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# Presentation of April 30, 2020 Actuarial Valuation Results

**Presented by:**  
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**September 10, 2020**





# The Actuarial Valuation Process

- The valuation process can be viewed as a *budgeting process*. Like a budget, we make use of information we know as of a certain date and using assumptions we estimate what we think will happen in the future.
- To the right are the inputs and results of the valuation process.
- Member data, asset data and benefit provisions are provided by staff. Thank you!!
- Assumptions and Funding Methodology are determined by the Board of Trustees, with input from the actuary and other professionals.

## **Inputs**

Member Data  
Asset Data  
Benefit Provisions  
Assumptions  
Funding Methodology



## **Results**

Actuarial Value of Assets  
Actuarial Liability  
Net Actuarial Gain or Loss  
Funded Ratio  
Projection Model

# Events During FYE 2020 Impacting the April 30, 2020 Valuation



- **Actual vs expected experience:**
  - Return on the market value for FYE 2020 was 1.1%. This resulted in a return on the actuarial (smoothed) value of assets of 4.6% and created an actuarial asset loss of \$26 million for Police and \$4 million for Civilians.
  - Actuarial gain on liabilities (lower than expected)
    - Salary gain for Police of \$7 million and \$11 million gain from no COLA
    - Salary gain for Civilians of \$0.8 million and \$1.5 million gain from no COLA
  - Net experience resulted in an increase in the unfunded actuarial accrued liability (UAAL)
  
- **Scheduled decrease in investment return assumption from 7.45% to 7.40%**
  - Increase unfunded actuarial accrued liability and actuarial contribution for both systems



# Police: Key Valuation Results

Police	4/30/2020 Valuation	4/30/2019 Valuation	% Change
Unfunded Actuarial Accrued Liability (UAAL)	\$318.3M	\$297.3M	7.1%
Funded Ratio (Actuarial Assets)	74%	75%	(1.3%)
<u>Actuarial Contribution Rate:</u>			
Total Contribution Rate	45.99%	44.15%	4.2%
Employee Contribution Rate	<u>(11.55%)</u>	<u>(11.55%)</u>	<u>0.0%</u>
City Contribution Rate	34.44%	32.60%	5.6%
City Contribution Amount	\$34,741,680	\$32,797,288	5.9%



# Civilians: Key Valuation Results

Civilians	4/30/2020 Valuation	4/30/2019 Valuation	% Change
Unfunded Actuarial Accrued Liability (UAAL)	\$42.8M	\$38.4M	11.4%
Funded Ratio (Actuarial Assets)	78%	80%	(2.5%)
<u>Actuarial Contribution Rate:</u>			
Total Contribution Rate	24.27%	23.05%	5.3%
Employee Contribution Rate	<u>(5.00%)</u>	<u>(5.00%)</u>	<u>0.0%</u>
City Contribution Rate	19.27%	18.05%	6.8%
City Contribution Amount	\$5,800,468	\$5,358,552	8.2%



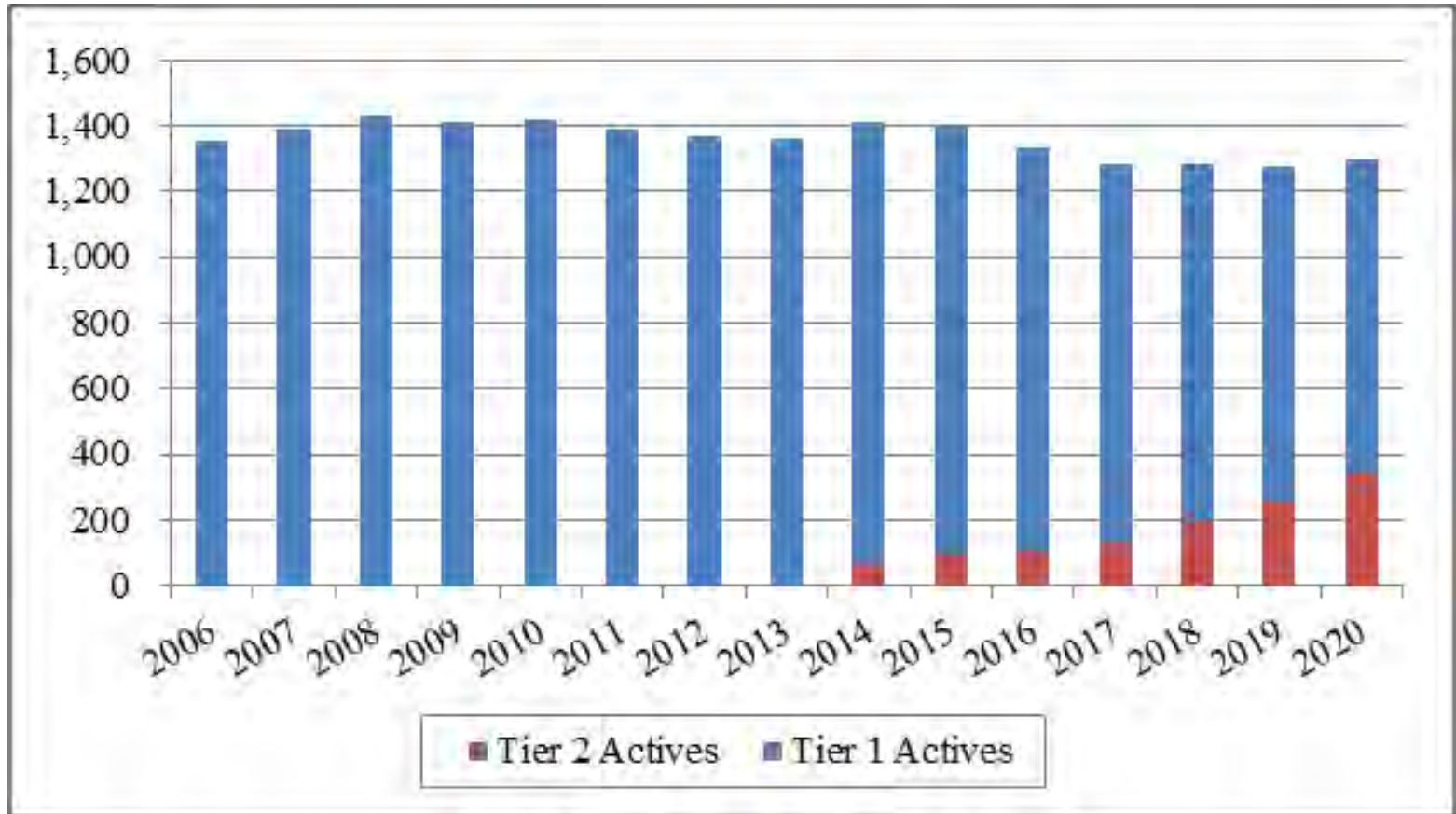
# Membership Statistics

	Police	Civilians
Active Members		
• April 30, 2020	1,297	537
• April 30, 2019	1,279	543
• % Change	1.4%	(1.1%)
Payroll (\$M)		
• April 30, 2020	\$ 97.94	\$ 29.22
• April 30, 2019	\$ 97.67	\$ 28.82
• % Change	0.3%	1.4%
Retired Members		
• April 30, 2020	1,404	290
• April 30, 2019	1,369	282
• % Change	2.6%	2.8%
Average Benefit *		
• April 30, 2020	\$44,230	\$27,492
• April 30, 2019	\$43,503	\$26,870
• % Change	1.7%	2.3%

