

# Presentation to TEXPERS 

Public Pension Plan Funding:
Challenges and Recommendations

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## Biography and Contact Information



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Bob co-founded Sage in 1996 and serves as the firm's President and Chief Investment Officer and leads the Investment Committee. He began his career in 1970 at Moody's Investors Services as a member of the Corporate Bond Rating Committee; he then went on to Loeb, Rhodes \& Co. to cover the insurance industry in the Institutional Equity Research department. He later worked at Merrill Lynch \& Co. for 13 years in a variety of institutional research, trading and portfolio management roles in New York and London. During this period, he was assigned to the Saudi Arabian Monetary Agency as a Resident Financial Advisor in Riyadh responsible for managing the foreign reserves of the Central Bank. Bob Smith received his M.B.A. in Finance from New York University Stern School of Business, is an Accredited Investment Fiduciary (AIF) and Certified Investment Management Consultant (CIMC).
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Texas Legislative Review

## 87 th Texas Legislature Pension Related Legislation

HB 3898 Relating to the funding of public retirement systems. Focused on conditions for an FSRP. Identified amortization limits (30 vs. 40yrs).
HB 4163 Relating to a FSRP requirement and limits for certain TLFFRA retirement systems.
HB 4566 Relating to granting the PRB the authority to enforce certain requirements applicable to public retirement systems.
SB 1372 Relating to the evaluation of investment practices and performance of certain public retirement systems. Focused on avoiding conflicts of interest for professional service provider to the Plans.
SJR 22 Proposing a constitutional amendment prohibiting the use of State funds to pay for the obligations of a local public retirement system.

## Funding Policy Statute

- Add the plan sponsor to the funding policy requirement.


## Funding Soundness Restoration Plan (FSRP) Statute

- Increase sponsor accountability and tie funding policy and FSRP together.
- Update the threshold, target, and trigger.
- Update timelines and consequences if original FSRP is not working.

Investment Performance Report

- Amend statute to require evaluations to detail how the evaluator determined the need, or lack thereof, for any recommendations.
- Amend statute to require a formal review-and-comment process before publication.
- Review and consider the feasibility of whether an independent firm conducting the evaluation should be a different firm from the one that helped the system develop its existing investment policies, procedures, and practices.
- Amend statute to require evaluators to identify their qualifications and potential conflicts-of-interest, codifying existing PRB informal guidance.


## What Was Not Addressed

- A framework and reporting methodology required for annual plan liability analysis featuring:
- the composition and term structure of a plan's projected benefit schedule based on closed group, current salary, current service (Accrued and Projected)
- the measurement of plan liabilities under different valuation regimes and scenarios.
- A framework and reporting requirement for dynamic plan cash flow testing under different market return sequences and projected plan sponsor contribution scenarios.
- A requirement to provide cash flow gap analysis and asset exhaustion test reporting.
- assuming uniform projected returns
- assuming a sequence of returns reflecting the plan's historical return volatility.
- A framework and reporting requirement for dynamic plan solvency stress testing and projected funded status volatility.
- A requirement to report investment performance results versus the plan's liabilities over various timeweighted periods and on a dollar-weighted return basis.

> "If you can’t measure it, you can’t improve it."
> - Peter Drucker

## The State of The State

Actuarial Asset-Liability and Funded Ratio Trends


## Investment Return Aspirations

- Rates of return matter because they drive both the funding ratio and the estimated future contributions required to meet pension obligations
$\mathbf{2 0 2 0 \text { Long-Term Return Assumptions }}$


Return assumptions are reported in actuarial valuations conducted by Texas plans according to law.

## 2020 Long-Term Return Assumptions

NASRA Nat'l. Avg. 7.18\%
TX Systems Avg. 7.17\%
ERS 7.00\%
TRS 7.25\%
PEW Charitable Trust 6.00\%

## Long-Term Return Assumption Distribution



- A higher pension return assumption (or actuarial discount rate) leads to a better funded ratio, lower unfunded pension liabilities, and less future contributions, but setting a high return assumption doesn't guarantee the return will be earned.


