



# FUNDED PROJECTIONS UNDER VARIOUS DISCOUNT RATE AND ASSET RETURNS

**Board of Trustees Meeting**

October 10, 2018

**Dallas Police and Fire Pension System**

 Segal Consulting

## Agenda

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1. Summary of January 1, 2018 Actuarial Valuation Results
2. Importance of Accurate Payroll Projections
3. Funded Percentage Projection
4. Discount Rate and Asset Return Stress Testing
5. Commentary and Conclusion
6. Graphs
7. Assumptions
8. Caveats



## Summary of 2018 Actuarial Valuation Results

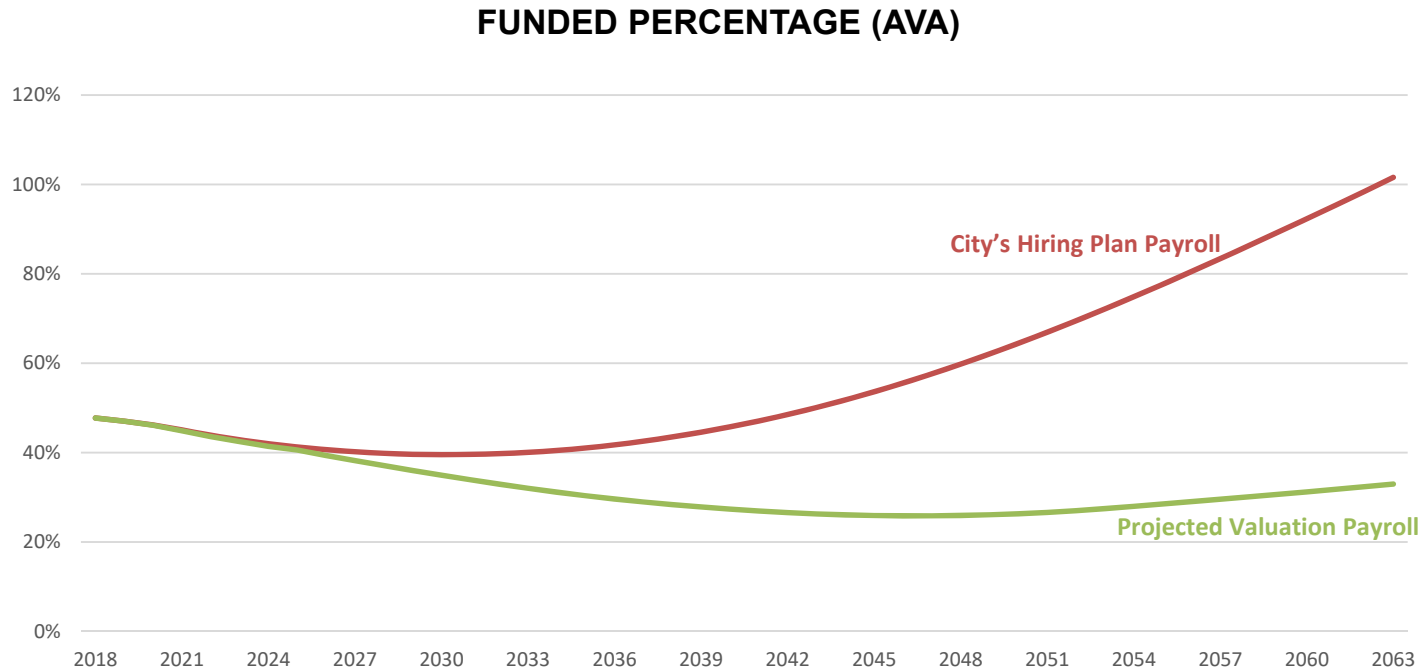
	As of 1/1/2018
Total Normal Cost, Including Administrative Expenses	\$61,892,453
Expected Member Contributions	<u>-46,714,953</u>
Employer Normal Cost	\$15,177,500
Total Normal Cost as a % of Computation Pay	17.89%
Employer Normal Cost as a % of Computation Pay	4.39%
Actuarial Accrued Liability	\$4,505,437,185
Actuarial Value of Assets	<u>-2,151,039,343</u>
Unfunded Liability	\$2,354,397,842
Funded Ratio	47.74%
Computation Payroll	\$346,036,690
<b>Actuarially Determined Employer Contribution, in dollars</b>	<b>\$157,100,128</b>
<b>Actuarially Determined Employer Contribution, as a percentage of computation pay</b>	<b>45.40%</b>
<b>100% Projected Funded Status Year, based on City's Hiring Plan Payroll</b>	<b>2063</b>

## The Importance of Accurate Payroll Projections

- The System should target 100% funding of the actuarial accrued liability, with City and member contributions sufficient to cover normal cost, interest on the unfunded actuarial accrued liability and, ultimately, the principal balance.
- The funding policy adopted by the State in HB 3158 meets this standard, if the City's Hiring Plan payroll projections come to fruition.
- Assuming the City's Hiring Plan payroll projection is met, the expected full-funding date is 2063.
- However, if the City's Hiring Plan projections are not met and instead the current valuation payroll million increases by the 2.75% assumed payroll growth each year ongoing, and if City and member contributions are based on this projected payroll beginning in 2025, the System is not projected to reach full funding in the next 100 years.

