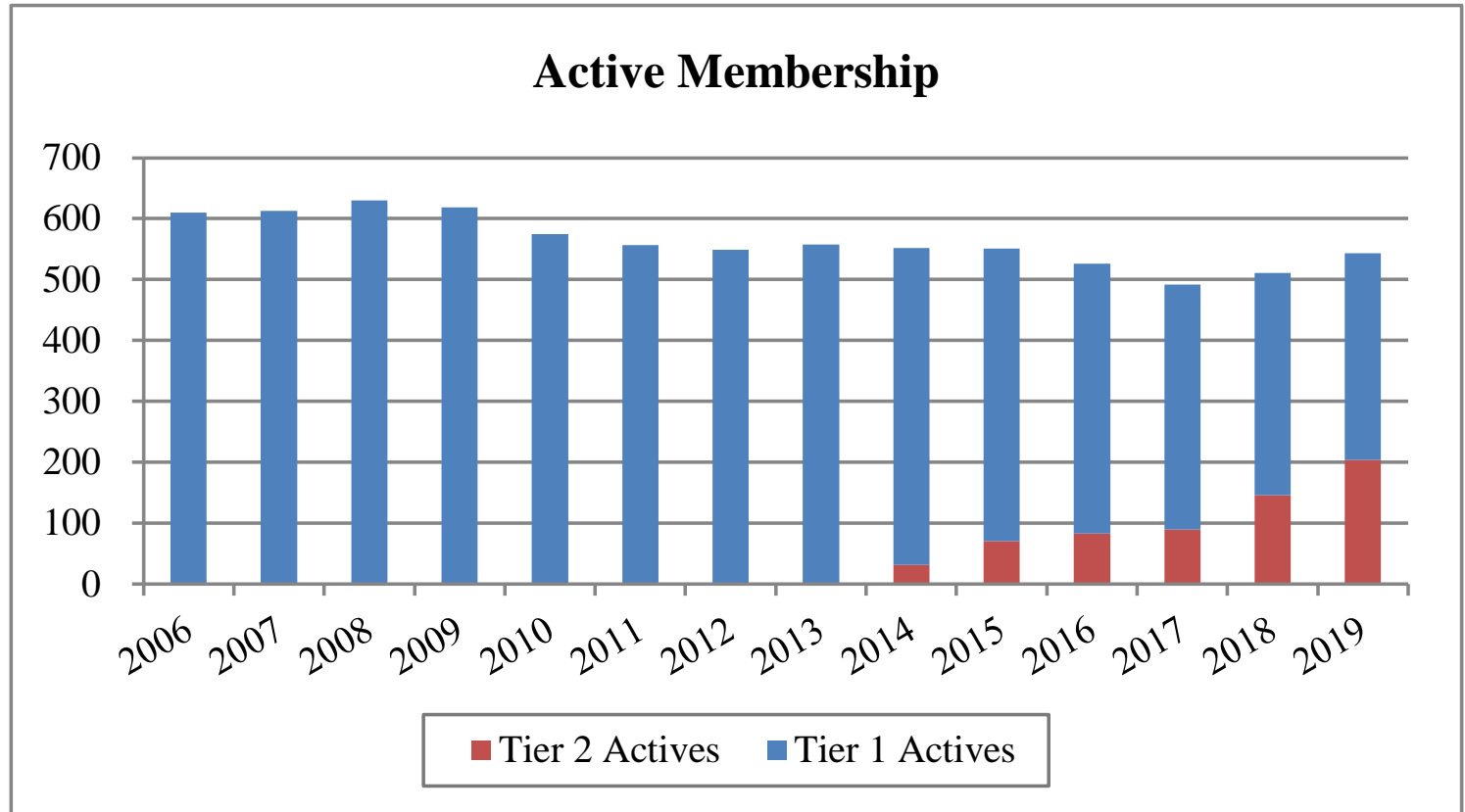
Police – Active Membership



As of April 30, 2019, there are 258 members in Tier 2 out of a total of 1,279 (about 20%).



Civilians - Active Membership



As of April 30, 2019, there are 204 members in Tier 2 out of a total of 543 (about 38%).

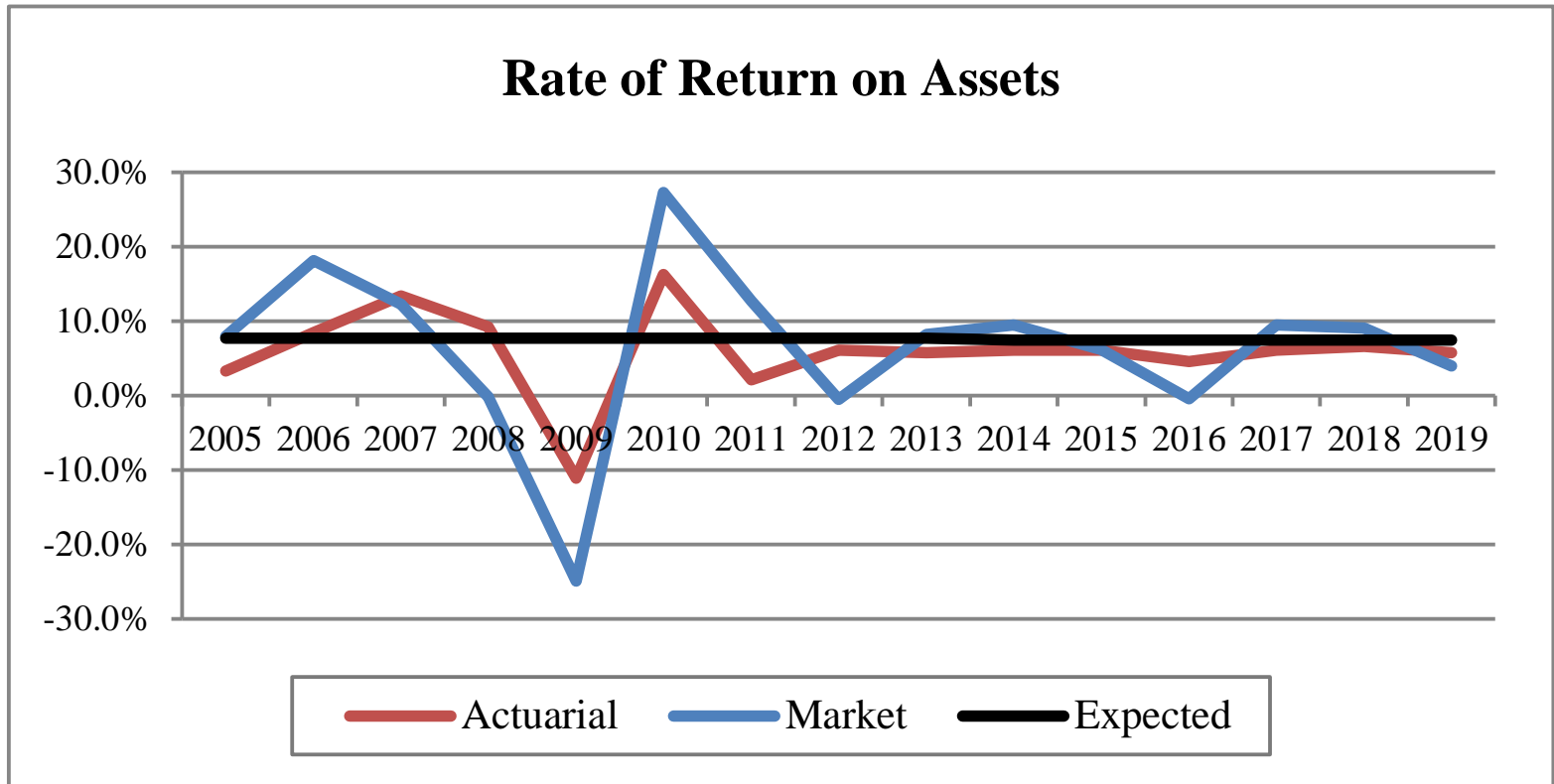


Actuarial Value of Assets

- Market value not used directly in valuation
- Asset valuation method is used to smooth the effect of market fluctuations
- Difference between the dollar amount of the expected and actual return on the market value of assets is spread evenly over a closed 5 year period



Historical Investment Returns



An asset smoothing method (which develops the actuarial value of assets) is used to mitigate the impact of investment return volatility on the Plan's funding.



Asset Values (\$M)

	Police	
	<u>Market</u>	<u>Actuarial</u>
Assets, 4/30/18	\$ 879.5	\$ 886.7
▪ Contributions	43.7	43.7
▪ Benefit Payments/Refunds	(66.1)	(66.1)
▪ Administrative Expenses	(0.8)	(0.8)
▪ Investment Income	34.9	50.4
Assets, 4/30/19	\$ 891.2	\$ 913.9
Estimated Net Return	+ 4.0%	+ 5.8%

The return of 5.8% on the actuarial value of assets resulted in an actuarial loss of \$15 million.



