

Comments on Interim Charge 4: Evaluating the Actuarial Soundness of the Texas ERS and TRS Pension Plans

Prepared for: Committee on Pensions, Investments & Financial Services,
Texas House of Representatives

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In response to the House Committee on Pensions, Investments & Financial Services' call for public comment regarding Interim Charge #4 pertaining to the two largest state-sponsored pension systems—ERS and TRS—the Pension Integrity Project at Reason Foundation respectfully submits the following analysis to aid in the review and evaluation of the long-term soundness and resiliency of these important retirement systems.

The Pension Integrity Project at Reason Foundation offers pro-bono consulting to public officials and other stakeholders to help design and implement policy solutions aimed at improving public pension plan resiliency and promoting retirement security for all public employees. We have also built up-to-date actuarial models for both Texas ERS and Texas TRS and stand ready to help your work in whatever way we can.

Interim Charge 4:

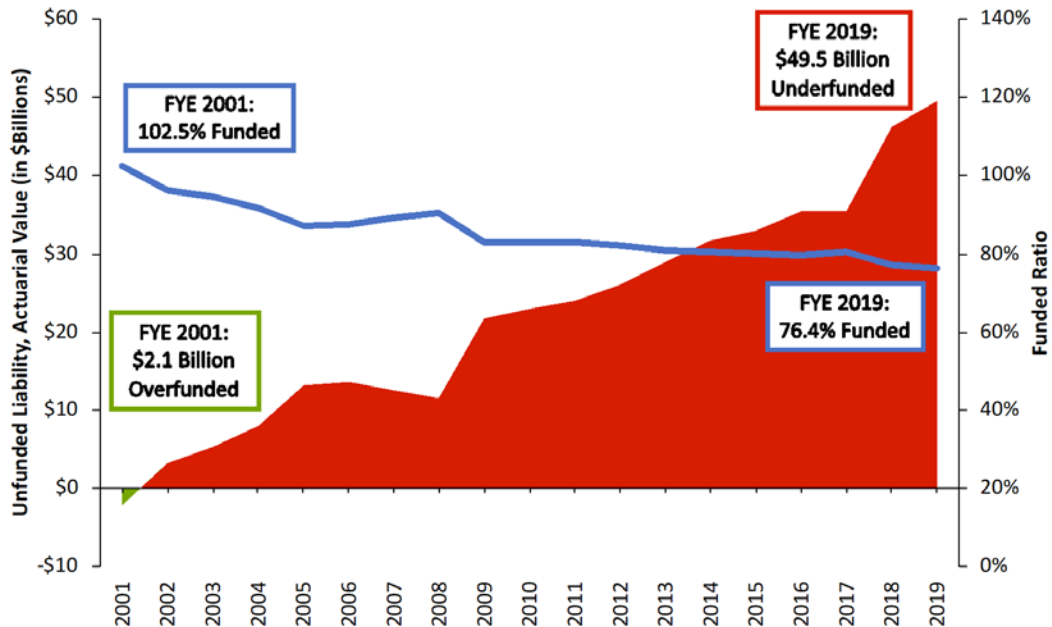
Review and evaluate the actuarial soundness of the Employees Retirement System and TRS pension funds. Examine the cost of and potential strategies for achieving and maintaining the actuarial soundness of the funds. Examine the effect the unfunded liabilities could have on the state's credit. Examine the state's investment policies and practices, including investment objectives, targets, disclosure policies, and transparency.

I. The Current State of Texas' Two Largest State-Sponsored Pension Systems

Figures 1 and 3 illustrate the history each respective system's unfunded liability in terms of both actuarial value of liabilities and funded ratio. Figures 2 and 4 highlight the systems' asset growth relative to accrued liability as reported by each respective system.