Year	City's Hiring Plan Payroll	Projected Valuation Payroll
2017	\$372,000,000	\$357,414,472
2018	364,000,000	346,036,690
2019	383,000,000	355,552,699
2020	396,000,000	365,330,398
2021	408,000,000	375,376,984
2022	422,000,000	385,699,851
2023	438,000,000	396,306,597
2024	454,000,000	407,205,029
2025	471,000,000	418,403,167
2026	488,000,000	429,909,254
2027	507,000,000	441,731,758
2028	525,000,000	453,879,382
2029	545,000,000	466,361,065
2030	565,000,000	479,185,994
2031	581,000,000	492,363,609
2032	597,000,000	505,903,608
2033	614,000,000	519,815,957
2034	631,000,000	534,110,896
2035	648,000,000	548,798,946
2036	666,000,000	563,890,917
2037	684,000,000	579,397,917

# Funded Percentage Projection



The projection above anticipates that all actuarial assumptions are met in the future and all contributions are made as expected. Projections are based on the City's Hiring Plan payroll projections through 2037 for the "City's Hiring Plan Payroll" projection. The "Projected Valuation Payroll" uses the actual January 1, 2018 payroll projected forward each year at the 2.75% growth assumption.

Based on the City's Hiring Plan payroll projections, 100% funding is projected by January 1, 2063. Based on the projected valuation payroll, the funded percent is projected to be 33% on January 1, 2063.

# **Projections Based on Different Discount Rates, With Stress-Testing Based on Low Market Rates of Return in the Near Term**



HIRING PLAN PAYROLL					
7.25% Discount Rate					
MVA ROR in 2019	MVA ROR in 2020	MVA ROR in 2021	Funded % 1/1/2063	Year Lowest Funded % 2018 - 2080	Projected Insolvent
5.00%	5.25%	6.25%	101.6%	2030: 39.5%	No
-20.00%	5.25%	6.25%	31.1%	2042: 13.8%	No
-10.00%	5.25%	6.25%	59.3%	2036: 26.0%	No
-5.00%	5.25%	6.25%	73.4%	2034: 31.0%	No
0.00%	0.00%	0.00%	60.7%	2036: 26.5%	No
-28.50%*	5.25%	6.25%	7.1%	2048: 0.4%	No

VALUATION PAYROLL					
7.25% Discount Rate					
MVA ROR in 2019	MVA ROR in 2020	MVA ROR in 2021	Funded % 1/1/2063	Year Lowest Funded % 2018 - 2080	Projected Insolvent
5.00%	5.25%	6.25%	33.0%	2046: 25.9%	No
-20.00%	5.25%	6.25%	N/A	2038: Insolvent	Yes
-10.00%	5.25%	6.25%	N/A	2048: Insolvent	Yes
-5.00%	5.25%	6.25%	4.8%	2075: 3.5%	No
0.00%	0.00%	0.00%	N/A	2049: Insolvent	Yes
-5.75%*	5.25%	6.25%	2.7%	2079: 0.6%	No

7.00% Discount Rate					
MVA ROR in 2019	MVA ROR in 2020	MVA ROR in 2021	Funded % 1/1/2063	Year Lowest Funded % 2018 - 2080	Projected Insolvent
5.00%	5.25%	6.25%	91.9%	2031: 37.7%	No
-20.00%	5.25%	6.25%	28.0%	2043: 11.9%	No
-10.00%	5.25%	6.25%	53.6%	2037: 24.0%	No
-5.00%	5.25%	6.25%	66.3%	2035: 29.0%	No
0.00%	0.00%	0.00%	54.8%	2037: 24.5%	No
-27.50%*	5.25%	6.25%	8.2%	2048: 0.2%	No

7.00% Discount Rate					
MVA ROR in 2019	MVA ROR in 2020	MVA ROR in 2021	Funded % 1/1/2063	Year Lowest Funded % 2018 - 2080	Projected Insolvent
5.00%	5.25%	6.25%	27.2%	2049: 21.9%	No
-20.00%	5.25%	6.25%	N/A	2038: Insolvent	Yes
-10.00%	5.25%	6.25%	N/A	2046: Insolvent	Yes
-5.00%	5.25%	6.25%	1.7%	2074: 0.8%	No
0.00%	0.00%	0.00%	1.1%	2076: 0.1%	No
-5.00%*	5.25%	6.25%	1.7%	2074: 0.8%	No