Asset Values (\$M)

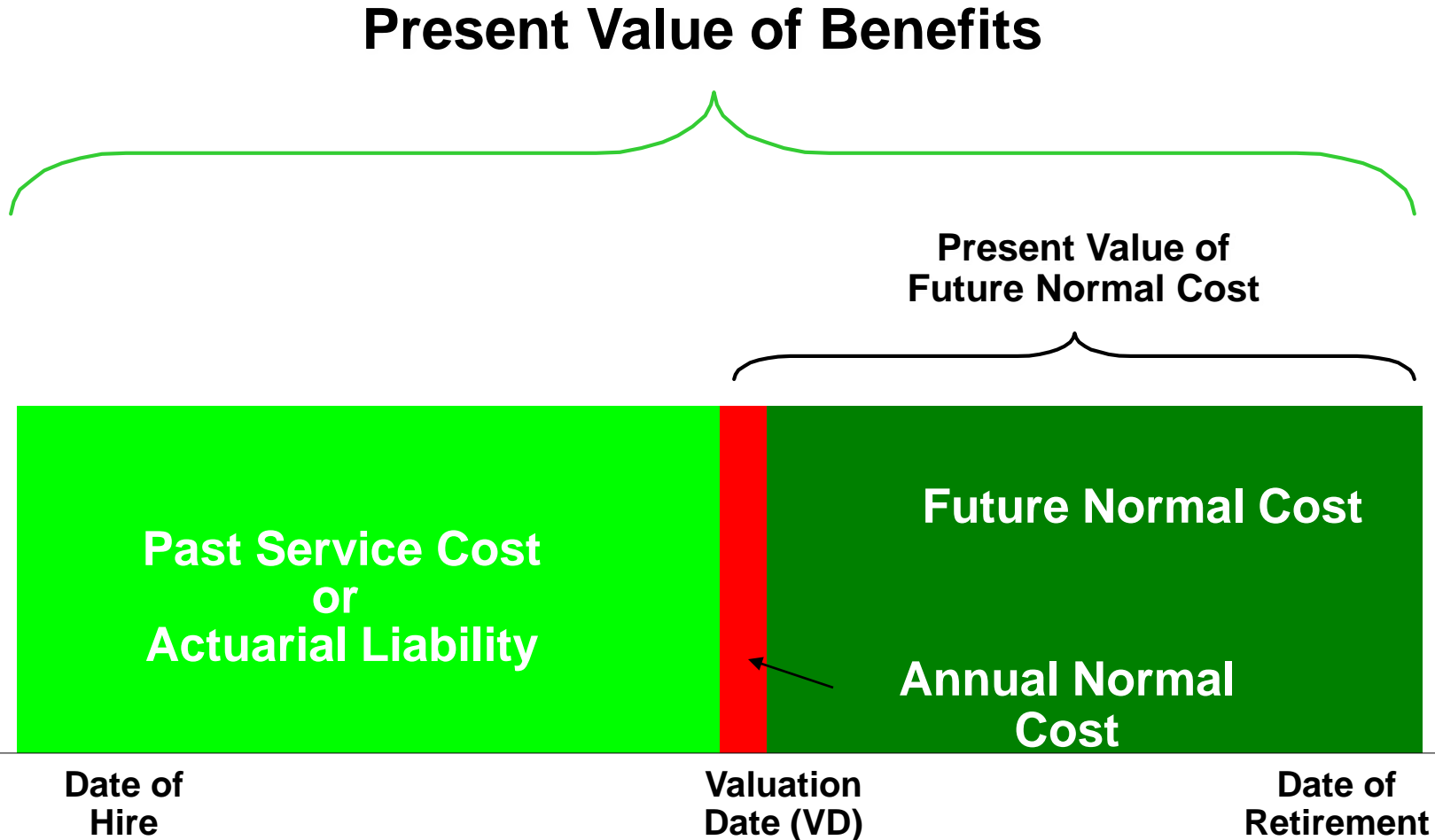
	Civilians	
	<u>Market</u>	<u>Actuarial</u>
Assets, 4/30/18	\$ 142.6	\$ 144.2
▪ Contributions	6.2	6.2
▪ Benefit Payments/Refunds	(8.2)	(8.2)
▪ Administrative Expenses	(0.1)	(0.1)
▪ Investment Income	5.7	8.0
Assets, 4/30/19	\$ 146.2	\$ 150.1
Estimated Net Return	+ 4.0%	+ 5.8%

The return of 5.8% on the actuarial value of assets resulted in an actuarial loss of about \$3 million.



Actuarial Funding Process

Contribution as
% of Pay



Actuarial Accrued Liability – Actuarial Assets = Unfunded Actuarial Accrued Liability

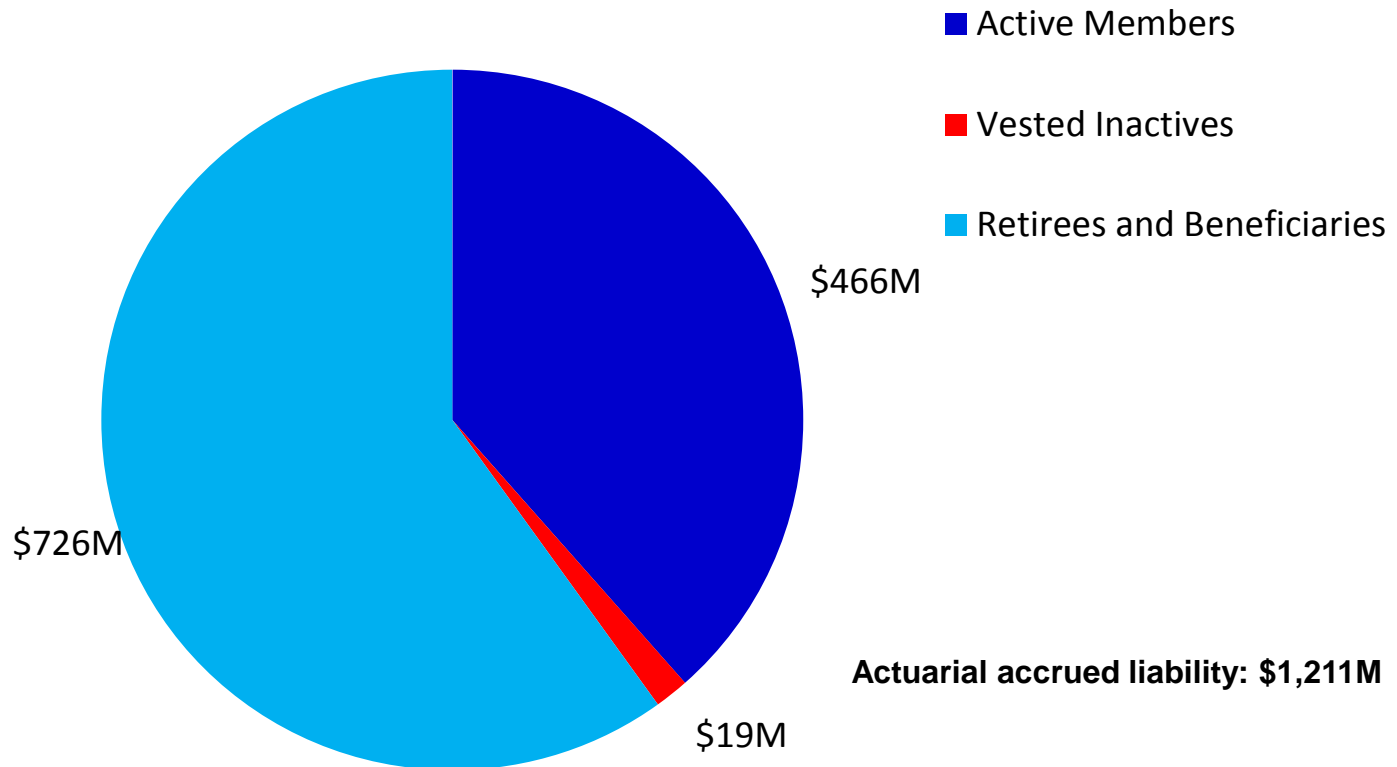
Unfunded Actuarial Accrued Liability (UAAL)



- Actuarial accrued liability less actuarial assets

- Impacted by:
 - Actual vs expected experience
 - Benefit provision changes
 - Assumption/method changes
 - Actual contributions

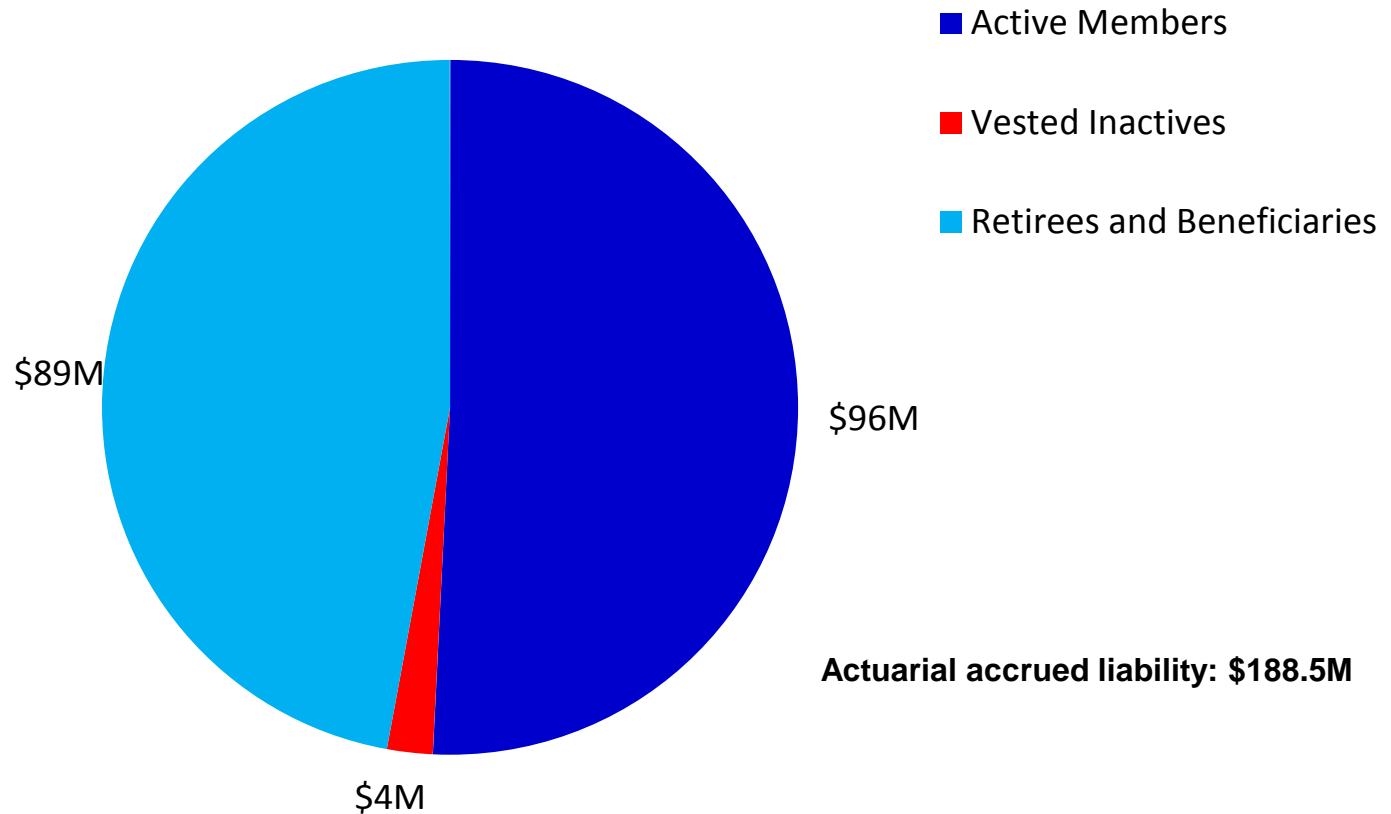
Actuarial Liability at April 30, 2019 (Police)



Note: Numbers may not add due to rounding.