Figure 1

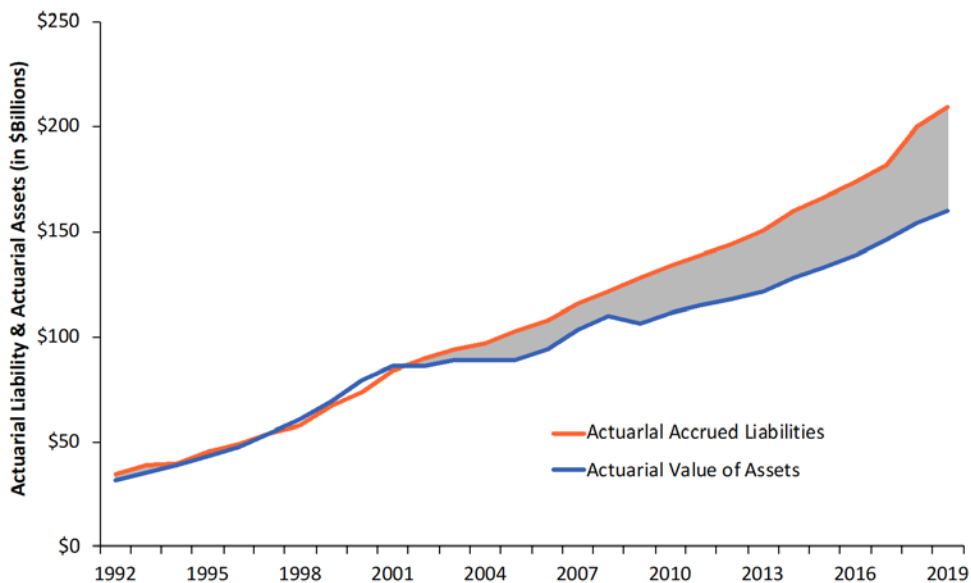
A History of TRS Solvency (2001-2019)



Source: Pension Integrity Project analysis of actuarial value of assets and actuarial accrued liability found in Texas TRS actuarial valuation reports and CAFRs

Figure 2

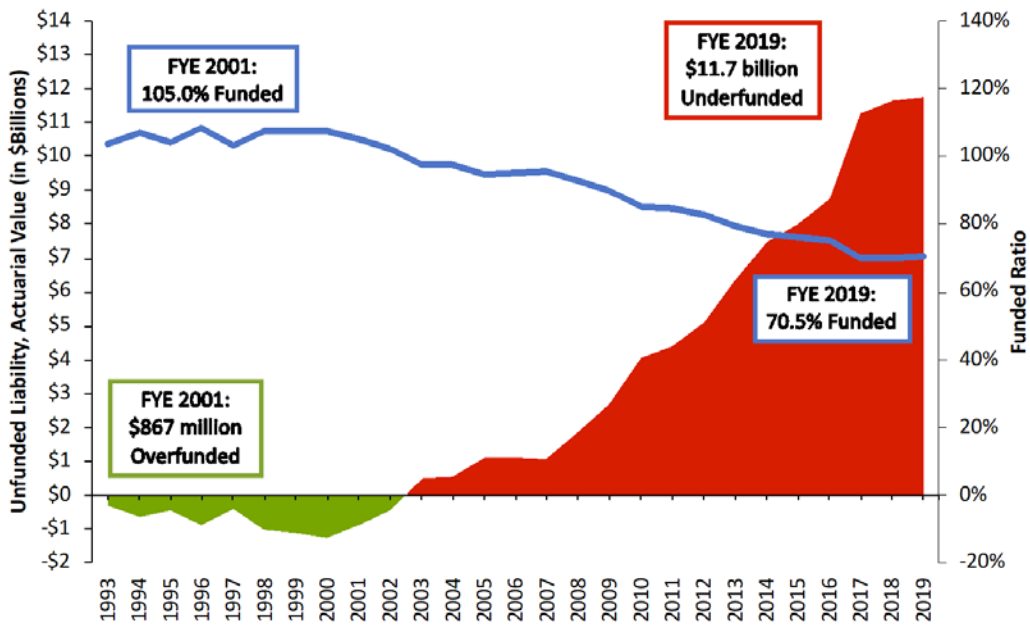
Texas TRS Liabilities are Growing Faster than Assets



Source: Pension Integrity Project analysis of Texas TRS actuarial valuation reports through FY2019.