6.75% Discount Rate					
MVA ROR in 2019	MVA ROR in 2020	MVA ROR in 2021	Funded % 1/1/2063	Year Lowest Funded % 2018 - 2080	Projected Insolvent
5.00%	5.25%	6.25%	83.8%	2032: 35.8%	No
-20.00%	5.25%	6.25%	25.6%	2044: 10.1%	No
-10.00%	5.25%	6.25%	48.9%	2039: 22.0%	No
-5.00%	5.25%	6.25%	60.5%	2036: 27.0%	No
0.00%	0.00%	0.00%	50.0%	2038: 22.6%	No
-27.00%*	5.25%	6.25%	9.3%	2048: 0.1%	No

6.75% Discount Rate					
MVA ROR in 2019	MVA ROR in 2020	MVA ROR in 2021	Funded % 1/1/2063	Year Lowest Funded % 2018 - 2080	Projected Insolvent
5.00%	5.25%	6.25%	22.5%	2051: 18.0%	No
-20.00%	5.25%	6.25%	N/A	2037: Insolvent	Yes
-10.00%	5.25%	6.25%	N/A	2044: Insolvent	Yes
-5.00%	5.25%	6.25%	N/A	2054: Insolvent	Yes
0.00%	0.00%	0.00%	N/A	2045: Insolvent	Yes
-4.50%*	5.25%	6.25%	0.5%	2058: 0.2%	No

\*Lowest MVA ROR possible in 2019 for projection to remain positively funded each year

## Commentary and Conclusion

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- Regardless of the discount rate, adverse asset return experience in the next few years can have a potentially severe impact on the System's future, under either payroll assumption.
- Under the Hiring Plan payroll assumptions, none of the asset return scenarios projected insolvency, although all of the scenarios produce years of extremely low funded percentages.
- Insolvency is defined herein as market value of assets less than \$0.
- Under the Valuation payroll assumptions, half of the scenarios project System insolvency, including three scenarios at the current 7.25% discount rate.