\* Excludes supplemental benefit



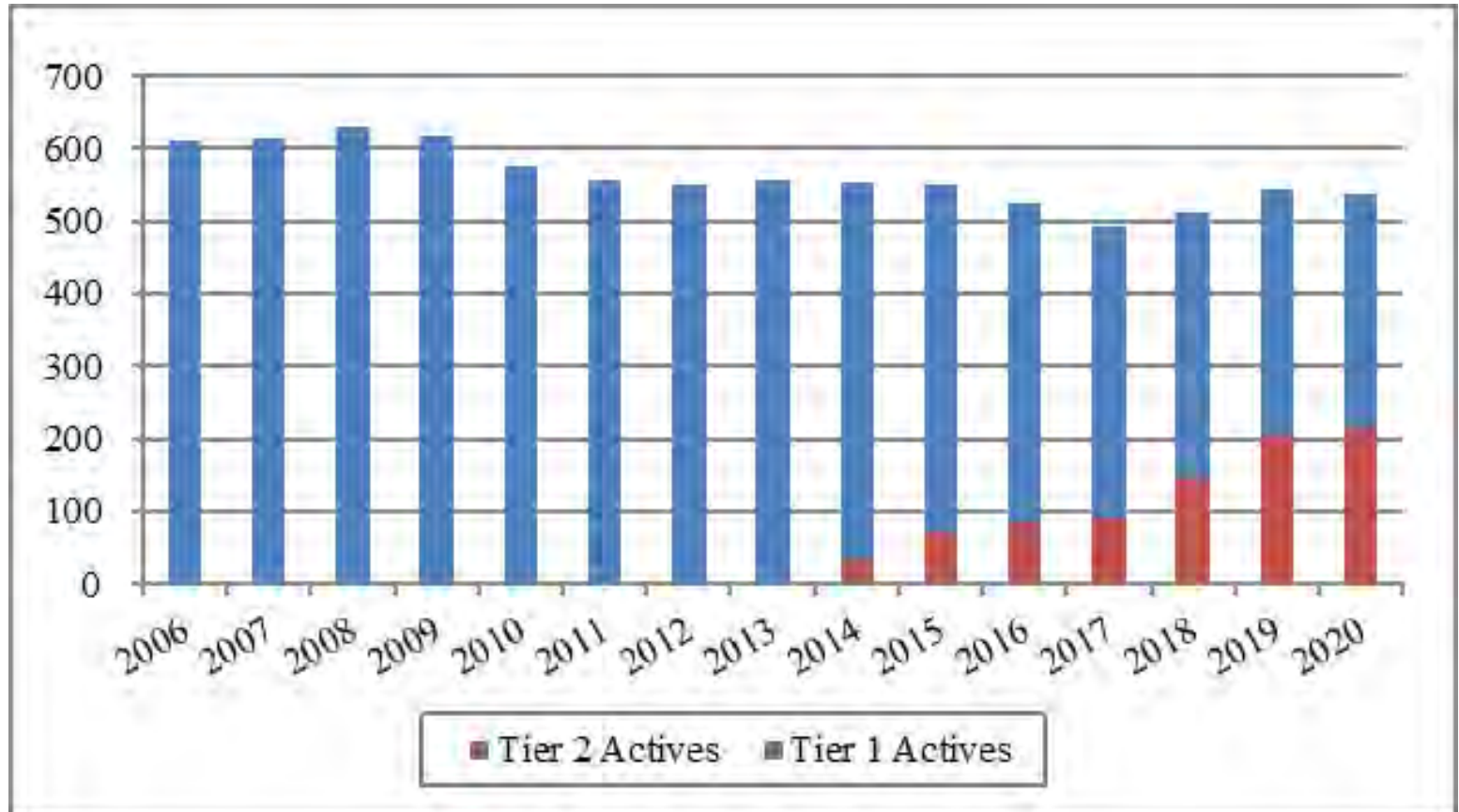
# Police – Active Membership



As of April 30, 2020, there are 346 members in Tier 2 out of a total of 1,297 (about 27%).



# Civilians - Active Membership



As of April 30, 2020, there are 216 members in Tier 2 out of a total of 537 (about 40%).



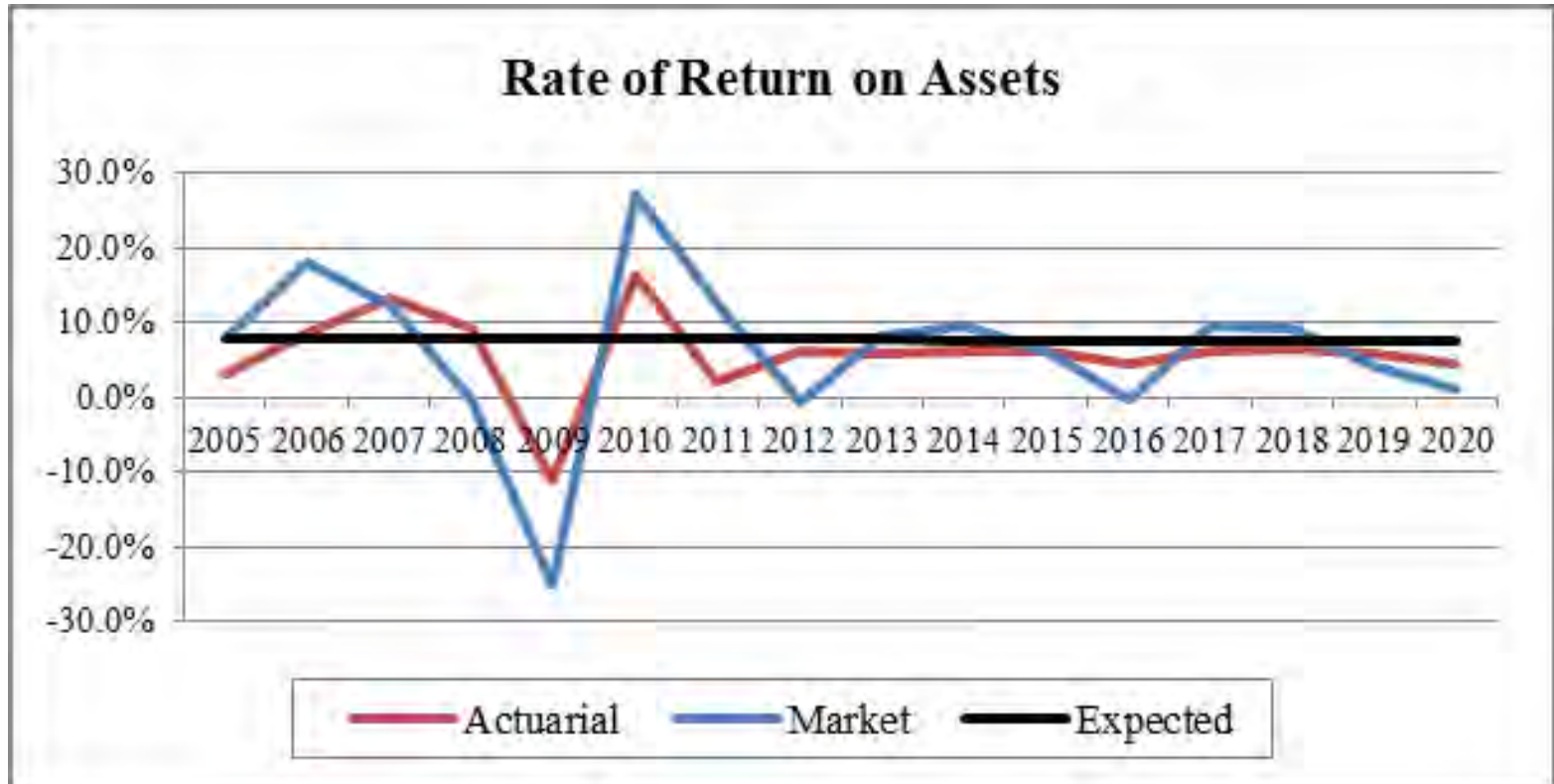


# Actuarial Value of Assets

- 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, 4/30/19	\$ 891.2	\$ 913.9
▪ Contributions	44.8	44.8
▪ Benefit Payments/Refunds	(70.3)	(70.3)
▪ Administrative Expenses	(0.9)	(0.9)
▪ Investment Income	9.5	41.5
Assets, 4/30/20	\$ 874.3	\$ 929.0
Estimated Net Return	1.1%	4.6%

**The return of 4.6% on the actuarial value of assets resulted in an actuarial loss of \$26 million.**



# Asset Values (\$M)

	Civilians	
	<u>Market</u>	<u>Actuarial</u>
Assets, 4/30/19	\$ 146.2	\$ 150.1
▪ Contributions	6.3	6.3
▪ Benefit Payments/Refunds	(8.4)	(8.4)
▪ Administrative Expenses	(0.1)	(0.1)
▪ Investment Income	1.4	6.7
Assets, 4/30/20	\$ 145.4	\$ 154.6
Estimated Net Return	1.1%	4.6%