## Historical Performance Comparison

Texas Retirement Systems
Average Realized Period Returns


| Ending December 31, 2019 | 1 Year |  | 3 Years |  | 10 Years |
| :--- | :---: | :---: | :---: | :---: | :---: |
| TLFFRA | $15.5 \%$ | $8.5 \%$ | $6.9 \%$ |  |  |
| District / Supplemental | $13.7 \%$ | $8.7 \%$ | $8.0 \%$ |  |  |
| Municipal | $13.0 \%$ | $8.5 \%$ | $7.6 \%$ |  |  |
| Statewide | $6.7 \%$ | $8.4 \%$ | $8.1 \%$ |  |  |

## Market Benchmark Returns <br> Cumulative Return of 60/40 Equity/FI Portfolio



| Ending December 31, 2019 | 1 Year | 3 Years |  |
| :--- | :---: | :---: | :---: |
| 10 Years |  |  |  |
| Annualized Return | $25.3 \%$ | $11.9 \%$ | $10.4 \%$ |
| Cumulative Return | $25.3 \%$ | $40.2 \%$ | $168.8 \%$ |
| Risk | $9.6 \%$ | $7.2 \%$ | $7.6 \%$ |
| Return to Risk | 2.65 | 1.65 | 1.37 |

60\% Vanguard Total Bond Market ETF (VTI), 40\% Total Stock Market ETF (BND) rebalance annually. All returns are net of fees. Management Fees 3.2 basis points

## 10 Year Capital Market Return Assumption Survey

| Firm | Date | U.S. Equities | Int'l Dev. Mkts | Emerg. Mkts | US Bonds | 60/40 US | 80/20 Global* |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vanguard | 20-Dec | 4.70\% | 8.00\% | 8.00\% | 1.25\% | 3.32\% | 5.25\% |
| BlackRock | 21-Feb | 6.30\% | 8.60\% | 7.20\% | 0.90\% | 4.14\% | 5.95\% |
| JP Morgan | 20-Dec | 4.10\% | 5.50\% | 7.20\% | 2.50\% | 3.46\% | 4.87\% |
| State Street | 20-Dec | 5.70\% | 6.10\% | 8.60\% | 0.50\% | 3.62\% | 5.13\% |
| Wells Fargo | 20-Dec | 8.30\% | 7.70\% | 10.00\% | 3.20\% | 6.26\% | 7.97\% |
| BONY | 20-Dec | 6.60\% | 7.00\% | 8.60\% | 1.00\% | 4.36\% | 5.96\% |
| Invesco | 21-Jan | 5.60\% | 6.60\% | 8.60\% | 1.60\% | 4.01\% | 5.62\% |
| Envestnet | 21-Jan | 5.37\% | 6.22\% | 7.28\% | 1.62\% | 3.87\% | 5.30\% |
| Regions | 20-Dec | 6.00\% | 6.50\% | 8.00\% | 2.00\% | 4.40\% | 5.90\% |
| Callan | 21-Jan | 6.60\% | 6.50\% | 6.90\% | 1.75\% | 4.66\% | 5.99\% |
| AON | 20-Sep | 5.80\% | 6.90\% | 7.60\% | 1.00\% | 3.88\% | 5.44\% |
| Research Affiliates | 20-Dec | 2.00\% | 6.30\% | 7.90\% | 1.10\% | 1.64\% | 3.49\% |
| Verus | 20-Dec | 5.10\% | 5.20\% | 5.40\% | 1.10\% | 3.50\% | 4.57\% |
| DiMeo Schneider | 20-Dec | 5.50\% | 7.00\% | 8.50\% | 1.20\% | 3.78\% | 5.48\% |
| Cliffwater | 21-Jan | 7.70\% | 7.90\% | 10.40\% | 1.20\% | 4.72\% | 6.96\% |
| UBS | 21-Jan | 6.00\% | 8.00\% | 9.00\% | 1.50\% | 4.20\% | 6.10\% |
| VOYA | 20-Dec | 6.30\% | 5.10\% | 8.00\% | 0.60\% | 4.02\% | 5.21\% |
| PGIM | 21-Jan | 5.80\% | 7.40\% | 7.00\% | 0.50\% | 3.68\% | 5.28\% |
| Average |  | 5.75\% | 6.80\% | 8.01\% | 1.27\% | 3.97\% | 5.58\% |
| Range |  | 2.0-8.3\% | 5.1-8.6\% | 5.4-10.4\% | 0.5-3.2\% | 1.64-6.26\% | 3.49-7.97\% |