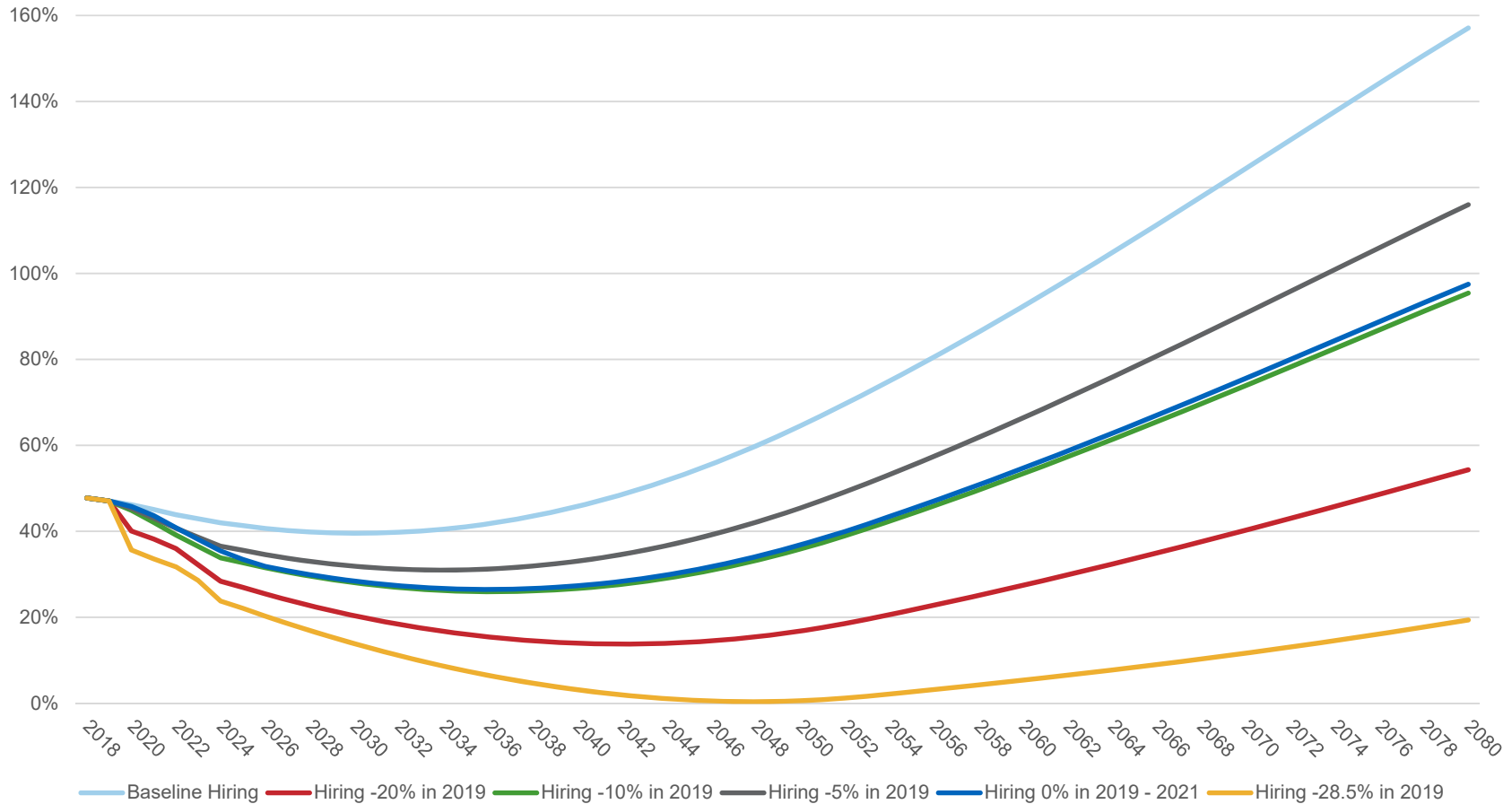
## Conclusion

- The discount rate does not have as big of an impact on System solvency as the payroll assumption and asset performance.



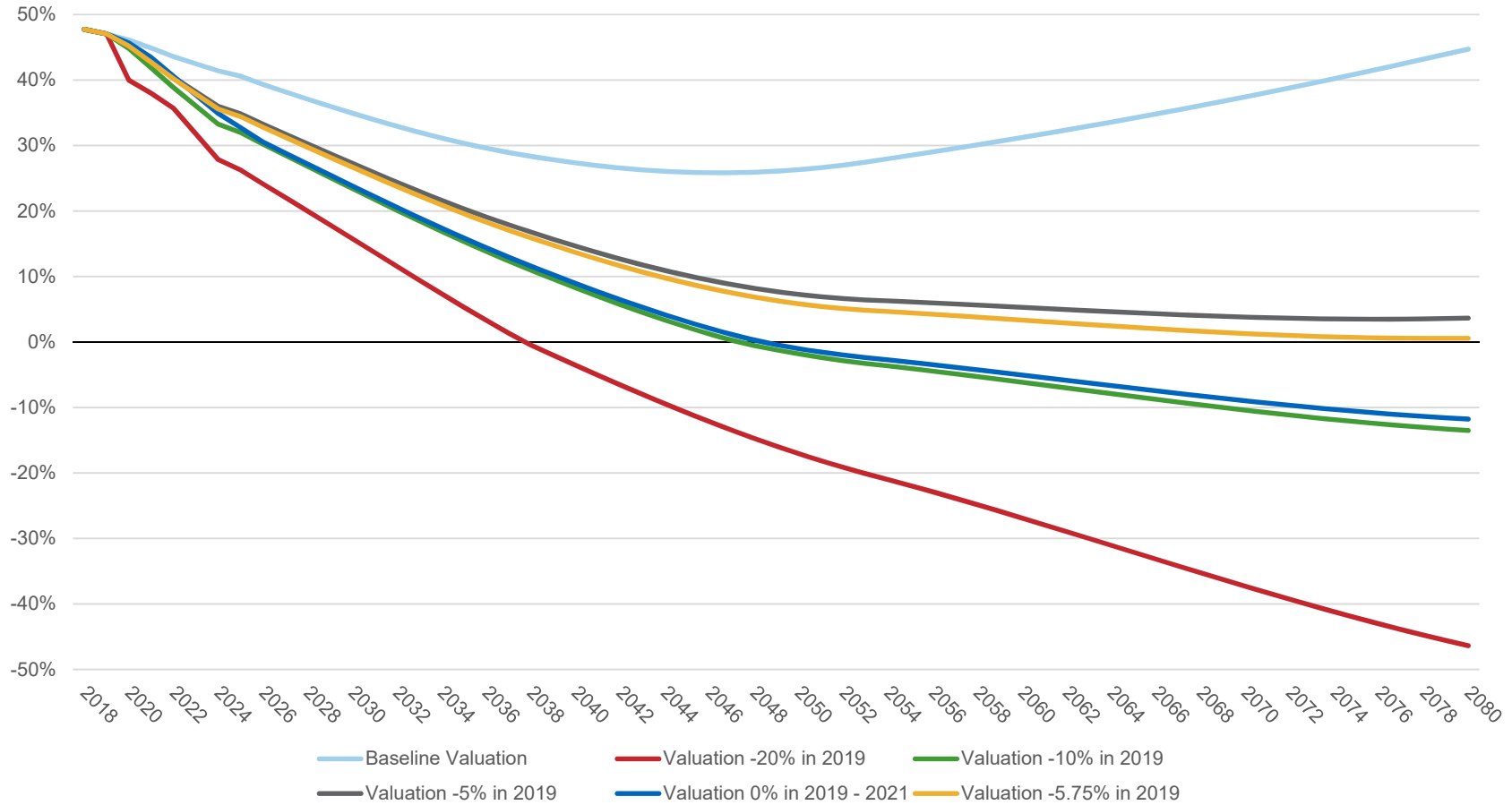
## 7.25% Discount Rate – Hiring Plan Payroll Assumptions