Actuarial Liability at April 30, 2019 (Civilians)



Note: Numbers may not add due to rounding.

Unfunded Actuarial Accrued Liability (UAAL) at April 30, 2019



Dollars Shown in Millions

	Police	Civilians
Actuarial Accrued Liability	\$1,211	\$ 189
Actuarial Value of Assets	<u>914</u>	<u>150</u>
Unfunded Actuarial Accrued Liability*	297	38
Funded Ratio	75%	80%

* Numbers may not add or subtract due to rounding.



Experience (Gain)/Loss

	Police	Civilians
UAAL at 4/30/18	\$ 275.1M	\$ 32.9M
Contributions less than actuarial rate	0.0	0.0
Expected change due to amortization	5.2	0.4
Asset experience	15.2	2.7
Demographic experience	(3.6)	(1.7)
Assumption changes	6.5	4.2
All other experience	<u>(1.1)</u>	<u>(0.1)</u>
UAAL at 4/30/19	\$ 297.3M	\$ 38.4M

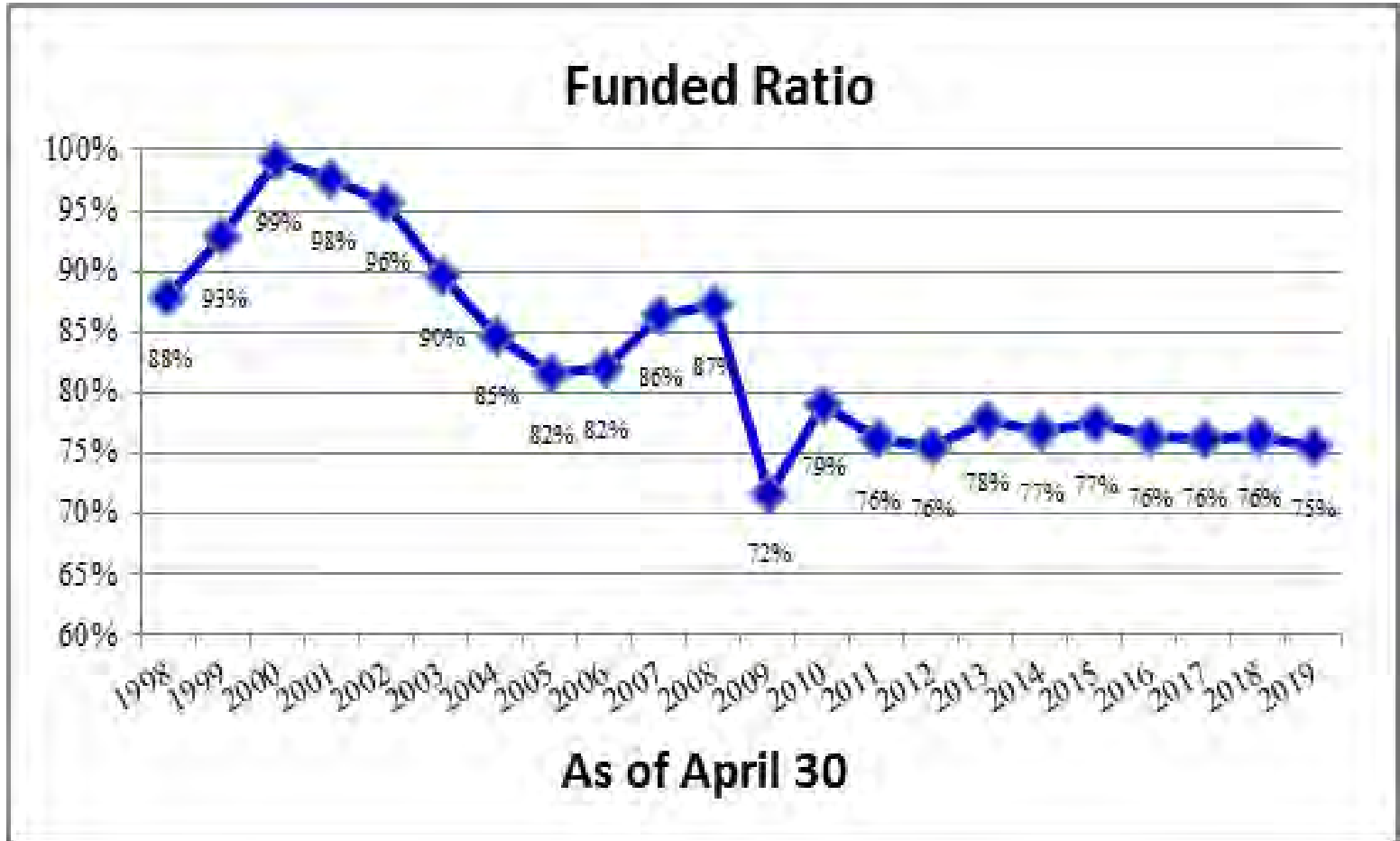


Funded Ratio

- Actuarial assets divided by actuarial accrued liability
- Often misunderstood
 - Not the percent of assets available to pay benefits already earned
 - Actuarial accrued liability includes an element of future service and salary
 - Actuarial accrued liability > value of benefits actually earned
 - One metric doesn't tell the whole story on the System's long term funding outlook

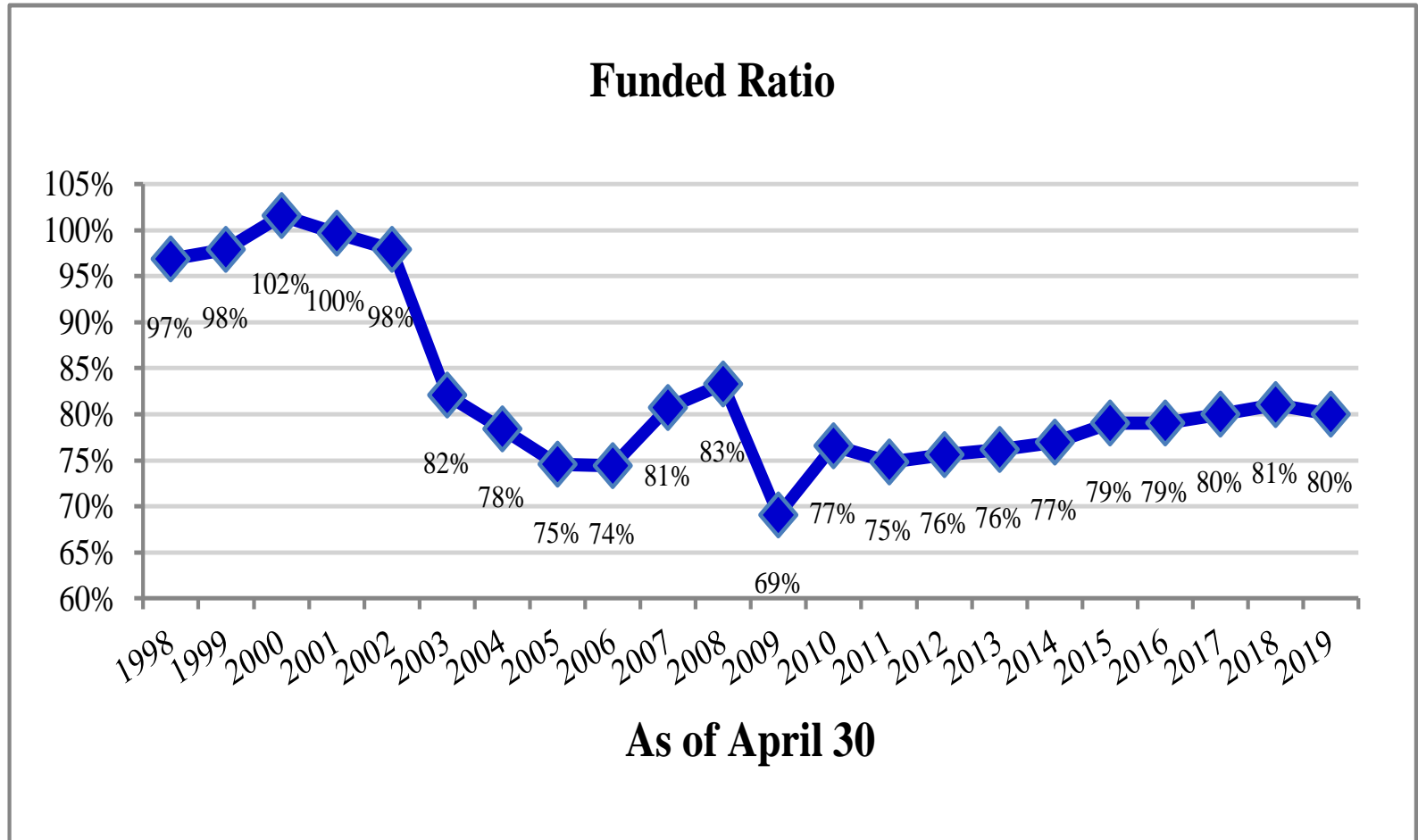


Historical Police Funded Ratio





Historical Civilians Funded Ratio





Actuarial Contribution Rates

- Components of Contribution Rate:
 - Normal Cost
 - Amortization of UAAL

- Funding policy finances the 4/30/17 UAAL over a 30-year closed period. New layers each year (starting in 2018) are amortized over closed 20 year periods.