**The return of 4.6% on the actuarial value of assets resulted in an actuarial loss of about \$4 million.**

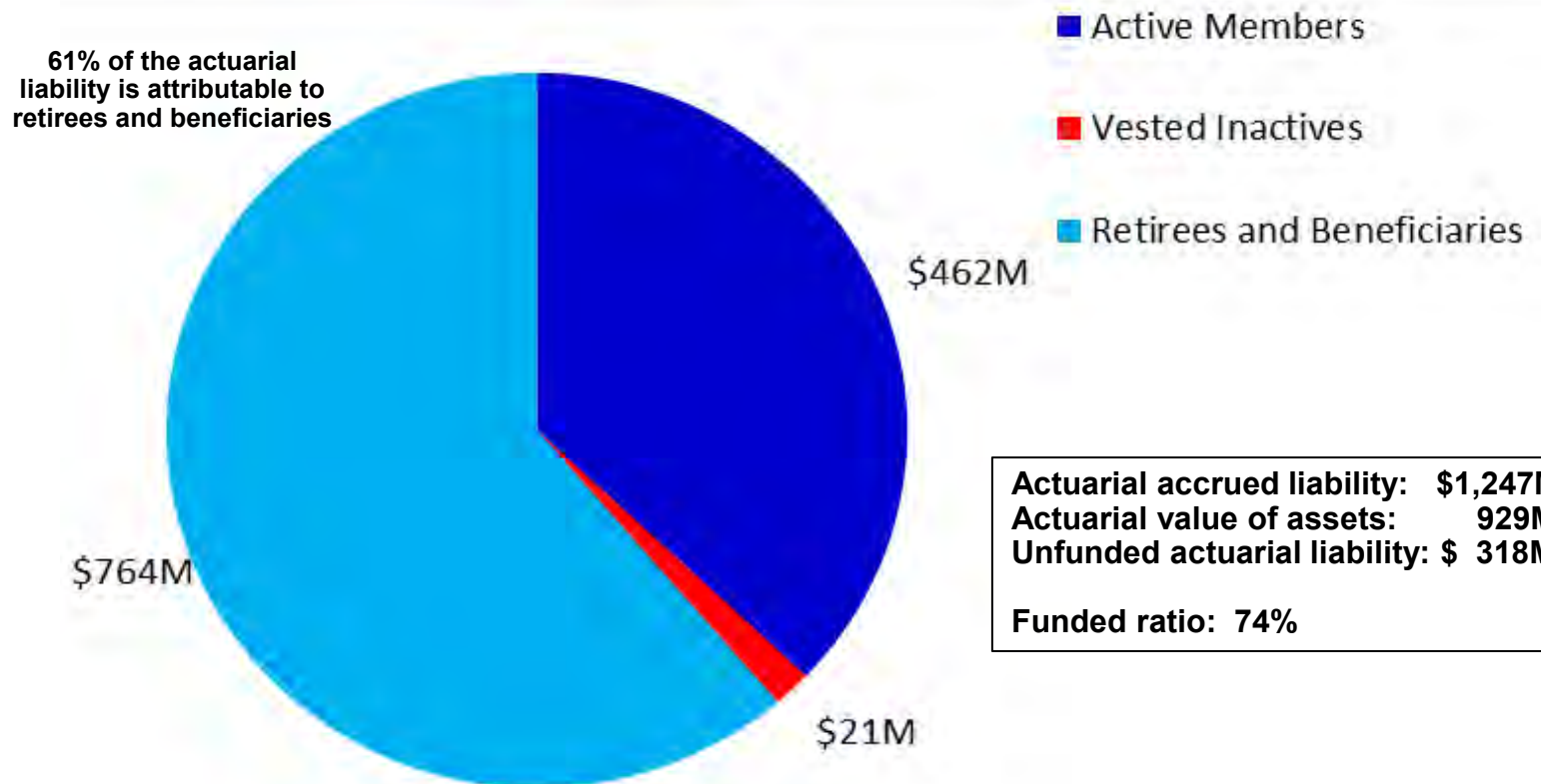
# Unfunded Actuarial Accrued Liability (UAAL)



- Actuarial accrued liability less actuarial assets
  
- Impacted by:
  - Actual vs expected experience
  - Benefit provision changes
  - Assumption changes
  - Actual contributions



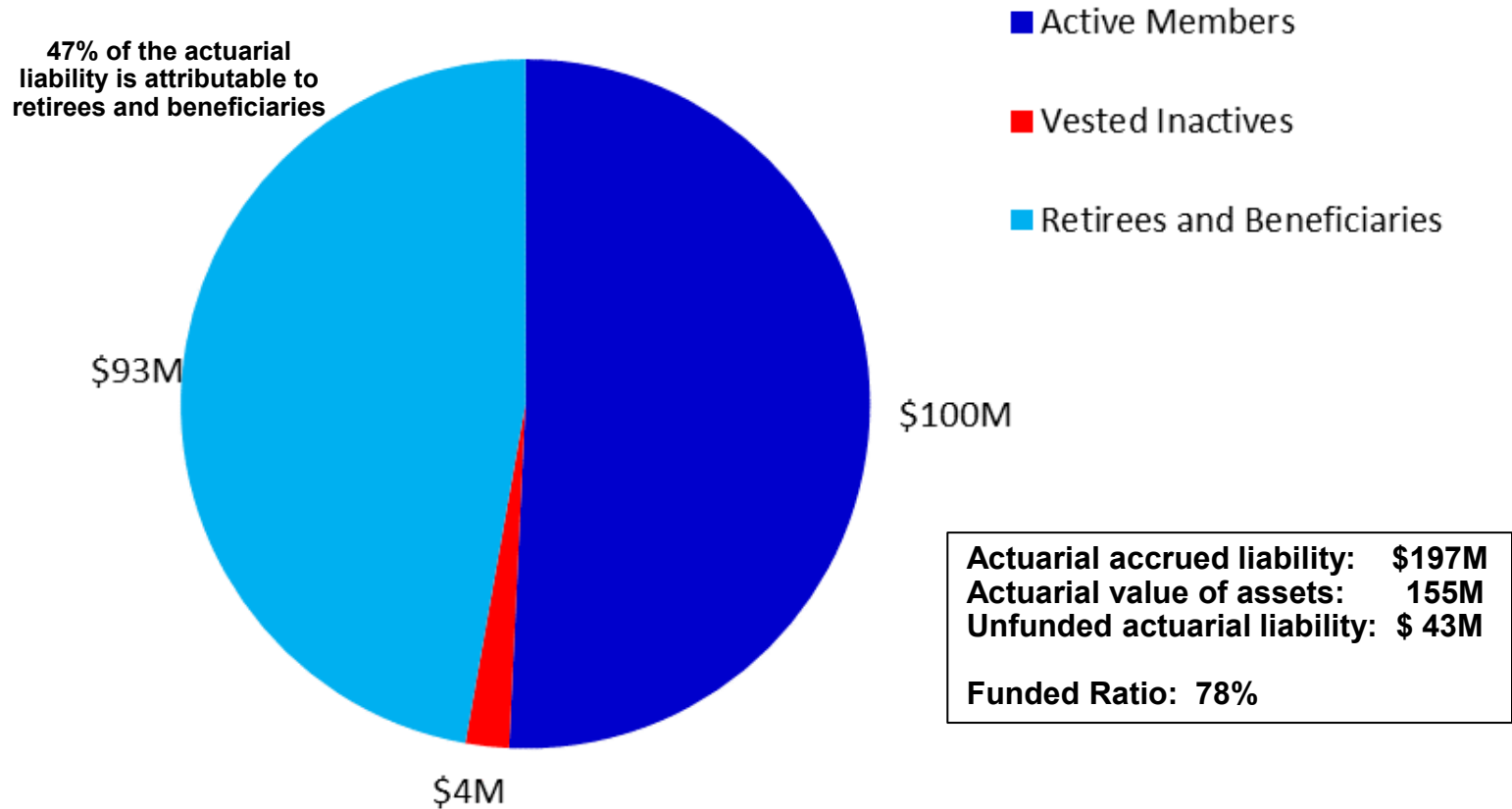
# Actuarial Liability at April 30, 2020 (Police)



Note: Numbers may not add due to rounding.



# Actuarial Liability at April 30, 2020 (Civilians)



Note: Numbers may not add due to rounding.