### Projected Funded Percentage



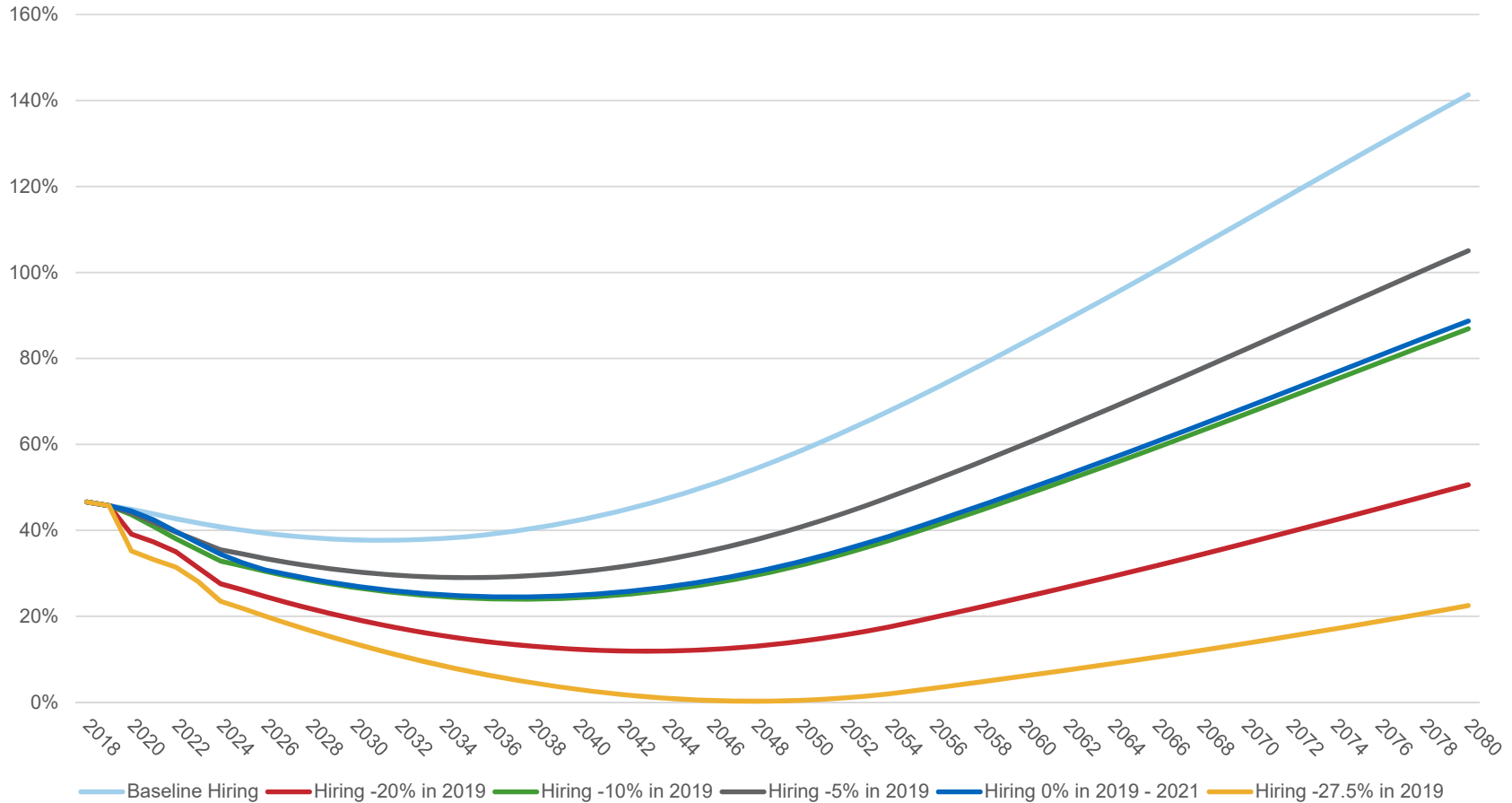
## 7.25% Discount Rate – Valuation Payroll Assumptions