| Average Asset Allocation TX | Equity | Bonds | Alts | Real Estate | Weighted 10 Yr. EROA** 4.82\% |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | U.S. 40\% | U.S. 26\% | HF 5\% | 5\% |  |
|  | Int'l 10\% | Cash 3\% | PE 3\% |  |  |
| Retirement Plans | EM 5\% |  | PD 3\% |  |  |

## Public Pension Plan InFlows vs. OutFlows

Percentage of plans receiving their full actuarially recommended contribution ${ }^{1}$

${ }^{1}$ Includes plans receiving more than 95 percent of their actuarially recommended contribution

Demographic Trends


## Negative Cash Flow Realities

Non-Investment Cash Flow \% of Assets
Average \% \# Plans > (3\%) \% Peer Group

| TLFFRA 2019 | $(2.69 \%)$ | $19: 41$ | $46.30 \%$ |
| :--- | :---: | :---: | :---: |
| TLFFRA 2009 | $1.11 \%$ | $7: 41$ | $17.07 \%$ |
| District 2019 | $(1.31 \%)$ | $10: 31$ | $32.25 \%$ |
| District 2009 | $2.83 \%$ | $5: 26$ | $19.23 \%$ |
|  |  |  |  |
| Municipalities 2019 | $(1.32 \%)$ | $9: 18$ | $50.00 \%$ |
| Municipalities 2009 | $(0.59 \%)$ | $3: 16$ | $18.75 \%$ |
| Statewide 2019 | $(2.68 \%)$ | $3: 07$ | $42.85 \%$ |
| Statewide 2009 | $(0.67 \%)$ | $2: 07$ | $28.57 \%$ |
|  |  |  |  |
|  |  |  |  |
| \$10m or less 2019 | $2.77 \%$ | $10: 19$ | $52.63 \%$ |
| \$10m or less 2010 | $(1.03 \%)$ | $6: 13$ | $46.15 \%$ |
|  |  |  |  |
| \$10m-\$50m 2019 | $(1.42 \%)$ | $8: 27$ | $29.62 \%$ |
| \$10m-\$50m 2010 | $2.21 \%$ | $5: 28$ | $17.86 \%$ |
|  |  |  |  |
| \$50m-\$100m 2019 | $(2.94 \%)$ | $5: 10$ | $50.00 \%$ |
| \$50m-\$100m 2010 | $(1.76 \%)$ | $2: 09$ | $22.22 \%$ |
|  |  |  |  |
| \$100m Plus 2019 | $(2.39 \%)$ | $17: 42$ | $40.48 \%$ |
| \$100m Plus 2010 | $(0.60 \%)$ | $5: 40$ | $12.50 \%$ |

10 Yr. Excess Distributions vs. Contributions

| TLFFRA | $25.40 \%$ |
| :--- | :---: |
| Districts | $2.80 \%$ |
| Municipalities | $37.03 \%$ |
| Statewide | $\mathbf{4 7 . 6 0 \%}$ |


| \$10m \& Under | $63.00 \%$ |
| :--- | :--- |
| $\$ 10 m-\$ 50 m$ | $16.30 \%$ |
| $\$ 50 m-\$ 100 m$ | $33.90 \%$ |
| $\$ 100 m$ Plus | $35.60 \%$ |

*Contributions and distributions by retirement systems over the past 10 years. Contributions include those from both the employer and employees. Distributions include benefit payments, withdrawals, and refunds to current and former plan members.