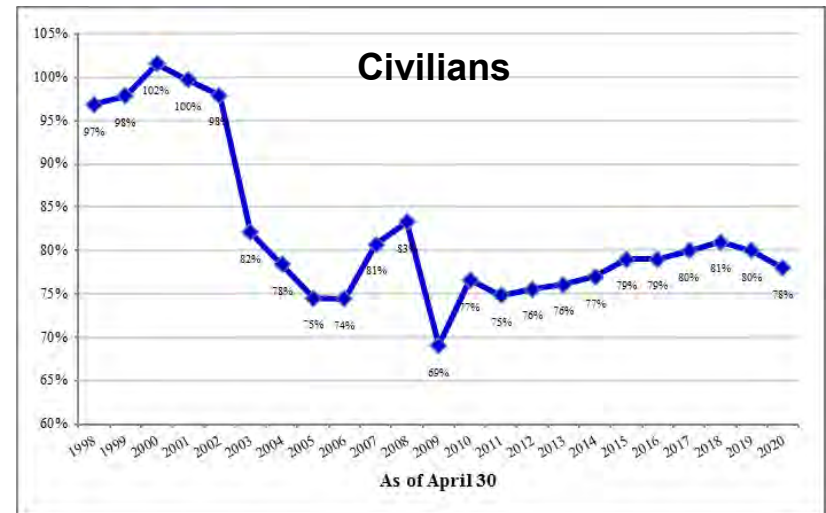
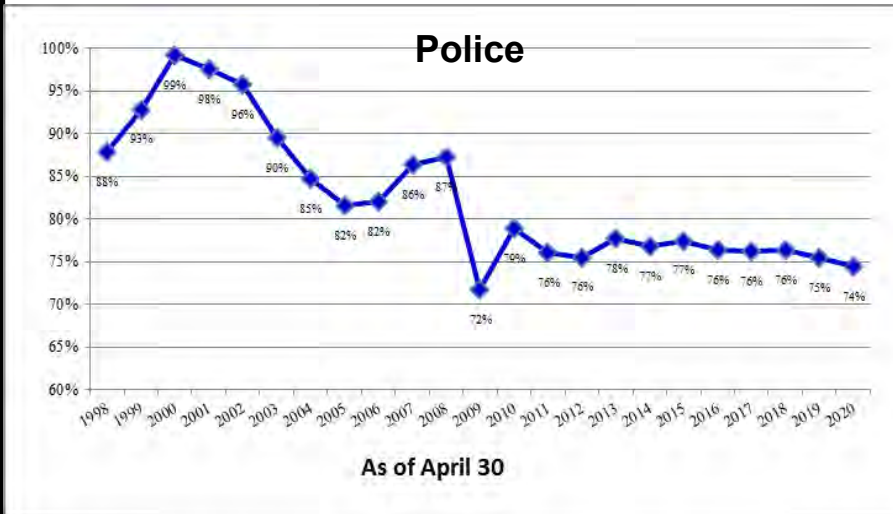
# Factors Impacting UAAL

	Police	Civilians
<b>UAAL at 4/30/19</b>	<b>\$ 297.3M</b>	<b>\$ 38.4M</b>
Contributions less than actuarial rate	0.0	0.0
Expected change due to amortization	5.3	0.4
Asset experience	25.6	4.3
Demographic experience	(15.5)	(1.7)
Assumption changes	6.7	1.2
All other experience	<u>(1.1)</u>	<u>0.2</u>
<b>UAAL at 4/30/20</b>	<b>\$ 318.3M</b>	<b>\$ 42.8M</b>





# Historical 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.
  
- 4/30/2020 valuation sets the contribution amount for May 1, 2021 to April 30, 2022



# Actuarial Contribution Rate - Police

	2020	2019	% Change
Normal Cost	25.38%	25.25%	0.5%
UAAL Payment	<u>20.61%</u>	<u>18.90%</u>	<u>9.0%</u>
<b>Total Actuarial Rate</b>	<b>45.99%</b>	<b>44.15%</b>	<b>4.2%</b>
Less Member Rate	<u>(11.55)%</u>	<u>(11.55)%</u>	<u>0.0%</u>
<b>Employer Actuarial Rate</b>	<b>34.44%</b>	<b>32.60%</b>	<b>5.6%</b>
<b>City Contribution Amount</b>	<b>\$34,741,680</b>	<b>\$32,797,288</b>	<b>5.9%</b>

Note: Increase in City Contribution from 2019 valuation is \$1,944,392



# Actuarial Contribution Rate - Civilians

	2020	2019	% Change
Normal Cost	14.91%	14.79%	0.8%
UAAL Payment	<u>9.36%</u>	<u>8.26%</u>	<u>13.3%</u>
<b>Total Actuarial Rate</b>	<b>24.27%</b>	<b>23.05%</b>	<b>5.3%</b>
Less Member Rate	<u>(5.00)%</u>	<u>(5.00)%</u>	<u>0.0%</u>
<b>Employer Actuarial Rate</b>	<b>19.27%</b>	<b>18.05%</b>	<b>6.8%</b>
<b>City Contribution Amount</b>	<b>\$5,800,468</b>	<b>\$5,358,552</b>	<b>8.2%</b>

Note: increase in City Contribution from 2019 valuation is \$441,916

# Factors Impacting Actuarial Contribution Rate



	Police	Civilians
<b>Actuarial Contribution Rate at 4/30/19</b>	<b>44.15%</b>	<b>23.05%</b>
Change in normal cost rate	(0.12%)	(0.05%)
Asset experience	2.05%	1.16%
Demographic experience	(1.25%)	(0.45%)
Assumption changes	0.70%	0.50%
Payroll increase other than expected	0.53%	0.14%
All other experience	<u>(0.07%)</u>	<u>(0.08%)</u>
<b>Actuarial Contribution Rate at 4/30/20</b>	<b>45.99%</b>	<b>24.27%</b>

# Police: Impact of Alternate Investment Return Assumptions



<b>Valuation Results at</b>	<b>6.90%</b>	<b>7.40%</b>	<b>7.90%</b>
Normal Cost Rate	28.53%	25.38%	22.66%
UAAL Contribution	<u>25.70%</u>	<u>20.61%</u>	<u>15.62%</u>
Total Actuarial Contribution	54.23%	45.99%	38.28%
Employee Contribution Rate	<u>(11.55%)</u>	<u>(11.55%)</u>	<u>(11.55%)</u>
City Contribution Rate	42.68%	34.44%	26.73%
<b>City Contribution (\$M)</b>	<b>43.1</b>	<b>34.7</b>	<b>27.0</b>
<b>Funded Ratio</b>	<b>70%</b>	<b>74%</b>	<b>79%</b>
<b>Unfunded Actuarial Accrued Liability (\$M)</b>	<b>397</b>	<b>318</b>	<b>247</b>



# 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 at least one of the criteria
- 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
  - ✓ Deferred investment losses (market value < actuarial value) and full impact of Covid-19 unknown