### Projected Funded Percentage



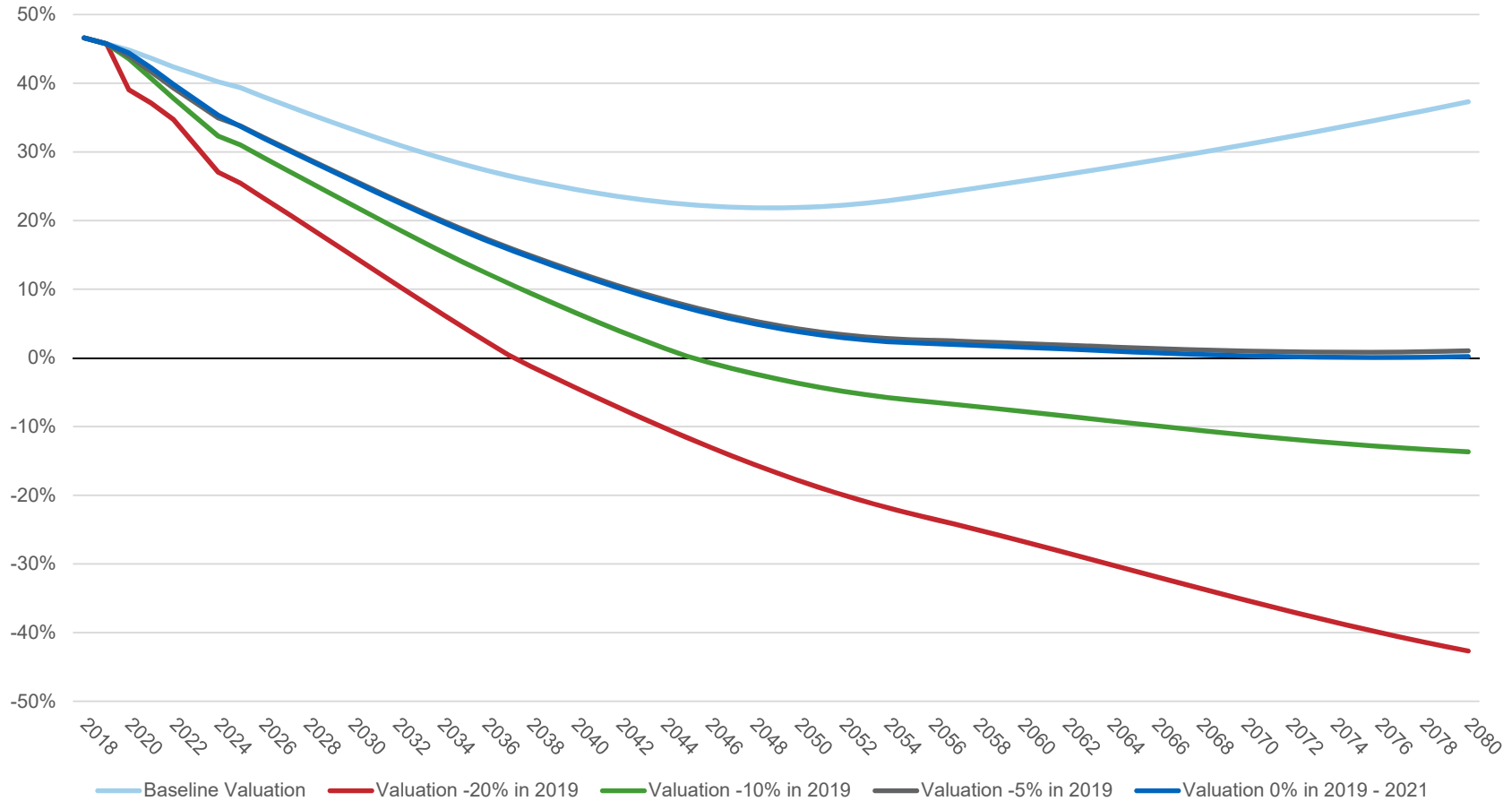
# 7.00% Discount Rate – Hiring Plan Payroll Assumptions