## Fund Expenses: Are You Getting What You Paid For?

| Peer Group | $10 \mathrm{Yr} \text { Avg. }$ <br> Return Assumption | 10 Yr Avg. <br> Realized Return | Performance Difference | $\begin{aligned} & \text { Expenses \% } \\ & \text { Assets } \end{aligned}$ |  | ssumed vs. Realized Return Difference | Avg. Expenses \% Assets |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TLFFRA 2019 | 7.50\% | 6.90\% | (0.40\%) | 0.76\% |  |  |  |
| TLFFRA 2013 | 7.83\% | 6.13\% | (1.70\%) | 0.80\% |  |  |  |
| Districts 2019 | 6.80\% | 8.05\% | 1.25\% | 0.66\% |  |  |  |
| Districts 2013 | 7.31\% | 6.03\% | (1.28\%) | 0.63\% | $\begin{aligned} & 2019 \\ & 2013 \end{aligned}$ | $\begin{array}{ll} 19 & 0.47 \% \\ 13 & (1.16 \%) \end{array}$ | $\begin{aligned} & 0.59 \% \\ & 0.57 \% \end{aligned}$ |
| Municipalities 2019 | 7.23\% | 7.62\% | 0.39\% | 0.62\% |  |  |  |
| Municipalities 2013 | 8.07\% | 7.15\% | (0.92\%) | 0.50\% |  |  |  |
| Statewide 2019 | 7.46\% | 8.08\% | $0.62 \%$ | $0.33 \%$ | , |  |  |
| Statewide 2013 | 7.82\% | 7.10\% | (0.72\%) | $0.35 \%$ | - |  |  |
| \$10m or less 2019 | 6.93\% | 6.51\% | (0.42\%) | 1.15\% |  |  |  |
| \$10m or less 2013 | 7.52\% | 5.53\% | (1.99\%) | 1.11\% |  |  |  |
| \$10m-\$50m 2019 | 7.30\% | 7.21\% | (0.09\%) | 0.72\% |  |  |  |
| \$10m-\$50m 2013 | 7.76\% | 5.90\% | (1.86\%) | 0.61\% | $\left[\begin{array}{l} 2019 \\ 2013 \end{array}\right.$ | 19 $0.10 \%$ <br> $(1.55 \%)$  | $\begin{aligned} & \text { 0.74\% } \\ & 0.70 \% \end{aligned}$ |
| \$50m-\$100m 2019 | 7.39\% | 7.45\% | 0.06\% | 0.65\% |  |  |  |
| \$50m-\$100m 2013 | 7.96\% | 6.37\% | (1.59\%) | 0.61\% |  |  |  |
| \$100m Plus 2019 | 7.20\% | 8.03\% | 0.83\% | 0.45\% |  |  |  |
| \$100m Plus 2013 | 7.86\% | 7.12\% | (0.74\%) | 0.49\% |  |  |  |

InVEST WITII WISDOM

County Employees' Retirement System

Pension Diagnostic Case Analysis
as of December 31, 2020

## Pension Risk Management

County Employees' Retirement System as of December 31, 2020

| Risk | Observation |
| :---: | :---: |
| Plan Status | Ongoing |
| Plan Solvency | 91\% funded on 7.0\% EROA |
|  | 54\% funded on IRS Corporate Curve |
| Funding Volatility | $11 \%$ or \$34,980 on 7.0\% EROA (1 standard deviation) |
|  | $8 \%$ or \$59,988 on IRS Corporate Curve (1 standard deviation) |
| Cash Flow | Contributions (\$17.6M) - Benefits (\$22.0M) = -\$4.4M (2019) (\$7.6M Total Normal Cost) |
| Liquidity Risk | $61 \%$ of assets roll out in 10 years |
| Interest Rate Risk | 5\% hedge, non-compensated risk (FI duration: 2.7 years vs. liability duration: 14.3 years) |
| Mortality Risk | Unhedged |