- 4/30/2019 valuation sets the FY 2021 contribution amount (May 1, 2020 to April 30, 2021)

Unfunded Actuarial Accrued Liability Amortization Rate - Police



	Original Amount	Remaining Payment	5/1/2020 Balance	Annual Payment
2017 Legacy UAAL	\$271,513,914	28	\$280,947,253	\$17,377,855
2018 Experience	3,938,832	19	3,943,725	306,540
2019 Experience Study	7,029,844	20	7,029,844	528,671
2019 Experience	10,682,521	20	10,682,521	803,367
Total			\$302,603,343	\$19,016,433

1. Total UAAL Amortization Payment	\$ 19,016,433
2. Expected Payroll for FYE 2021	100,605,177
3. UAAL Payment Rate: (1)/(2)	18.90%



Actuarial Contribution Rate - Police

	2019	2018
Normal Cost	25.25%	25.98%
UAAL Payment	<u>18.90%</u>	<u>15.93%</u>
Total Actuarial Rate	44.15%	41.91%
Less Member Rate	<u>(11.55)%</u>	<u>(11.55)%</u>
Employer Actuarial Rate	32.60%	30.36%
City Contribution Amount	\$32,797,288	\$30,157,170

Note: Increase in City Contribution from 2018 is \$2,640,118



Actuarial Contribution Rate - Civilians

	2019	2018
Normal Cost	14.79%	15.63%
UAAL Payment	<u>8.26%</u>	<u>6.52%</u>
Total Actuarial Rate	23.05%	22.15%
Less Member Rate	<u>(5.00)%</u>	<u>(5.00)%</u>
Employer Actuarial Rate	18.05%	17.15%
City Contribution Amount	\$5,358,552	\$4,849,708

Note: increase in City Contribution from 2018 is \$508,844



Ad Hoc COLA

- Board has a formal policy to determine if COLA is granted. Must satisfy one of the following:
 - ✓ Funded ratio at least 75%
 - ✓ Contributions for last 3 years at least 90% of total actuarial rate
 - ✓ Employer contributions equal to Actuarial Required Contribution in at least three of last five years
- Both systems meet the funded ratio test
- Considerations
 - ✓ Phase-in of 7.25% investment return assumption will lower funded ratio in the future
 - ✓ Investment outlook in short-term remains lower than assumption
 - ✓ Ad hoc COLA creates additional liability, but the true increase is dependent on the actual returns in future years.



Projections

- Actuarial valuation is a snapshot measurement at a single point in time
- Provides important information, but no insight into future valuation results
 - How will unrecognized investment experience impact contributions in the future
 - How does Funding Policy impact funded status over time
 - How will the new tier of benefits for new hires impact future funding requirements
 - Provides ability to perform some basic sensitivity analysis and risk evaluation

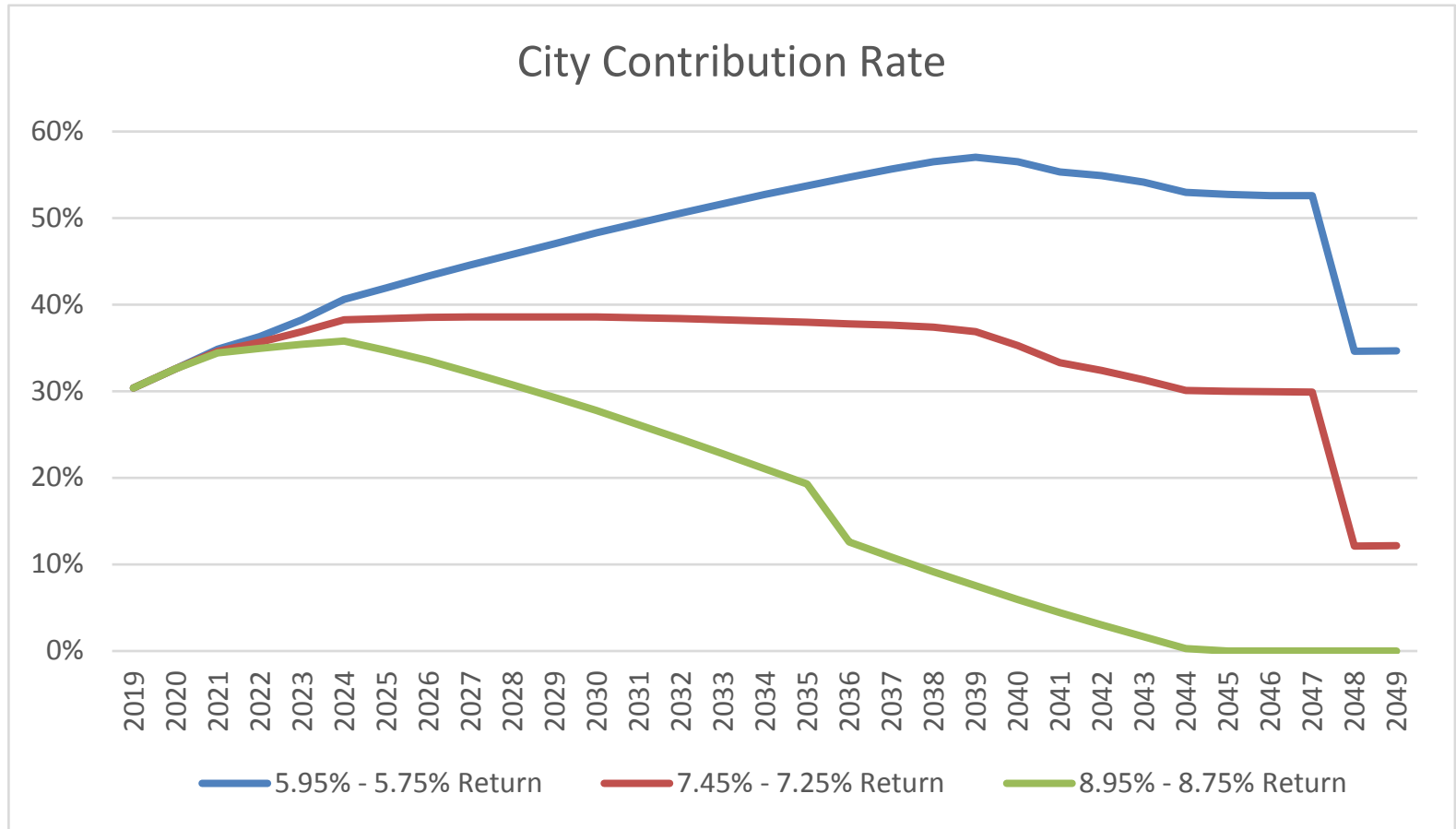


Limitations of Projections

- Not precise predictions but rather general trends
- Projections based on many assumptions
 - Step down of investment return assumption over next four years to 7.25%
 - Assumes investment return assumption is met in all future years, unless otherwise noted
 - All other actuarial assumptions met in the future
 - Constant number of active members
 - No change in current plan provisions
 - Contributions are paid timely per Board's Funding Policy, including closed amortization periods
 - New entrants in future years are similar to recent history



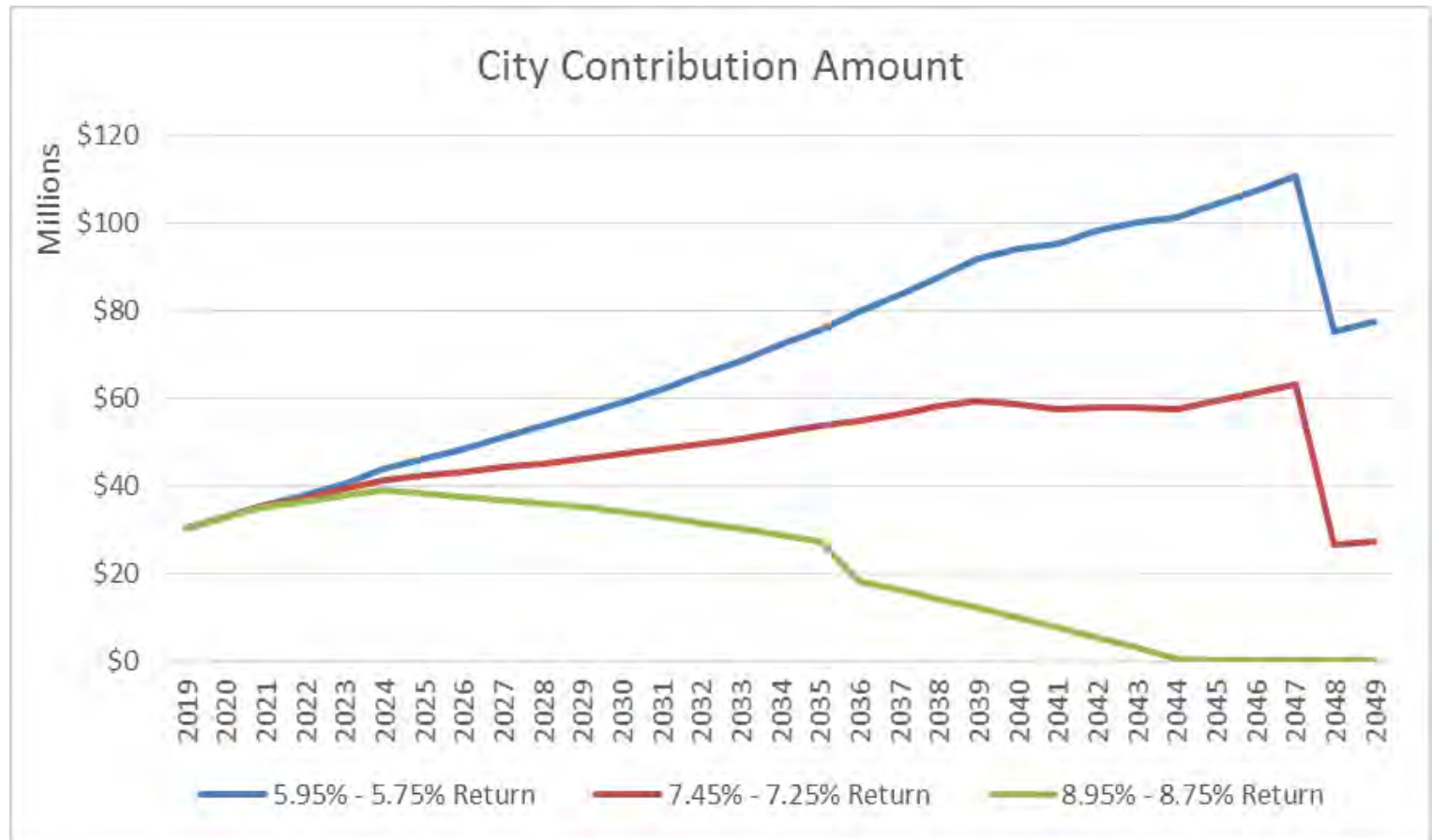
Police Retirement System City Contribution Rate



Projections reflect the step down in the investment return assumption over the next four years and actual returns equal to the assumption or 1.5% higher/lower than the assumption.