# 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



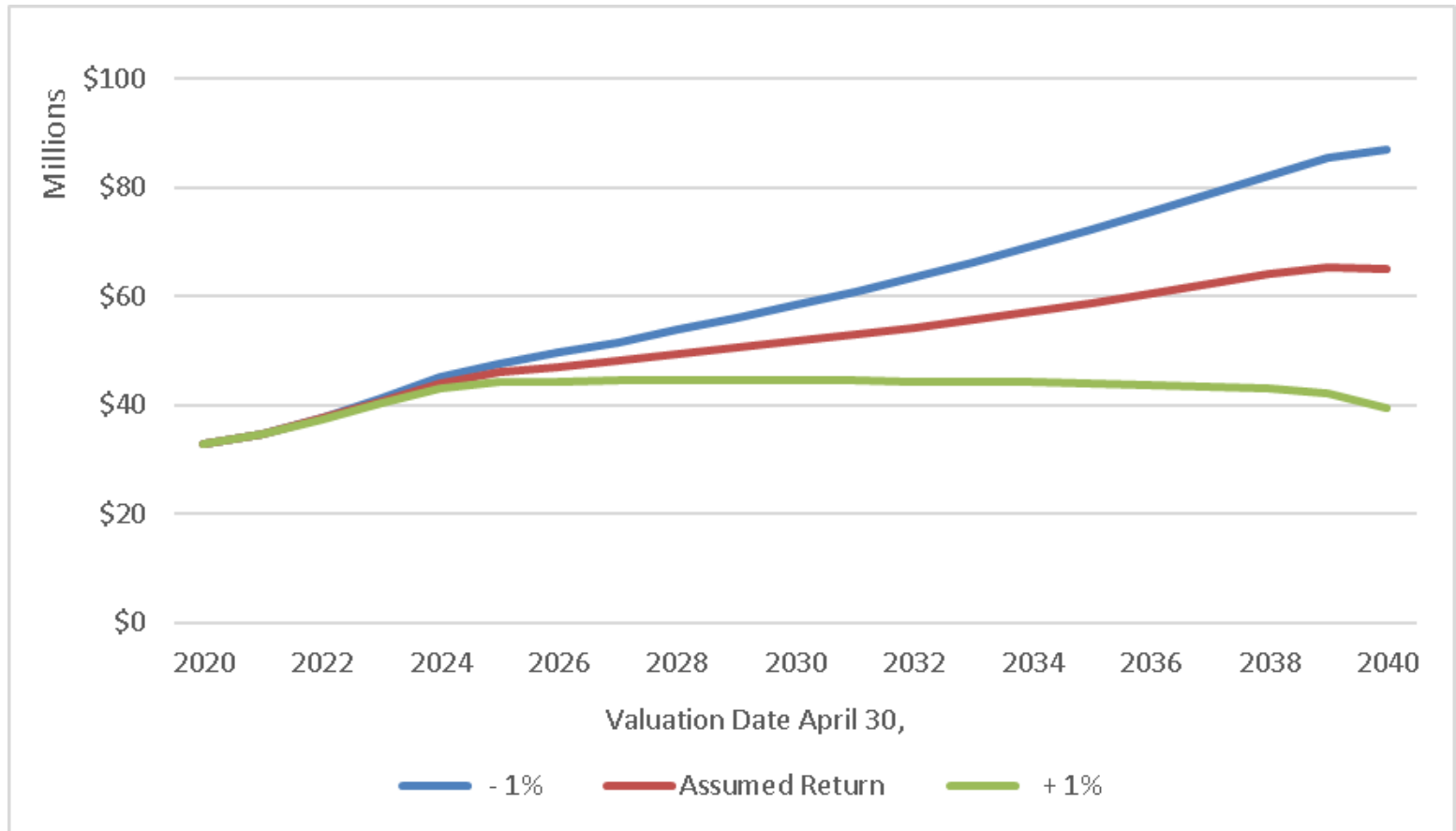


# Limitations of Projections

- Not precise predictions but rather general trends
- Projections based on many assumptions
  - Reflects step down of investment return assumption over next three years to 7.25%
  - Assumes the 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

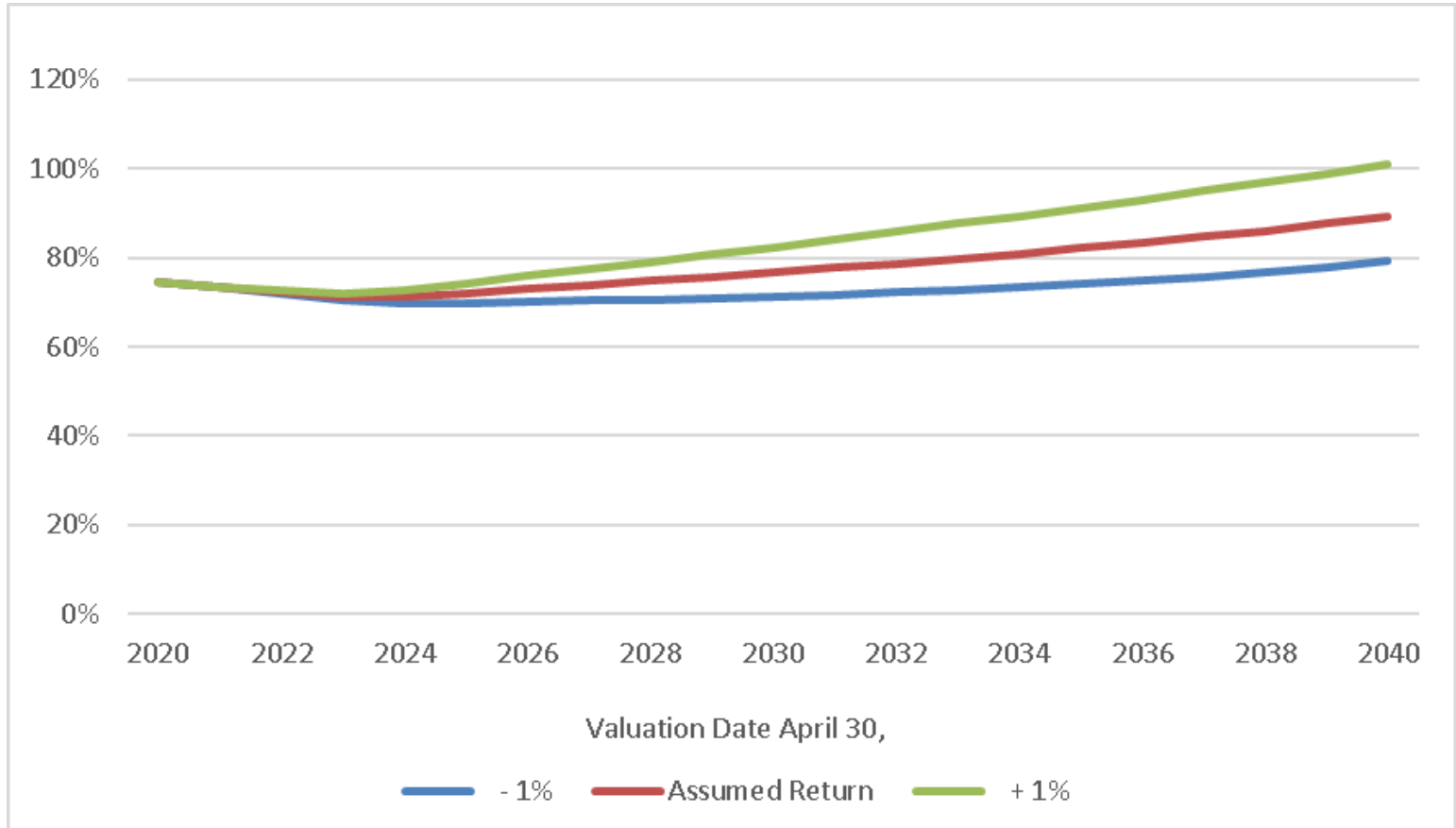


# Police Retirement System City Contribution Amount



Projections reflect the step down in the investment return assumption over the next three years and actual returns equal to the assumption compared to 1% higher/lower than the assumption.