## Plan Characteristics

County Employees' Retirement System as of December 31, 2020
$\left.\begin{array}{|llllllll|}\hline & \begin{array}{c}\text { Future } \\ \text { Value }\end{array} & \begin{array}{c}\text { Discount } \\ \text { Rate }\end{array} & \begin{array}{c}\text { Present } \\ \text { Value }\end{array} & \begin{array}{c}\text { Surplus/ } \\ \text { (Deficit) }\end{array} & \begin{array}{c}\text { Funded } \\ \text { Status }\end{array} & \begin{array}{c}\text { Duration } \\ \text { (Years) }\end{array} & \begin{array}{c}\text { Dollar } \\ \text { Duration }\end{array} \\ \hline \text { Assets } & & & & & & & \\ \hline \text { Fixed Income Assets (US) } & & & 63,163 & & & 2.7 & 1,716 \\ \text { Ratio* }\end{array}\right]$
*Interest rate hedge ratio is the ratio of the dollar duration of assets to the dollar duration of the liabilities; it is a measure of the fraction of liability interest rate risk (measured in dollar terms) that is hedged by the assets.

## Liability Statistics Summary

County Employees' Retirement System as of December 31, 2020
Present Value of Liabilities


|  |  | 7.0\% EROA @ 7.0\% |  |  | IRS Corporate Curve |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | FV of | Liabilities | Yield | PV of <br> Liabilities | Weight | Yield | PV of <br> Liabilities |
|  | Weight |  |  |  |  |  |  |
| $0-5$ | 115,252 | $7.0 \%$ | 97,175 | $31.6 \%$ | $0.5 \%$ | 113,501 | $21.6 \%$ |
| $5-10$ | 124,849 | $7.0 \%$ | 75,233 | $24.4 \%$ | $1.5 \%$ | 111,248 | $21.2 \%$ |
| $10-15$ | 124,495 | $7.0 \%$ | 53,597 | $17.4 \%$ | $2.4 \%$ | 91,849 | $17.5 \%$ |
| $15-20$ | 115,049 | $7.0 \%$ | 35,389 | $11.5 \%$ | $2.8 \%$ | 71,037 | $13.5 \%$ |
| $20-30$ | 177,649 | $7.0 \%$ | 34,094 | $11.1 \%$ | $2.9 \%$ | 87,625 | $16.7 \%$ |
| $30+$ | 155,218 | $7.0 \%$ | 12,236 | $4.0 \%$ | $3.0 \%$ | 49,324 | $9.4 \%$ |
| Total | $\mathbf{8 1 2 , 5 1 2}$ | $\mathbf{7 . 0 \%}$ | $\mathbf{3 0 7 , 7 2 5}$ | $\mathbf{1 0 0 . 0 \%}$ | $\mathbf{2 . 0 \%}$ | $\mathbf{5 2 4 , 5 8 4}$ | $\mathbf{1 0 0 . 0 \%}$ |

The discount rate refers to the single equivalent rate in which liabilities can be effectively settled using the stated yield curve as the discounting mechanism. The yield refers to the market weighted rate in which a portfolio of bonds are typically measured.

## Required Return For Full Funding Without Contributions

County Employees' Retirement System as of December 31, 2020
Required Rate of Return for Full Funding


| Time Horizon | 7.0\% EROA |  | IRS Corporate Curve |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Projected Value of <br> Liabilities | Required <br> Rate of Return | Projected Value of <br> Liabilities | Required <br> Rate of Return |
|  | 307,725 | N/A | 524,584 | N/A |
| 1-Year | 306,762 | $17.5 \%$ | 517,491 | $94.9 \%$ |
| $5-$ Year | 295,306 | $9.4 \%$ | 479,569 | $18.6 \%$ |
| 10-Year | 266,783 | $8.4 \%$ | 416,283 | $11.6 \%$ |

*"Without contributions" refers to contributions in excess of the plan's normal cost (i.e., the required return if the plan was frozen)
*Projected value of liabilities assume rates do not change over stated horizon periods
*Assumes no expenses are paid from plan assets
*Required rate of returns does not consider volatility of assets