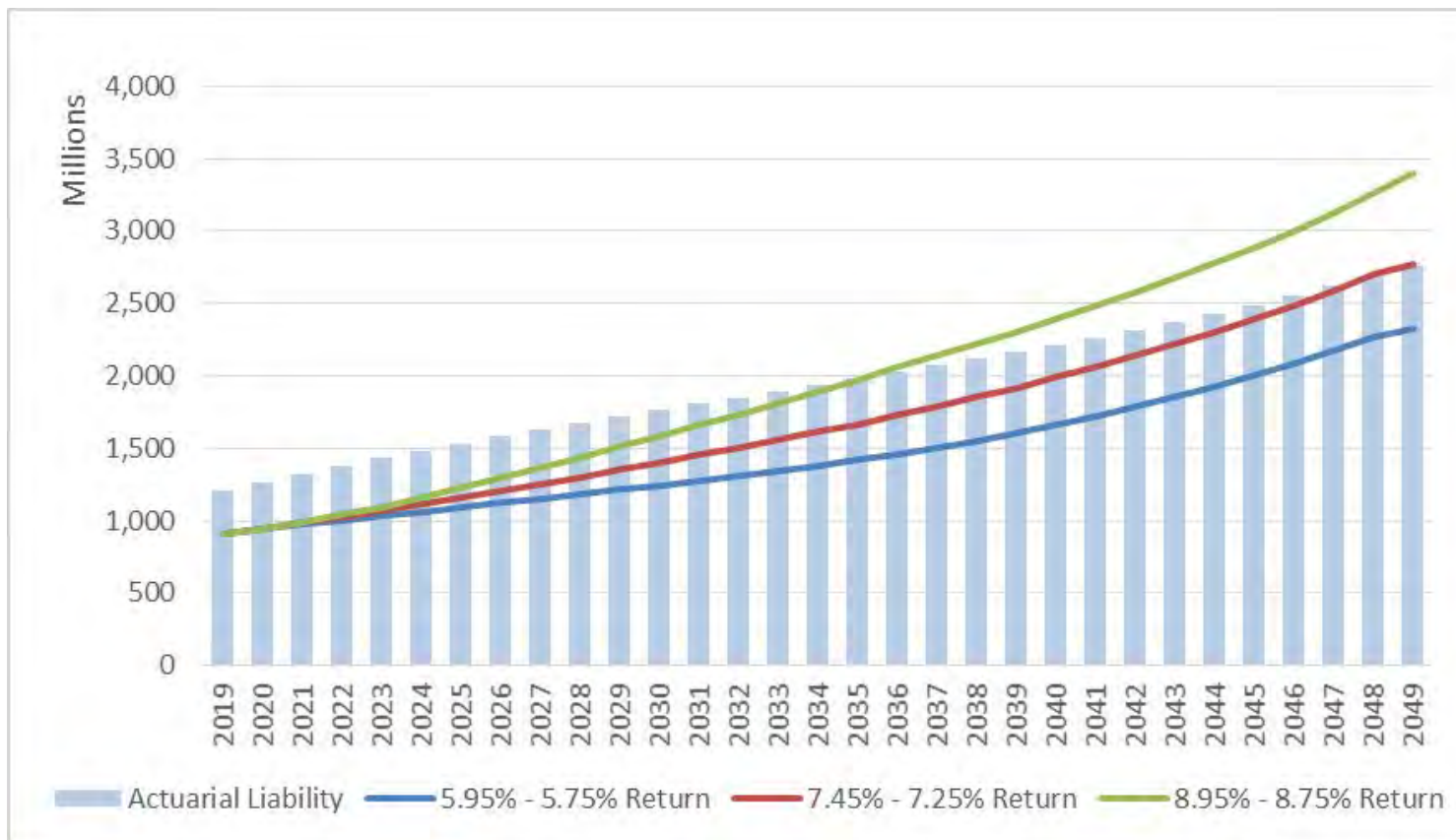
Police Retirement System City Contribution Amount



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Police Retirement System

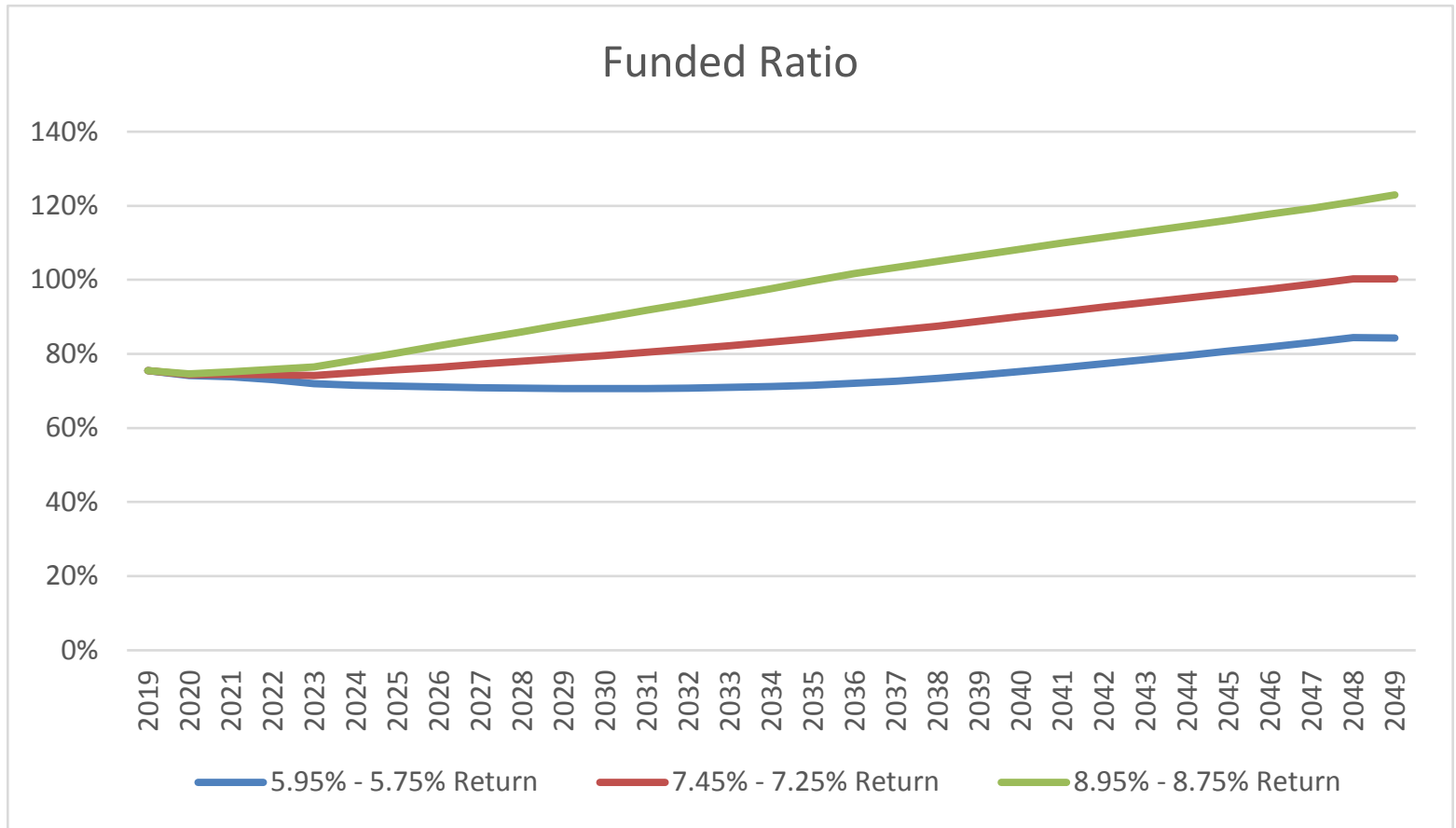
Comparison of Projected Actuarial Assets to Actuarial Liability



Asset values are shown by colored lines, illustrating different return scenarios.

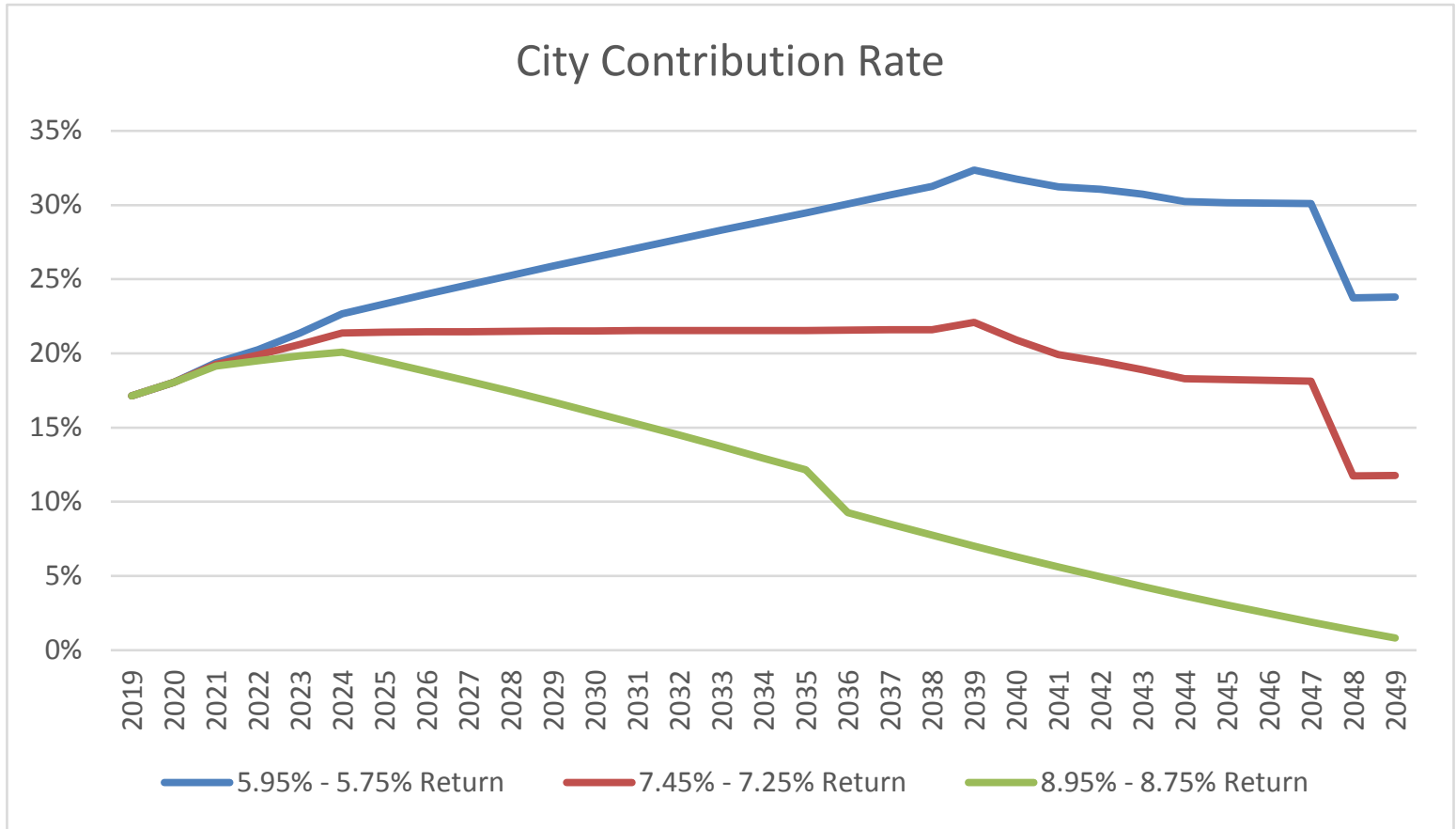
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Police Retirement System Funded Ratio