Figure 3

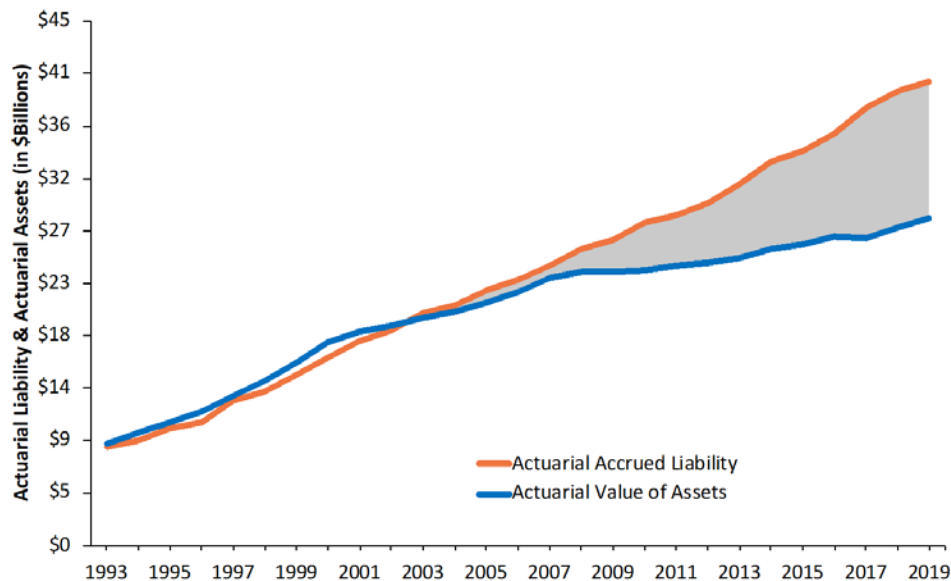
A History of ERS Solvency (1993-2019)



Source: Pension Integrity Project analysis of Texas ERS actuarial valuation reports and CAFRs.

Figure 4

Texas ERS Liabilities are Growing Faster than Assets



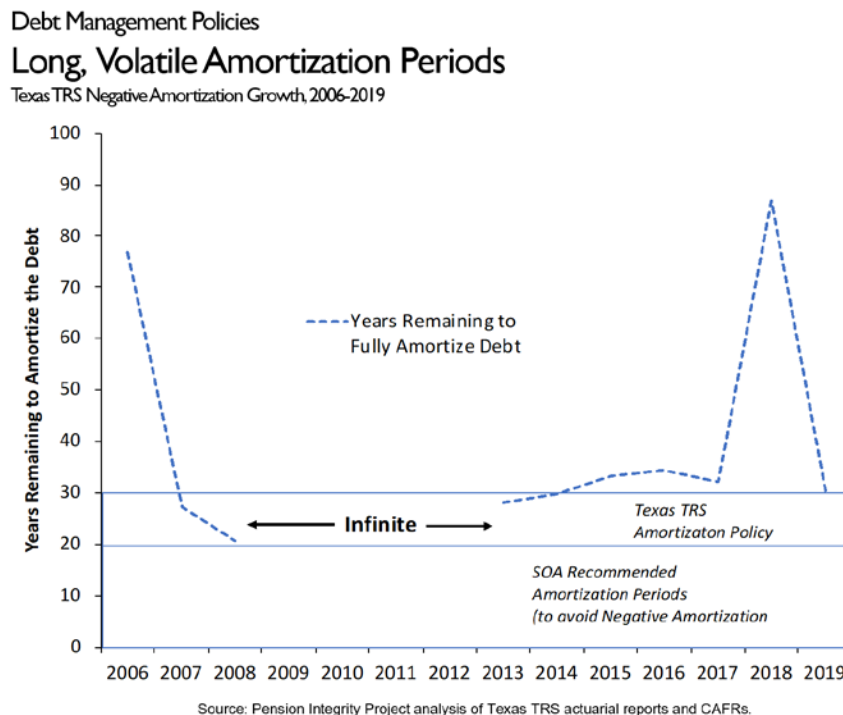
Source: Pension Integrity Project analysis of Texas ERS actuarial valuation reports through FY2019.