## Asset Exhaustion Test | Sequence of Returns Analysis

County Employees' Retirement System as of December 31, 2020

| Year-End | Expected <br> Benefit <br> Payment | Expected EE + ER <br> Contribution | Market Value of Assets |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Scenario 1 <br> Ann Return 7.00\% ROA |  | Scenario 2 <br> Ann Return 7.00\% ROA |  | Scenario 3 |  |
|  |  |  |  |  | Ann Return | 7.00\% ROA |
| 12/31/2020 |  |  |  | 281,048 |  |  |  | 281,048 |  | 281,048 |
| 2021 | 22,645 | 15,501 | 7.0\% | 293,331 | -0.8\% | 271,672 | -10.4\% | 244,994 |
| 2022 | 23,459 | 14,692 | 7.0\% | 304,796 | 21.6\% | 320,688 | 6.0\% | 250,595 |
| 2023 | 24,362 | 13,946 | 7.0\% | 315,357 | 6.9\% | 332,089 | 1.2\% | 243,060 |
| 2024 | 25,235 | 13,289 | 7.0\% | 325,074 | 6.0\% | 339,615 | 8.0\% | 250,121 |
| 2025 | 26,067 | 12,661 | 7.0\% | 333,962 | 1.2\% | 330,119 | -6.7\% | 220,379 |
| 2026 | 27,040 | 12,037 | 7.0\% | 341,820 | -10.4\% | 281,514 | -2.3\% | 200,578 |
| 2027 | 27,903 | 11,419 | 7.0\% | 348,696 | 13.5\% | 301,931 | -9.6\% | 165,624 |
| 2028 | 28,791 | 10,815 | 7.0\% | 354,511 | 8.0\% | 307,268 | 3.4\% | 153,005 |
| 2029 | 29,626 | 10,244 | 7.0\% | 359,278 | 21.2\% | 351,115 | 18.4\% | 160,020 |
| 2030 | 30,399 | 9,689 | 7.0\% | 363,005 | 7.4\% | 355,500 | 13.3\% | 159,271 |
| 2031 | 31,145 | 9,146 | 7.0\% | 365,660 | 3.4\% | 345,280 | 7.4\% | 148,200 |
| 2032 | 31,899 | 8,608 | 7.0\% | 367,164 | 21.5\% | 393,890 | 7.7\% | 135,470 |
| 2033 | 32,566 | 8,097 | 7.0\% | 367,554 | -6.7\% | 343,810 | 8.0\% | 120,820 |
| 2034 | 33,257 | 7,611 | 7.0\% | 366,755 | -9.6\% | 286,376 | -0.8\% | 94,306 |
| 2035 | 33,843 | 7,156 | 7.0\% | 364,822 | 18.4\% | 309,940 | 13.5\% | 78,599 |
| 2036 | 34,331 | 6,715 | 7.0\% | 361,794 | 21.2\% | 345,371 | 21.2\% | 64,869 |
| 2037 | 34,722 | 6,278 | 7.0\% | 357,696 | 7.7\% | 342,516 | 21.6\% | 47,515 |
| 2038 | 35,055 | 5,865 | 7.0\% | 352,541 | -2.3\% | 305,937 | 6.9\% | 20,618 |
| 2039 | 35,328 | 5,476 | 7.0\% | 346,340 | 13.3\% | 314,875 | 21.5\% | $(9,233)$ |
| 2040 | 35,543 | 5,065 | 7.0\% | 339,057 | 8.0\% | 308,430 | 21.2\% | $(39,711)$ |

* Expected benefit payment based on projected service/salary as of 12/31/2018 (closed group)
* Expected contribution based on $23.9 \%$ of projected payroll as of $12 / 31 / 2018$ (closed group)