## Projected Funded Percentage



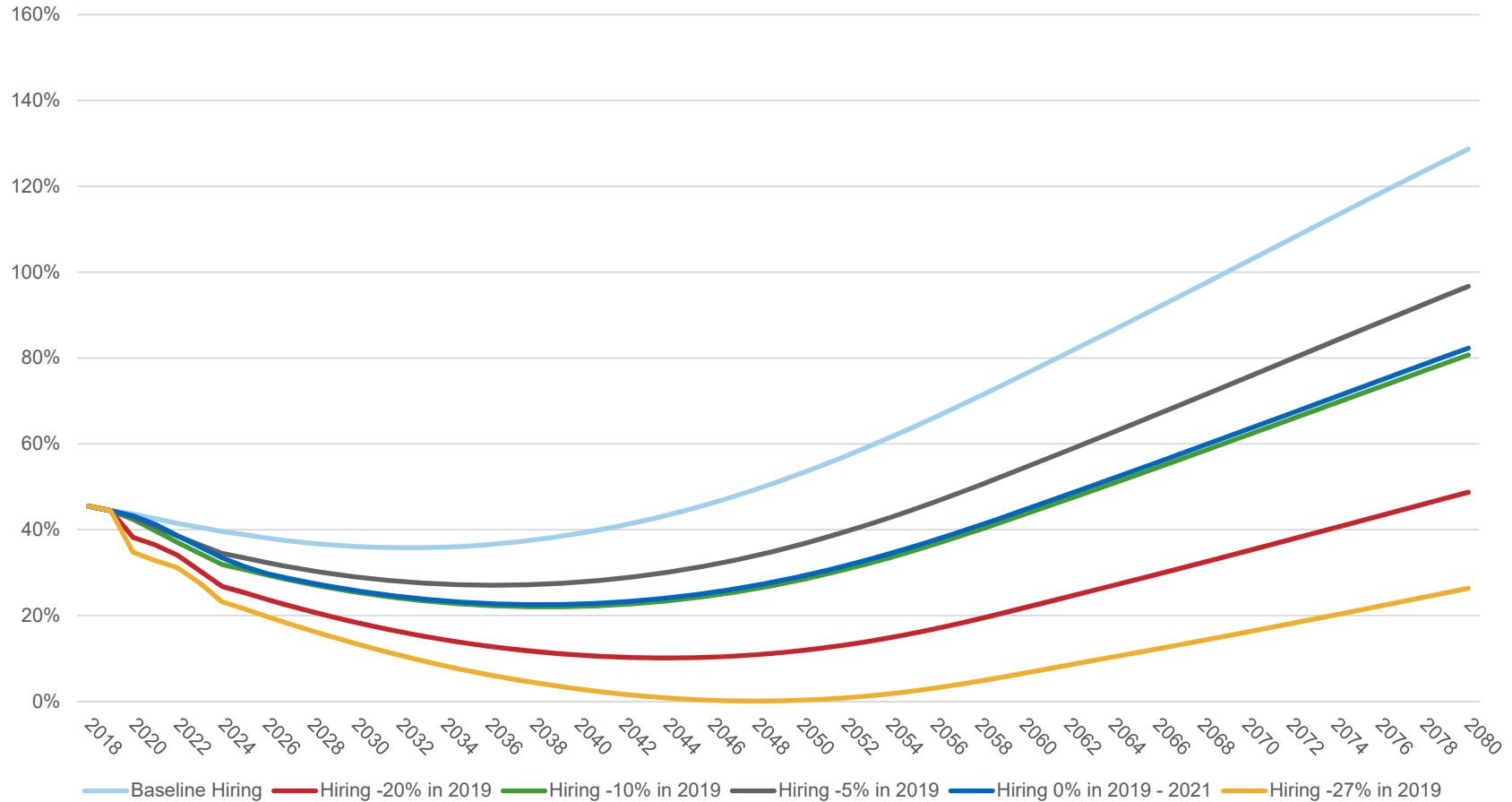
# 7.00% Discount Rate – Valuation Payroll Assumptions