Projections reflect the step down in the investment return assumption over the next four years and actual returns equal to the assumption or 1.5% higher/lower than the assumption.

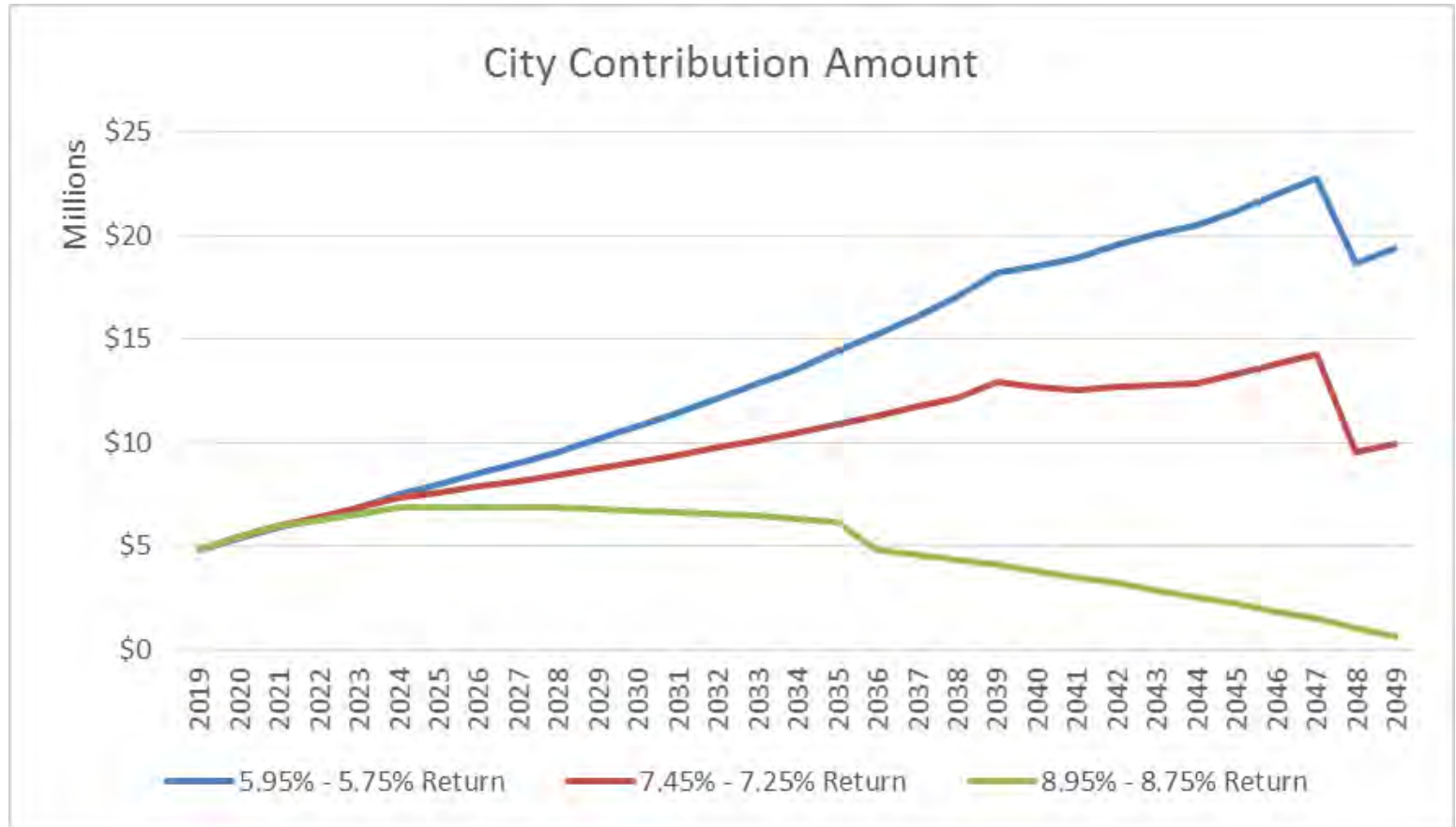
Civilians Retirement System City Contribution Rate



Projections reflect the step down in the investment return assumption over the next four years and actual returns equal to the assumption or 1.5% higher/lower than the assumption.



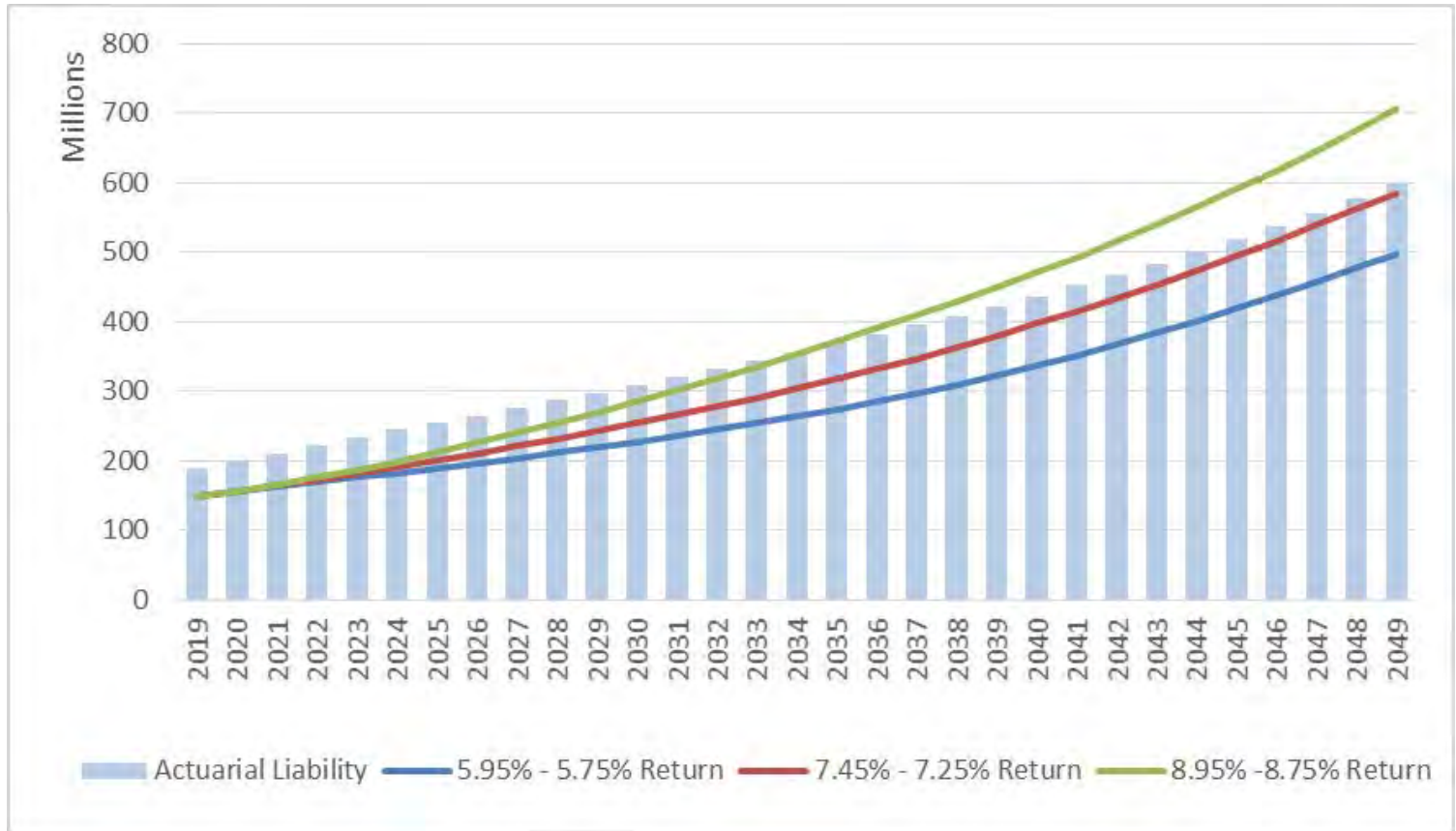
Civilians Retirement System City Contribution Amount