## Contribution Analysis

County Employees' Retirement System as of December 31, 2020

23\% ALM + 78\% Return-Seeking
Annual Contribution: Normal Cost + \$15 million

| Estimated Time to Full Funding (Discount Rate: 7.0\% EROA) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Interest Rate Shift |  |  |
|  |  | -1\% | 0\% | +1\% |
|  | +4\% | 8 Yrs | 8 Yrs | 8 Yrs |
|  | +6\% | 4 Yrs | 4 Yrs | 4 Yrs |
|  | +8\% | 3 Yrs | 3 Yrs | 3 Yrs |

Estimated Time to Full Funding
(Discount Rate: IRS Corporate Curve) Interest Rate Shift

|  |  | -1\% | 0\% | +1\% |
| :---: | :---: | :---: | :---: | :---: |
|  | +4\% | 22 Yrs | 20 Yrs | 17 Yrs |
|  | +6\% | 17 Yrs | 15 Yrs | 13 Yrs |
|  | +8\% | 13 Yrs | 11 Yrs | 10 Yrs |

*Assumes 1-10 YR ALM portfolio
*This analysis does not consider the volatility of assets or interest rates. Actual results will likely differ.
*See appendix for additional assumption and methodology
*This analysis is for illustrative purposes only and is not indicative of future plan expectations or performance

## Funding Sensitivities: Current Allocation

## County Employees' Retirement System as of December 31, 2020

| Discount Rate: 7.0\% EROA |  |  |  |
| :---: | :---: | :---: | :---: |
| Plan Surplus/(Deficit) Resulting from Market Movements |  |  |  |
|  | Interest Rate Shift |  |  |
|  | -1.0\% | 0.0\% | +1.0\% |
|  | $(45,952)$ | $(47,705)$ | $(49,384)$ |
|  | $(24,924)$ | $(26,677)$ | $(28,356)$ |
|  | $(3,895)$ | $(5,648)$ | $(7,328)$ |
| Current Plan Surplus/(Deficit) |  |  | $(26,677)$ |


| Plan Funded Status Resulting from Market Movements |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Interest Rate Shift |  |  |
|  | -1.0\% | 0.0\% | +1.0\% |
|  | 85\% | 84\% | 84\% |
|  | 92\% | 91\% | 91\% |
|  | 99\% | 98\% | 98\% |
| Current Plan Funded Status |  |  | 91\% |

- Red box indicates funding loss from current position
- Estimate at instantaneous time horizon


## Discount Rate: IRS Corporate Curve

| Plan Surplus/(Deficit) Resulting from Market Movements |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Interest Rate Shift |  |  |
|  | -1.0\% | 0.0\% | +1.0\% |
|  | $(346,077)$ | $(264,564)$ | $(199,840)$ |
|  | $(325,049)$ | $(243,536)$ | $(178,811)$ |
|  | $(304,021)$ | $(222,507)$ | $(157,783)$ |
| Current Plan Surplus/(Deficit) |  |  | $(243,536)$ |


| Plan Funded Status Resulting from Market |  |  |  |
| :---: | :---: | :---: | :---: |
| Movements |  |  |  |

## Funding Volatility

County Employees' Retirement System as of December 31, 2020

| 12-Month Volatility |  |  |  |
| :--- | :---: | :---: | :---: |
| Portfolio | Liability <br> Discount | \% Funding <br> Volatility | \$ Funding <br> Volatility |
|  |  | $11 \%$ | 34,980 |
| 35\% 1-10 YR ALM + 65\% Return-Seeking | $7.0 \%$ EROA | $10 \%$ | 29,834 |
| Current Allocation | IRS Curve | $8 \%$ | 59,988 |
| 35\% 1-10 YR ALM + 65\% Return-Seeking | IRS Curve | $7 \%$ | 54,961 |