## Projected Funded Percentage



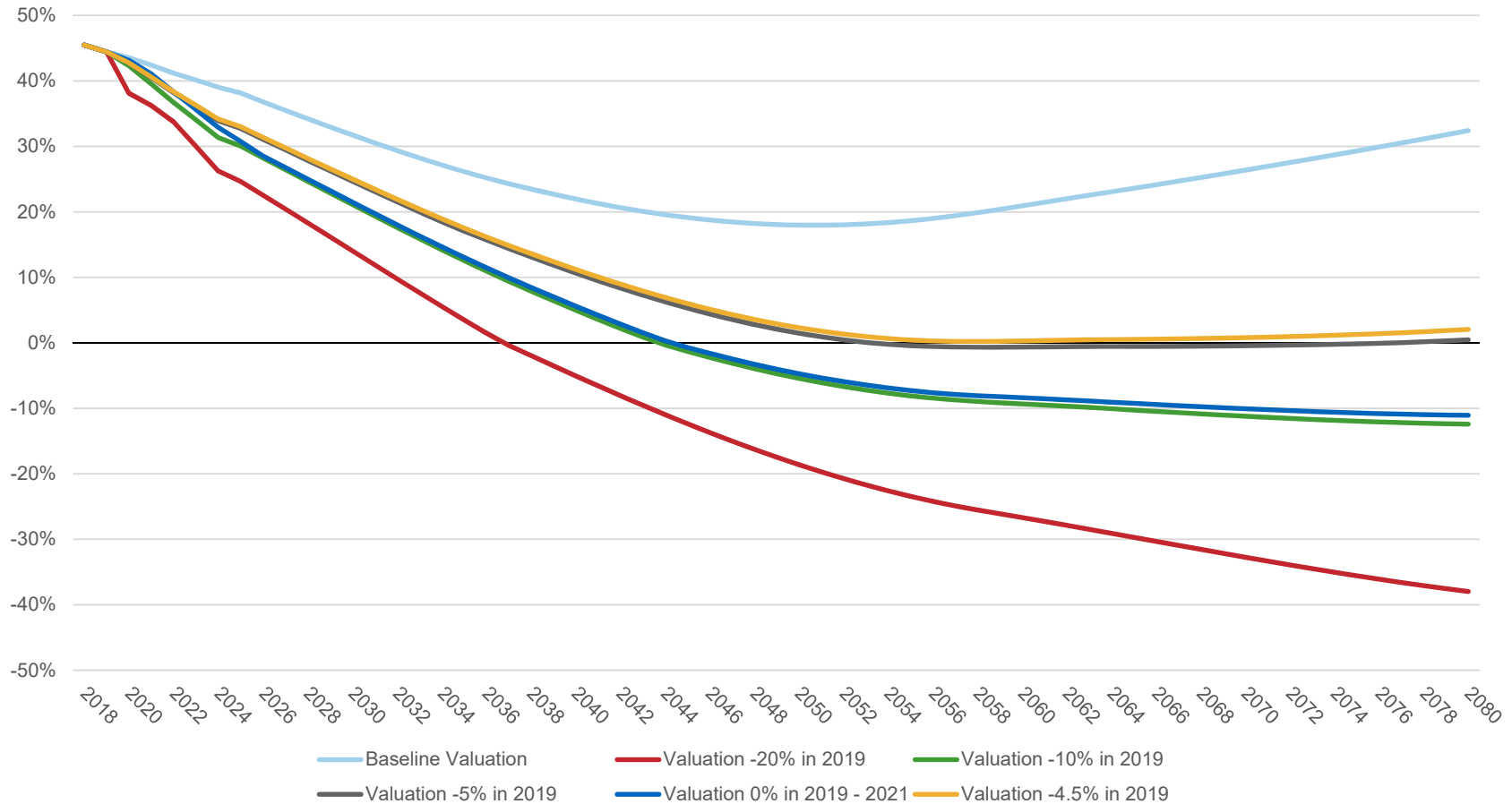
## 6.75% Discount Rate – Hiring Plan Payroll Assumptions

### Projected Funded Percentage



## 6.75% Discount Rate – Valuation Payroll Assumptions

### Projected Funded Percentage



## **Assumptions for Discount Rate and Asset Return Projections**

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- Market value asset return assumptions of 4.75% in 2018, 5.00% in 2019, 5.25% in 2020, 6.25% in 2021, and 7.25% thereafter, unless stated otherwise.
- All demographic assumptions are met exactly each year.
- The City contributes based on HB3158 through 2024, and 34.5% of computation payroll beginning in 2025.
- No future changes in benefit provisions.
- Benefit provisions and assumptions are the same as those used in the January 1, 2018 actuarial valuation, unless stated otherwise herein.

## Caveats

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- This presentation is intended for the use of the Board of Trustees for the Dallas Police and Fire Pension System.
- These projections are based on the data, actuarial assumptions and plan provisions used in the January 1, 2018 actuarial valuation.
- Projections, by their nature, are not a guarantee of future results. They are intended to serve as estimates of future financial outcomes that are based on assumptions about future experience and the information available to us at the time the modeling is undertaken and completed. The projected future results included in this presentation show how the System would be affected if specific investment return, salary, mortality, turnover, disability and retirement assumptions are met. Actual results may differ due to such variables as demographic experience, the economy, contribution patterns, stock market performance and the regulatory environment.
- The calculations included in this presentation were completed under the supervision of Jeffrey S. Williams, FCA, ASA, MAAA, EA.



## Questions?

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 **Segal Consulting**

2018 Powers Ferry Road, Suite 850  
Atlanta, GA 30339-7200  
T 678.306.3147  
jwilliams@segalco.com

**Jeffrey S. Williams, FCA, ASA, MAAA, EA**  
Vice President and Consulting Actuary