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Civilians Retirement System

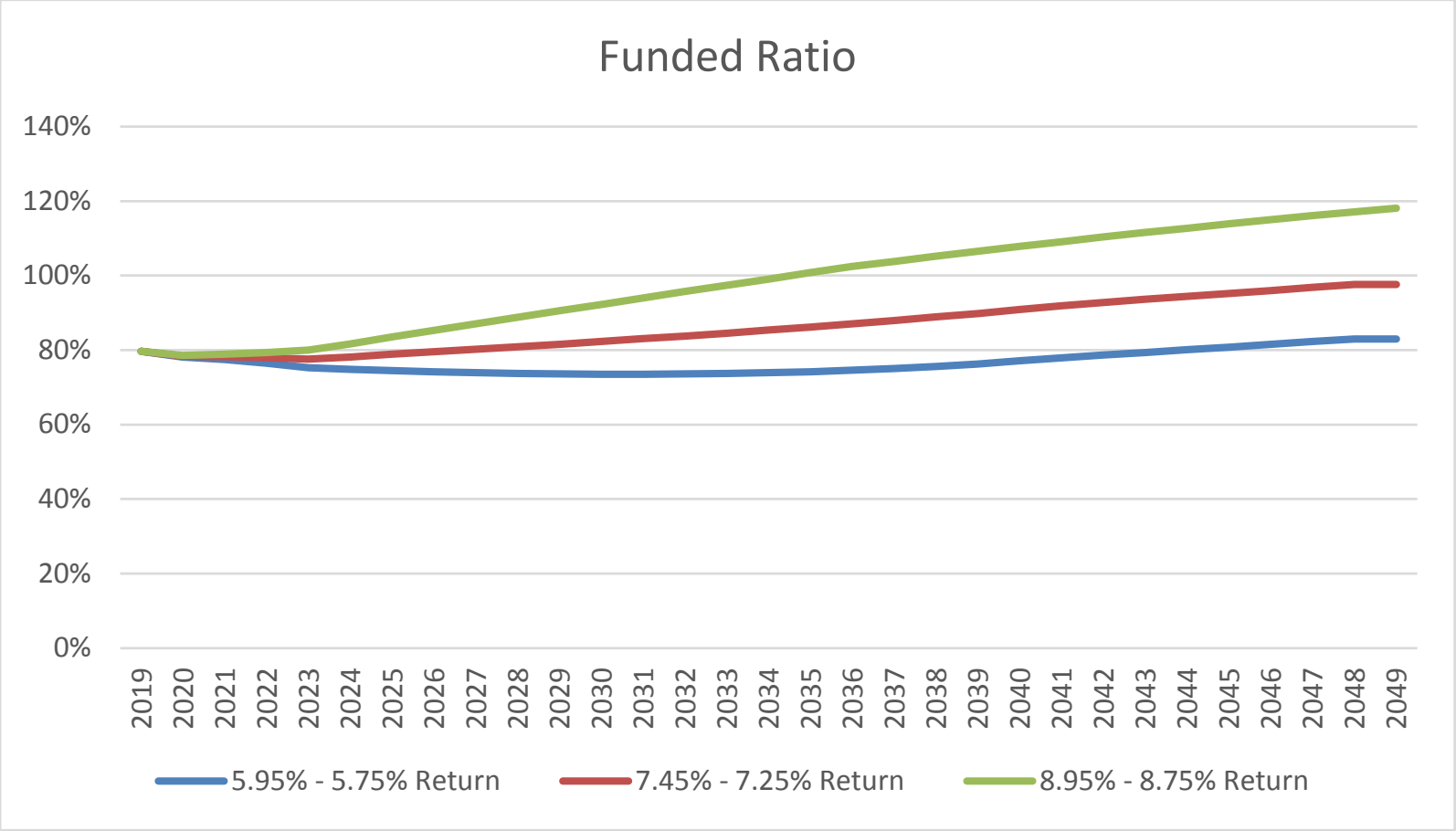
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Civilians Retirement System Funded Ratio



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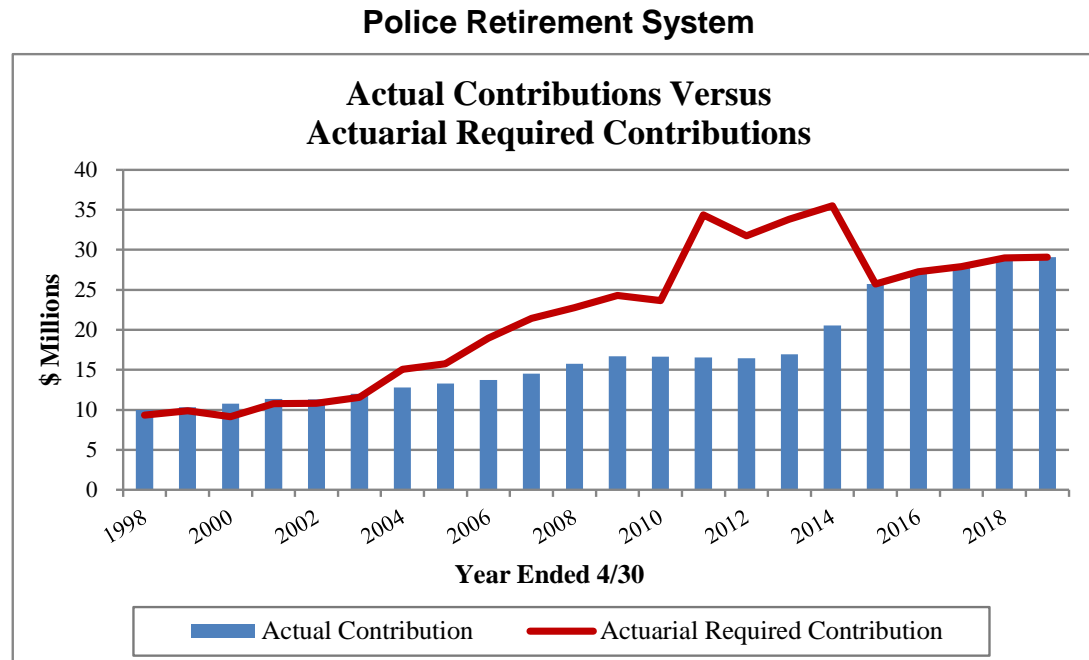


Risk Considerations

- “Risk” in this context means **uncertainty**
- Key risks include:
 - Investment risk
 - Demographic risks
 - External risks
- Most significant risk for most retirement systems is investment risk
- Although the majority of the risks are outside the control of the system, certain metrics can be tracked to help identify the impact of the risks and changes to policies to the extent possible

ASOP 51: Funding Risk

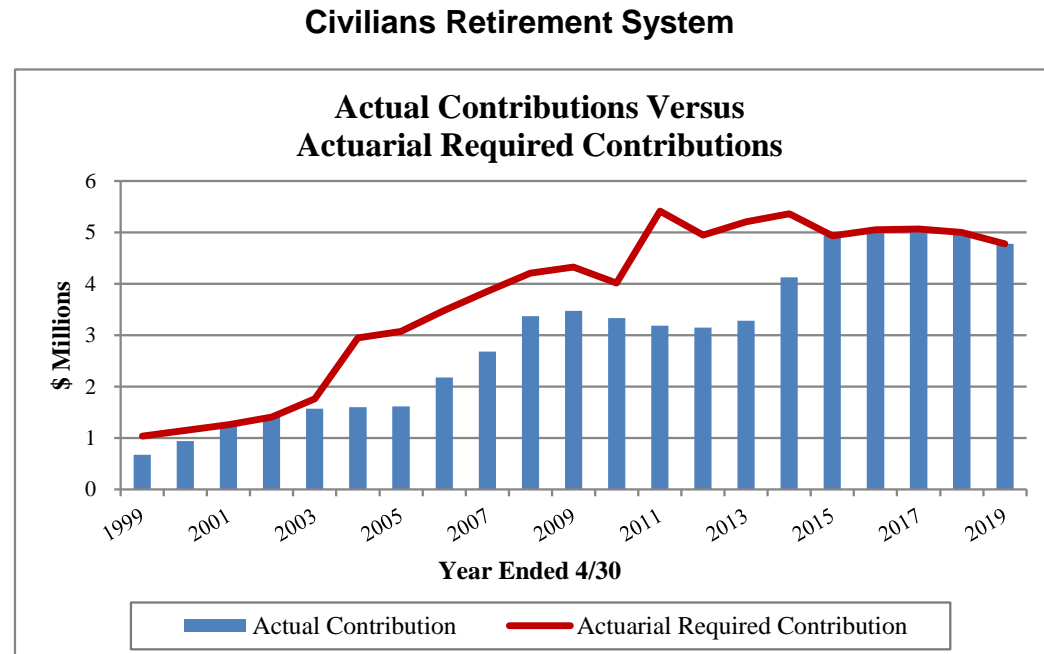
- Direct correlation between healthy, well-funded plans and consistently making full actuarial contributions



- Contributions less than actuarial amount for 2003 through 2014. Full actuarial contribution is now required by statute.