Liability Discount: 7.0\% EROA


Liability Discount: IRS Corporate Curve

*See appendix for funding volatility methodology
SAGE

## De-Risking Glidepath

County Employees' Retirement System as of December 31, 2020

| Funded Status | Current | Proposed | $\rightarrow$ Glidepath by Funded Status $\rightarrow$ |  |  |  | Target |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 54\% | 54\% | 60\% - 69\% | 70\% - 79\% | 80\% - 89\% | 90\% - 99\% | $\geq 100 \%$ |
| Asset Allocation |  |  |  |  |  |  |  |
| Fixed Income Assets | 22\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% |
| Liability-Hedging Assets* | 0\% | 35\% | 40\% | 50\% | 60\% | 70\% | 80\% |
| Return-Seeking Assets | 78\% | 65\% | 60\% | 50\% | 40\% | 30\% | 20\% |
| Risk Profile (IRS Corporate Curve) |  |  |  |  |  |  |  |
| Portfolio IR Hedge Ratio | 2\% | 7\% | 8\% | 12\% | 17\% | 22\% | 28\% |
| \% Funded Status Volatility | 8\% | 7\% | 7\% | 7\% | 7\% | 7\% | 7\% |
| \$ Funded Status Volatility | 59,988 | 54,961 | 54,224 | 51,841 | 48,266 | 43,649 | 38,376 |

* 1-10 Year ALM


## Plan Recommendations

## General Theme: Pivot from a Relative Asset Performance Game to Securing Benefits Strategy

| Plan Solvency: | 91\% funded with 7.0\% EROA discount rate/ 54\% funded on the corporate yield curve (AAA to A-) |
| :---: | :---: |
| Liquidity: | ~80\% of plan assets roll out in 10 years or less (the exhaustion problem is getting close) $7.8 \%$ benefit payout per year (burn rate) $\$ 22$ million benefits / $\$ 281$ million in assets |
| Negative Cash Flow: | (benefits \$ > contributions \$) (a yellow flag) <br> Contributions (\$17.6M) - Benefits (\$22.0M) = $\$ 4.4 \mathrm{M}(2019)(\$ 7.6 \mathrm{M}$ Total Normal Cost) |
| Asset Exhaustion: | 12-years' worth of benefit payments (on a run-off basis) <br> 15 to 20 years of payments on the sunshine sequence of return basis |
| Funding Volatility: | +/- ~ \$60 million in 12 months (one-standard deviation) / (Can the plan afford the downside risk?) Asset risk characteristics do not look like the plan benefit promises |
| Relative Size: | Pension liabilities are $32 x$ the size of County's book value ( $\$ 308$ mill liabilities/ \$ 9.7 mill unrestricted net assets) |

Summary: Asset allocation alone will not save this plan. If it sought an asset-based solution, assets would need to need to achieve an $18.6 \%$ annualized return for five years and contributions would need to match normal cost. If the County contributed $\$ 15$ million over the normal cost of ( $\$ 7.6$ million) and obtained a $6 \%$ annualized return, fully funded status might be achieved in 14 years.

## Recommendations and Closing Thoughts

## Benefit Management

- Report on the present value and term structure of the accrued benefits (liabilities) to plan stakeholders
- Value benefit promises based upon a low-risk market reference benchmark as well as the official EROA
- Report on the plan's cash flow dynamics on a best case and worst-case basis monthly or quarterly


## Asset Allocation

- Primarily structure fixed income allocations to fund short/intermediate term liability requirements or plan retired lives
- Prefer separate account vs comingled investment vehicles for cash flow specific liability funding requirements
- Regularly harvest gains from return seeking portfolio allocations to secure participant benefits over time, develop a glidepath


## Contribution Strategy

- Underwrite new benefit promises at a spread over the yield curve i.e. ( $2 \%$ yield curve $+3 \%$ risk premium $)=$ 5\%
- Push for one-time extraordinary catch-up contributions


## Governance

- Reframe the goal of plan assets from a return optimization game to a process that secures participant benefits with the highest degree of certainty for the lowest risk and cost possible
- Build and execute a disciplined, determined, and measurable deficit-reduction strategy to fund your plan by moving from prevailing practice thinking to best practice methods
- Implement active risk and cost management oversight of all professional service providers through continuous assessment
- Demonstrate leadership; do not wait for external forces to determine your future


## An Unfortunate Outcome

## LIGHTEN UP



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