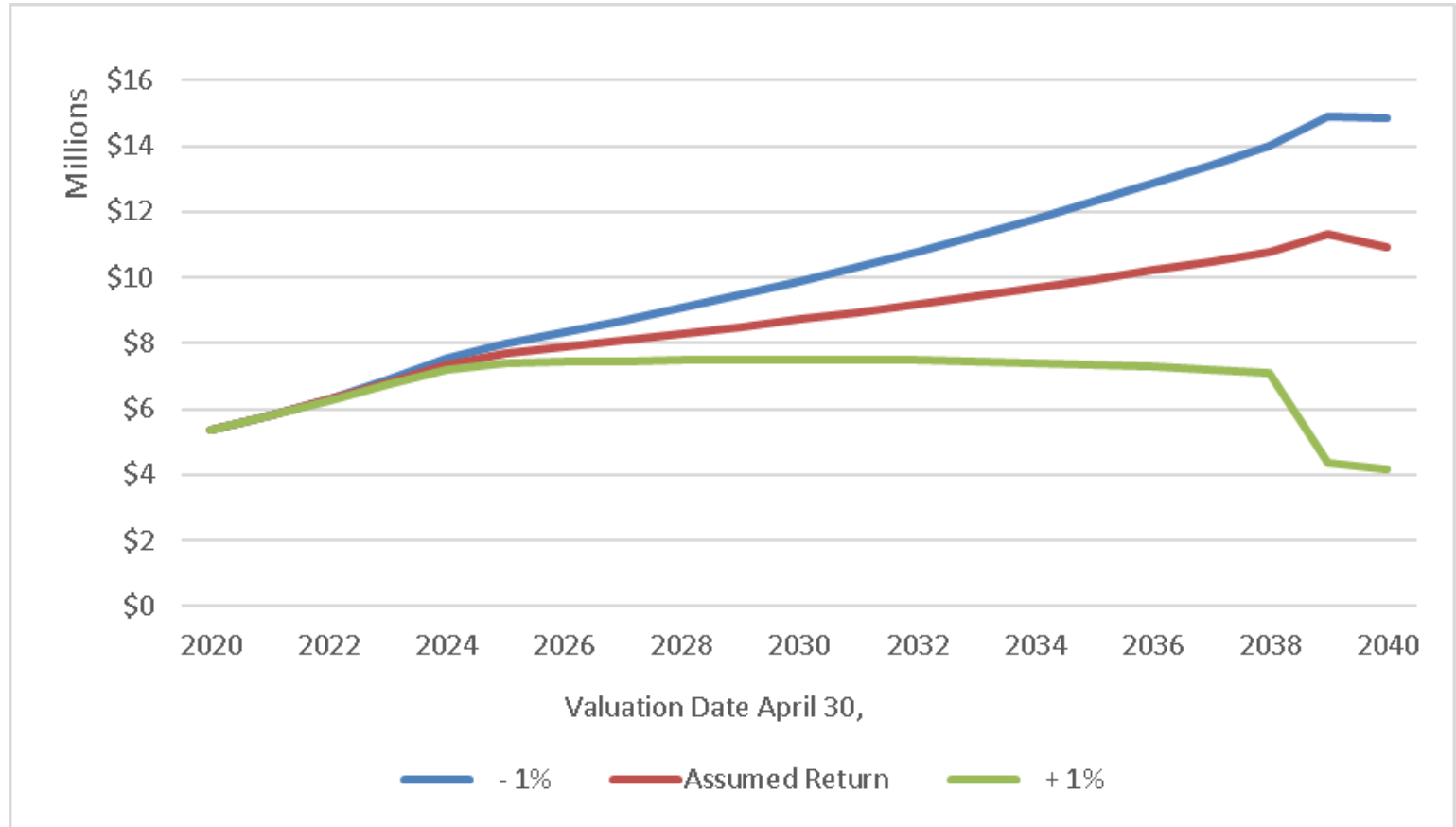
# Police Retirement System Funded Ratio



Projections reflect the step down in the investment return assumption over the next three years and actual returns equal to the assumption compared to 1% higher/lower than the assumption.

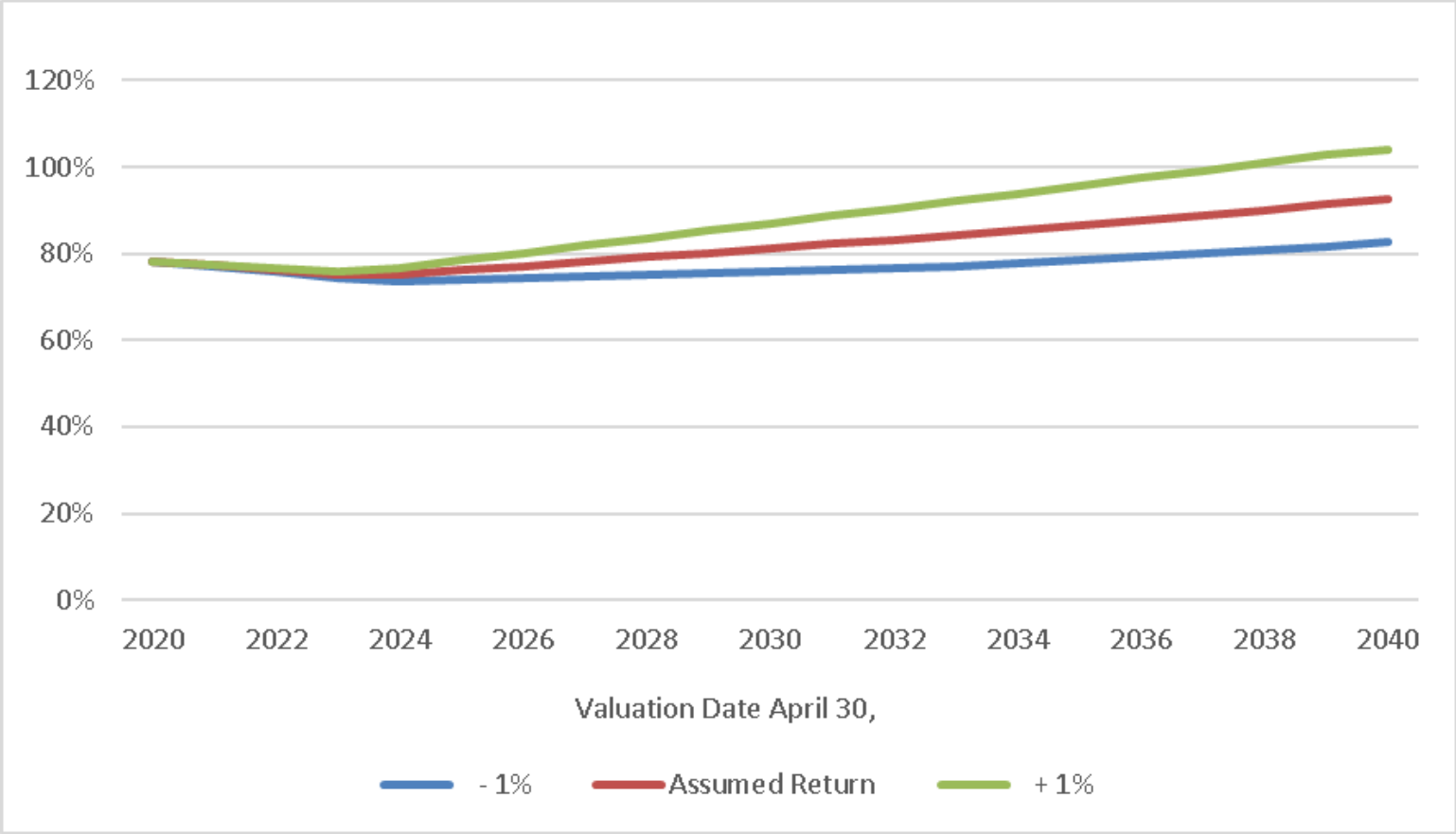


# Civilians Retirement System City Contribution Amount



Projections reflect the step down in the investment return assumption over the next three years and actual returns equal to the assumption compared to 1% higher/lower than the assumption.

# Civilians Retirement System Funded Ratio



Projections reflect the step down in the investment return assumption over the next three years and actual returns equal to the assumption compared to 1% higher/lower than the assumption.



# Comments

- 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 losses, is expected to result in increases in the contribution amounts and decline in funded ratio in the future, absent favorable experience
- COLA policy provides a potential mechanism to address funding concerns