ASOP 51: Funding Risk

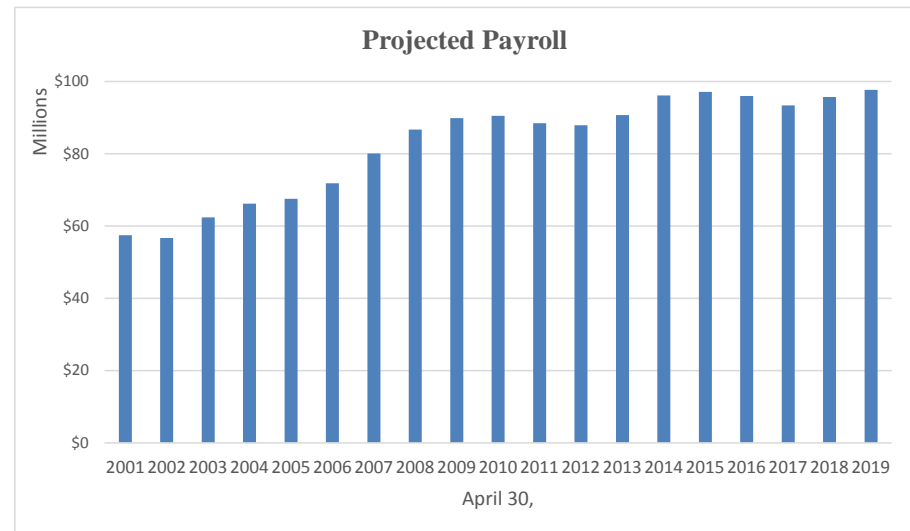
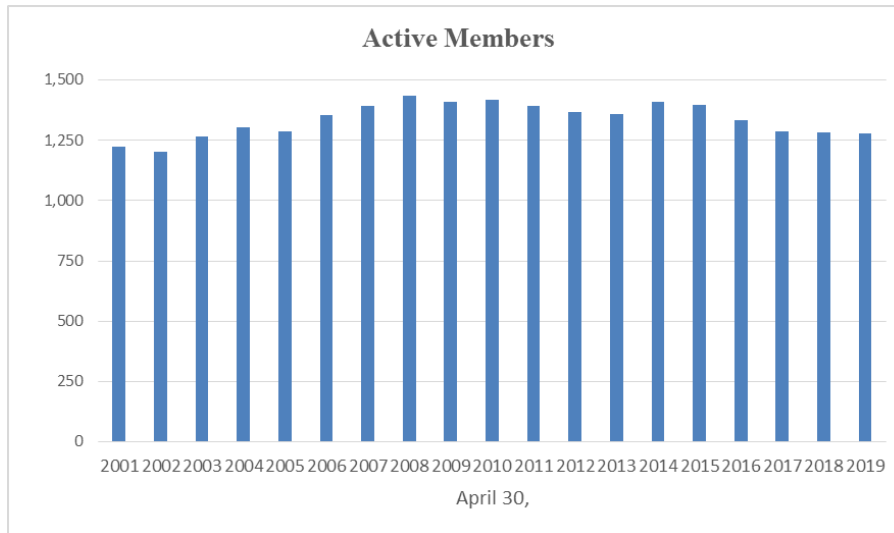
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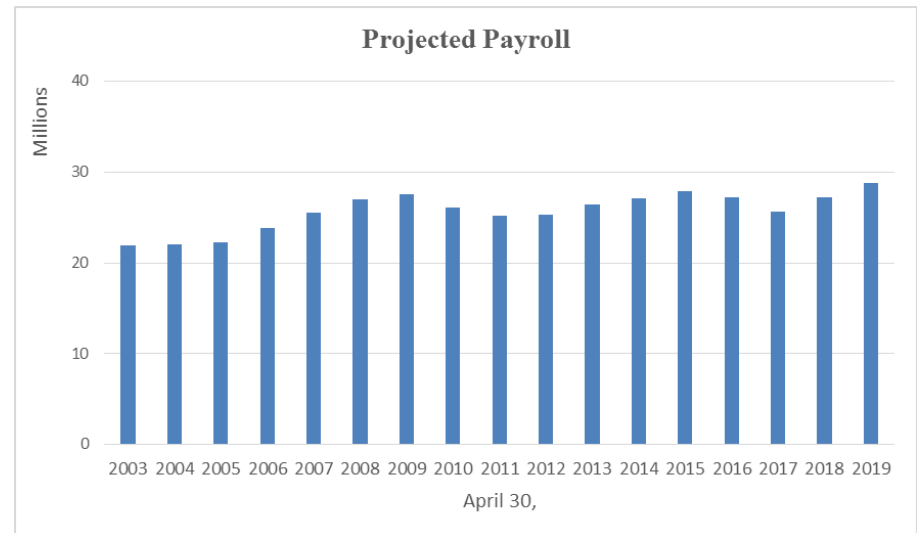
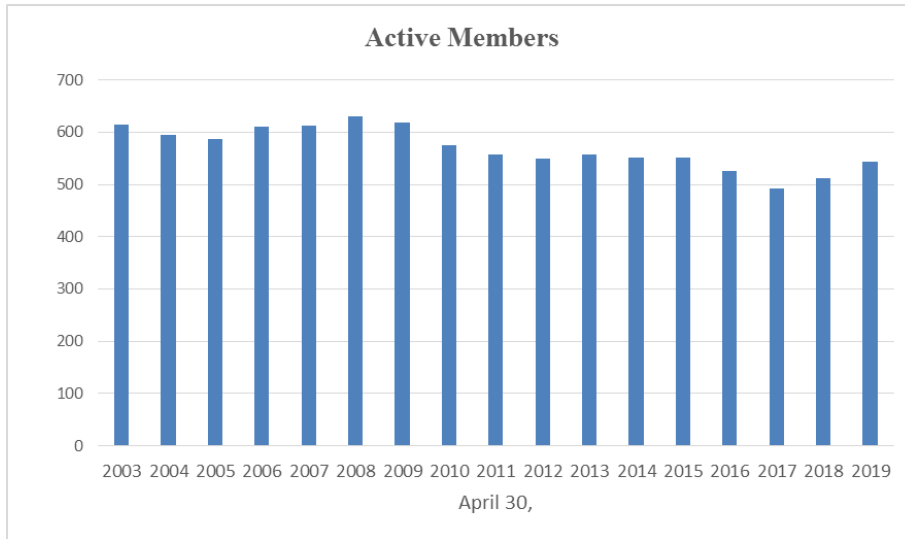


Police Payroll Growth Risk





Civilians Payroll Growth Risk



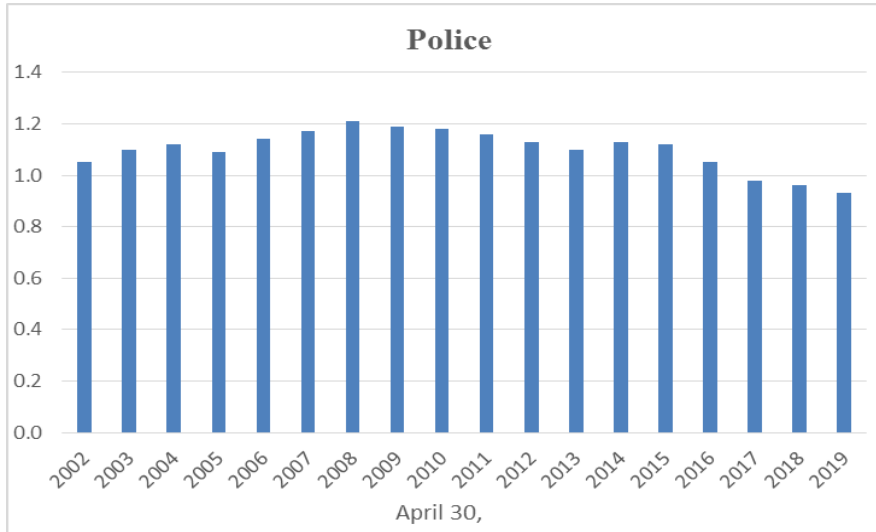


ASOP 51: Maturity Measurements

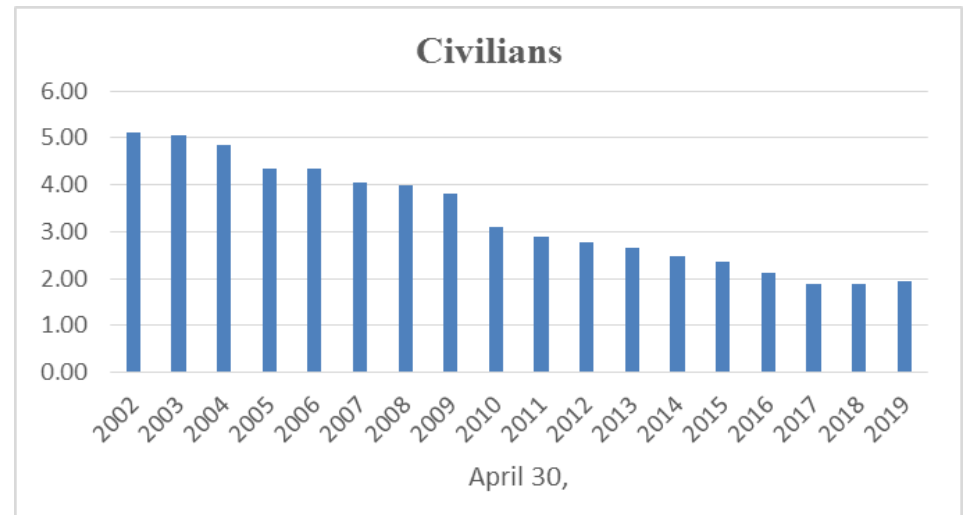
- Police Retirement System is a very mature System, having been created in 1946
 - The more mature the system, the more sensitive it is to investment volatility, i.e., harder to recover from investment losses with increased contributions
 - Significant differences between actual and expected returns, which are not unexpected, have a large impact on contribution amounts (volatility)
- Civilians' System is less mature (created in 1965) but demographics have still changed over time



Maturity Measure: Active to Retiree Ratio



Note: the scale of the two graphs is different, but the Police Plan is more mature than the Civilians Plan. Both have changed demographically over this period.





Contribution Rate Volatility

- Asset Volatility Ratio is market value of assets divided by covered payroll

	Year	Assets	Payroll	Ratio
Police	2019	\$891.2M	\$97.7M	9.12
Civilians	2019	\$146.2M	\$28.8M	5.07

- Underperforming the investment return assumption by 10% (e.g., -2.55% for one year)
 - Police:
 - Actuarial loss of \$89 million or 91% of payroll
 - Increases contribution rate by 6.86% of pay (without smoothing)
 - Civilians:
 - Actuarial loss of \$15 million or 51% of payroll
 - Increases contribution rate by 3.81% of pay (without smoothing)
- Same investment experience has a more dramatic impact on the contribution rate for Police

Police: Impact of Alternate Investment Return Assumptions



Valuation Results at	6.95%	7.45%	7.95%
Normal Cost Rate	28.38%	25.25%	22.54%
UAAL Contribution	<u>23.93%</u>	<u>18.90%</u>	<u>13.97%</u>
Total Actuarial Contribution	52.31%	44.15%	36.51%
Employee Contribution Rate	(11.55%)	(11.55%)	(11.55%)
City Contribution Rate	40.76%	32.60%	24.96%
City Contribution (\$M)	41.0	32.8	25.1
Funded Ratio	71%	75%	80%
Unfunded Actuarial Accrued Liability (\$M)	374	297	228



Comments on Funding Report

- It will take another 10-15 years before the impact of the plan changes (benefits and contributions) has a material impact on valuation results, and longer if there are fewer new hires in future years
- Decrease in the investment return assumption, coupled with deferred investment loss, will result in increases in the contribution amounts and decline in funded ratio in the future
- Biggest risk factors are investment risk and size of the active membership