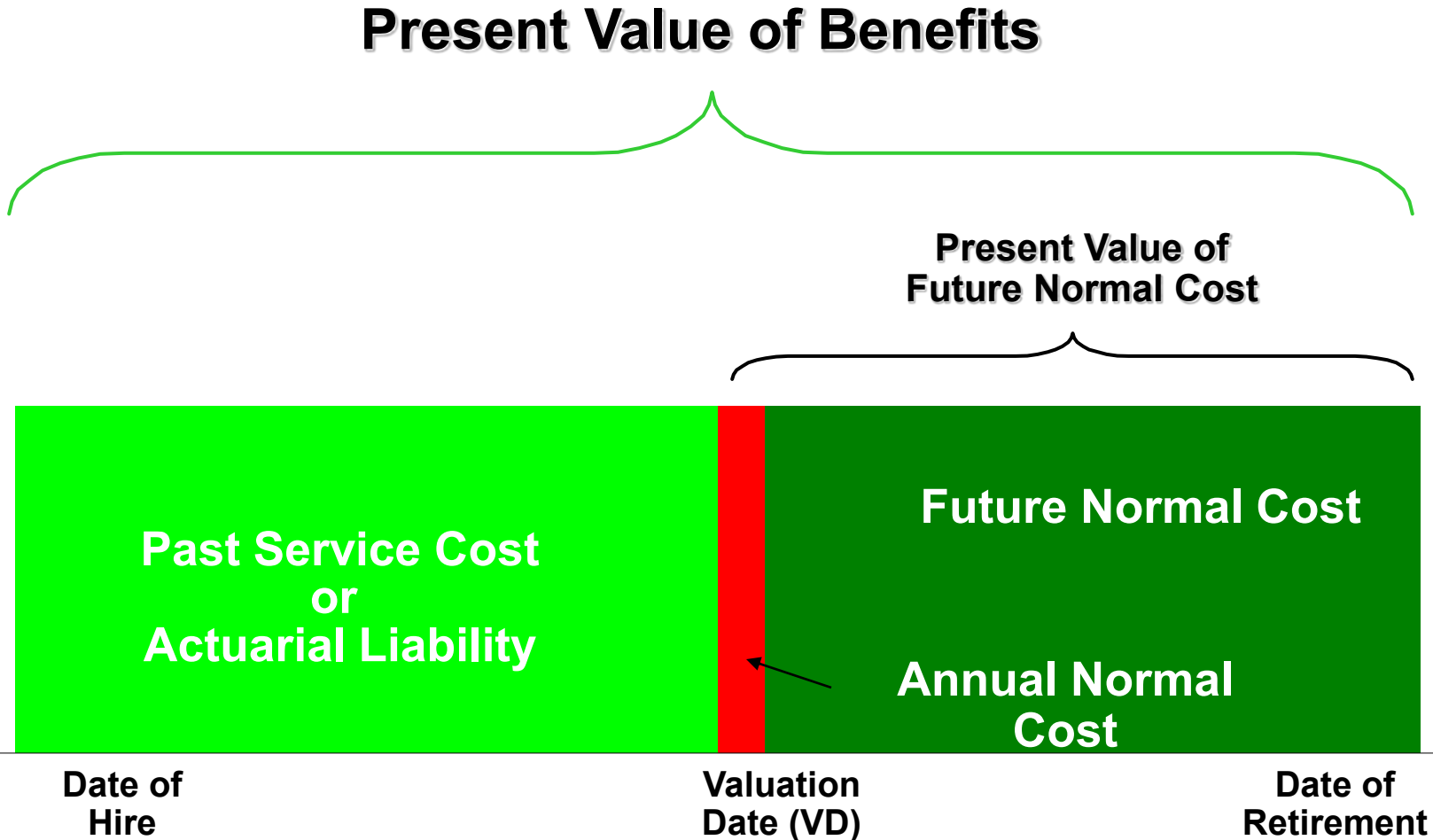


# **Appendix of Supplemental Information**



# Actuarial Funding Process

Contribution as  
% of Pay



**Actuarial Accrued Liability – Actuarial Assets = Unfunded Actuarial Accrued Liability**



# Unfunded Actuarial Accrued Liability (UAAL) at April 30, 2020



Dollars Shown in Millions

	Police	Civilians
Actuarial Accrued Liability	\$1,247	\$ 197
Actuarial Value of Assets	<u>929</u>	<u>155</u>
Unfunded Actuarial Accrued Liability*	318	43
Funded Ratio	74%	78%

\* Numbers may not add or subtract due to rounding.

# Unfunded Actuarial Accrued Liability Amortization Rate - Police



	Original Amount	Remaining Payment	5/1/2021 Balance	Annual Payment
2017 Legacy UAAL	\$271,513,914	27	\$283,864,270	\$17,807,771
2018 Experience	3,938,832	18	3,919,779	314,580
2019 Experience Study	7,029,844	19	7,005,557	542,444
2019 Experience	10,682,521	19	10,645,614	824,296
2020 Assumption Change	7,234,995	20	7,234,995	541,921
2020 Experience	10,137,107	20	10,137,107	759,298
Total			\$322,807,322	\$20,790,310

1. Total UAAL Amortization Payment	\$ 20,790,310
2. Expected Payroll for FYE 2022	100,875,957
3. UAAL Payment Rate: (1)/(2)	20.61%



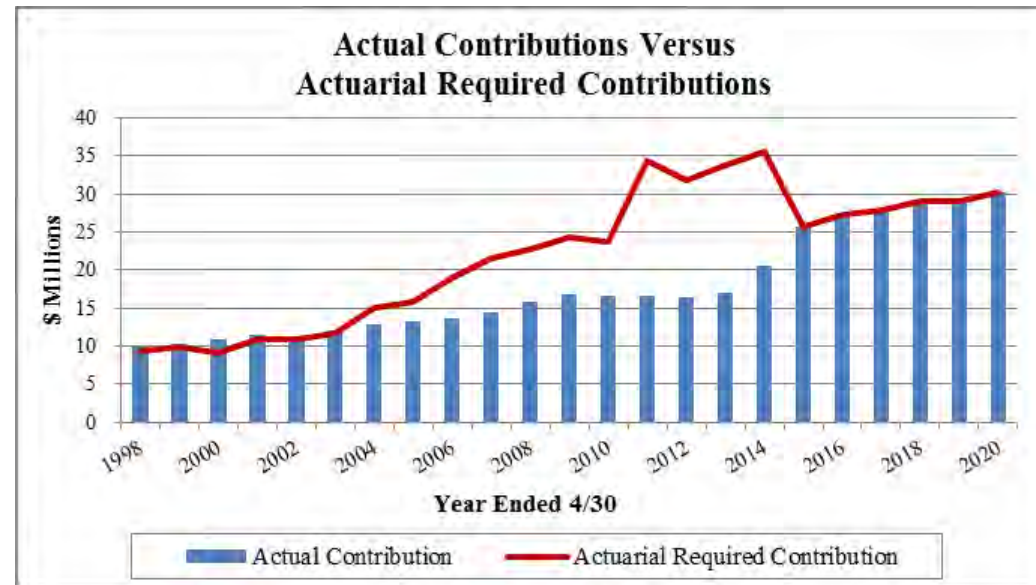
# Risk Considerations

- “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

Police Retirement System

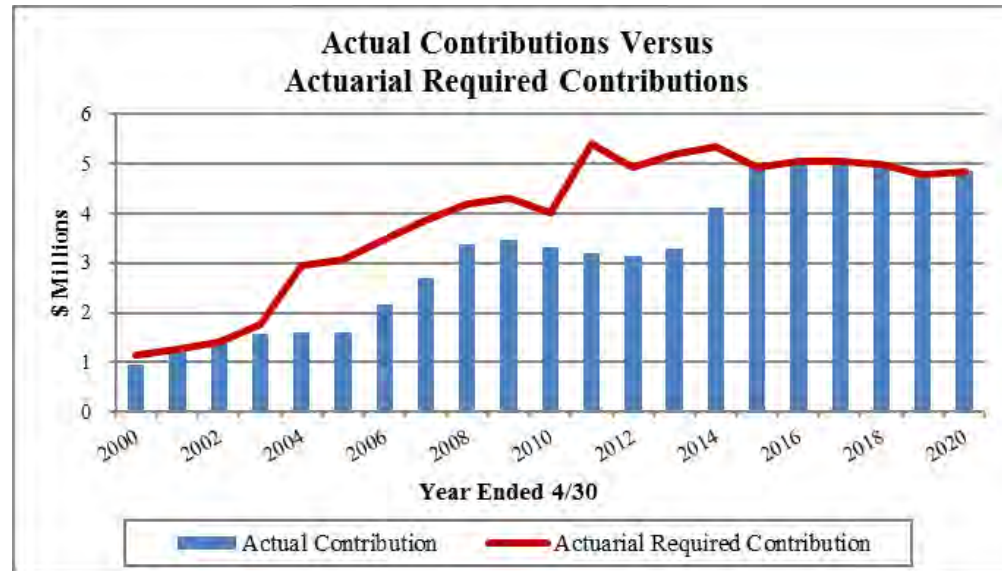


- Contributions less than actuarial amount for 2003 through 2014. Full actuarial contribution is now required by statute.

# ASOP 51: Funding Risk

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

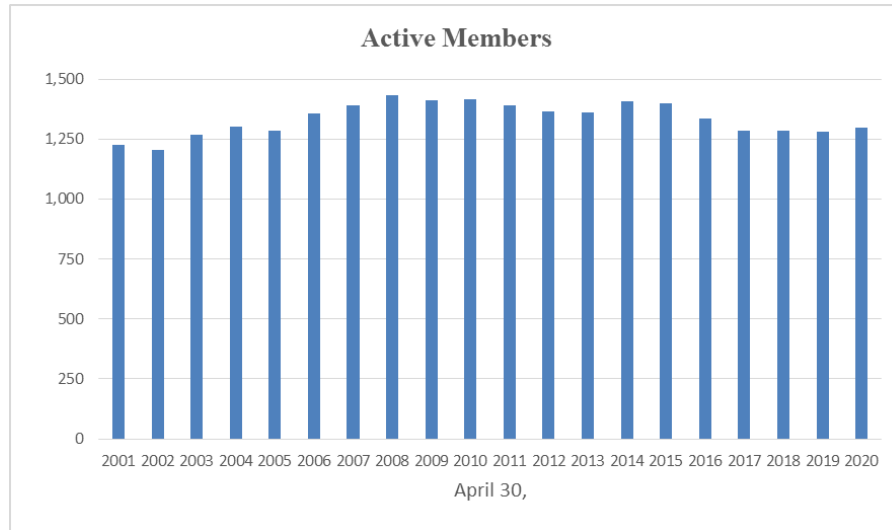
Civilians Retirement System



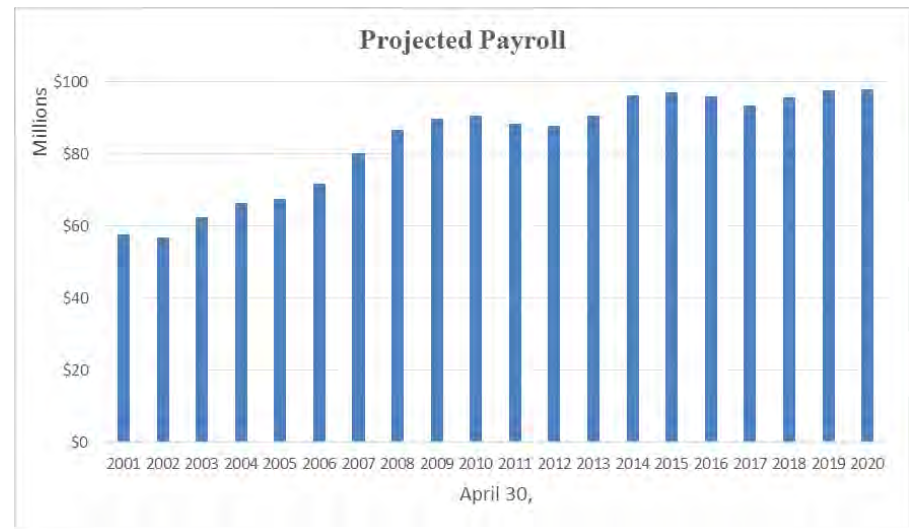
- Contributions less than actuarial amount for 2003 through 2014. Full actuarial contribution is now required by statute.



# Police Payroll Growth Risk



**Any decrease in the size of the active membership puts pressure on the contribution rate largely because covered payroll does not increase as assumed.**

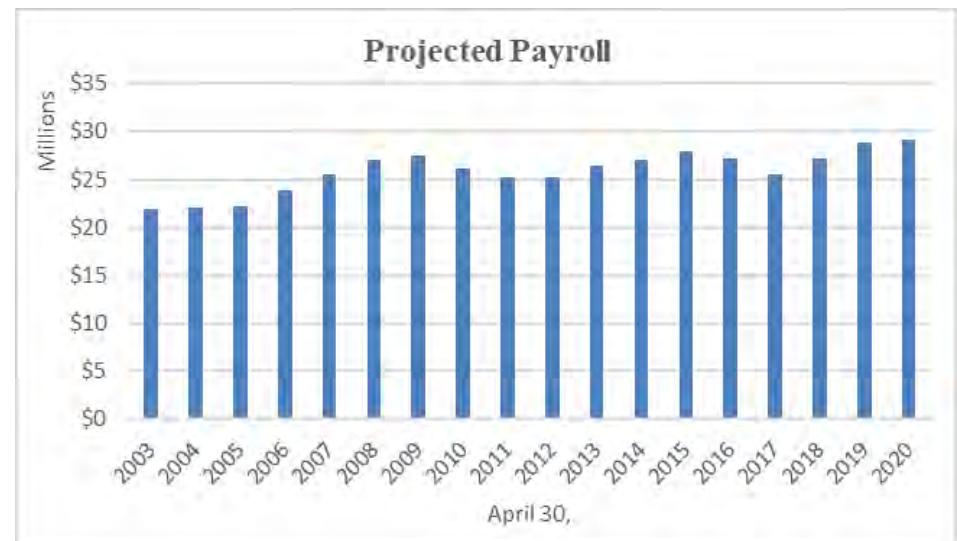




# Civilians Payroll Growth Risk



**Any decrease in the size of the active membership puts pressure on the contribution rate largely because covered payroll does not increase as assumed.**





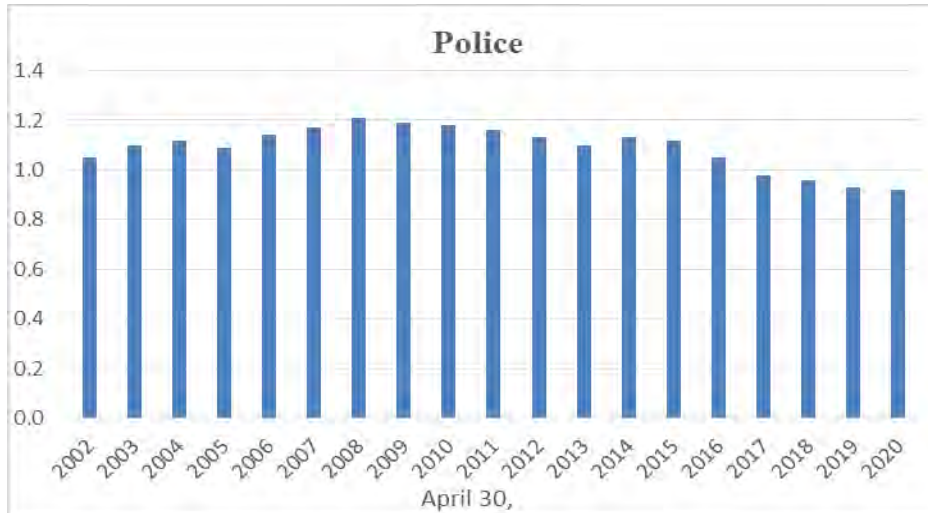
# ASOP 51: Maturity Measurements

- 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

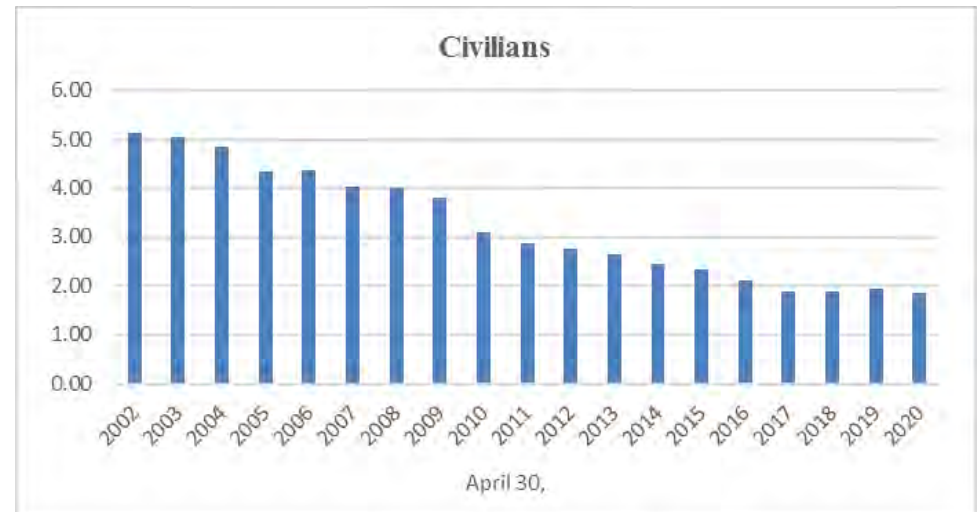




# Maturity Measure: Active to Retiree Ratio



**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 but Civilians more than the Police Plan.**





# Contribution Rate Volatility

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

	Year	Assets	Payroll	Ratio
Police	2020	\$874.3M	\$97.9M	8.93
Civilians	2020	\$145.4M	\$29.2M	4.97

- Underperforming the investment return assumption by 10% (e.g., -2.60% for one year)
  - Police:
    - Actuarial loss of \$87 million or 89% of payroll
    - Increases contribution rate by 6.69% of pay (without smoothing)
  - Civilians:
    - Actuarial loss of \$15 million or 50% of payroll
    - Increases contribution rate by 3.72% of pay (without smoothing)
- Same investment experience has a more dramatic impact on the contribution rate for Police