Evaluating the Solvency of TRS and ERS

Texas Civil Statutes define an “actuarially sound” pension system as a system for which the amount of contributions is sufficient to cover the normal cost and amortization of the unfunded prior-service cost in a period not to exceed 30 years. (§6243e.3) A public retirement system is required to notify its associated governmental entity if it receives an actuarial valuation indicating the system's actual contributions are insufficient to achieve an amortization period of 40 years or less. If the system's amortization period exceeds 40 years over a few valuations, the public retirement system and its associated governmental entity shall formulate a Funding Soundness Restoration Plan. (§802.2015) Therefore, both ERS and TRS are statutorily required to adhere to the definition of “soundness” as being within 40 years of achieving 100% funding or risk triggering a Funding Soundness Restoration Plan.

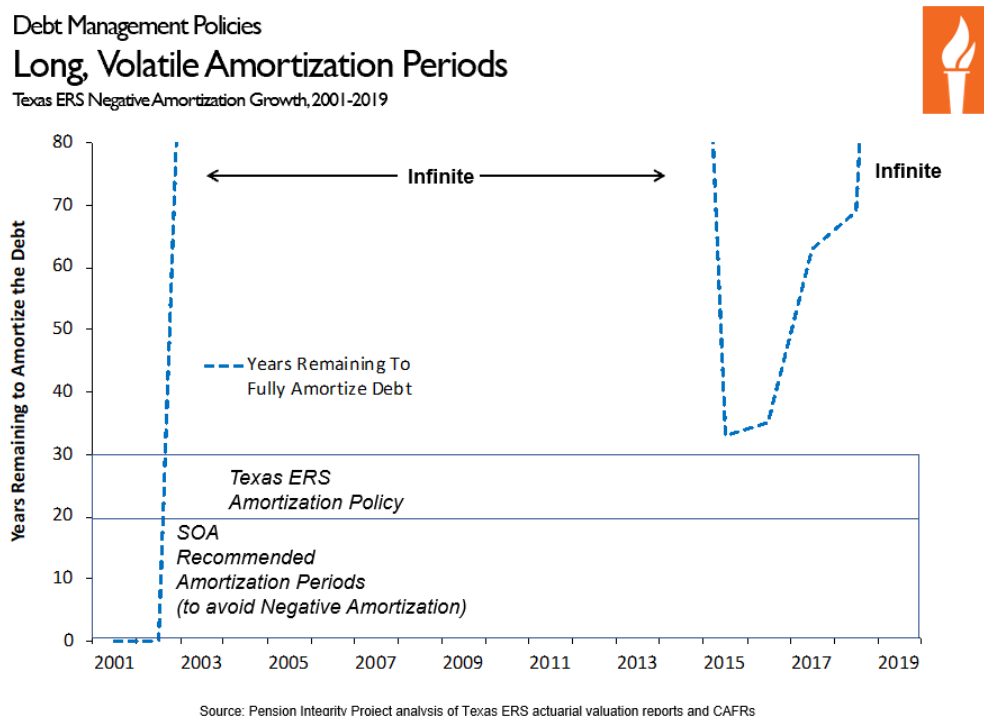
According to annual reports, the TRS amortization period has fluctuated wildly in recent years and saw its amortization period fall from over 80 years to approximately 30 years in the wake of Senate Bill 12 of 2019 (see Figure 5). That legislation increased plan contributions from employers and employees. The adjustment to contribution rates included in SB12 were just enough for the 2019 valuation to meet the legal threshold for issuing a cost of living adjustment for which TRS retirees have waited over a decade. Technically, the increase in TRS funding allowed the system to project that the system’s pension debts would be paid in full within 30 years. However, given the impact of investment experience on the TRS amortization period, that 30 year forecast only reflects that one moment in time—prior to COVID-19 and its resulting market volatility, notably—and not the overall health of the system.

Figure 5



By contrast, Figure 6 shows that Texas ERS is in essentially in an infinite amortization period. Thus we believe it would be misleading and inappropriate to describe either plan as “actuarially sound” based on the current statutory definition.

Figure 6



One challenge is that there is no universal, objective definition or standard for what “actuarial soundness” means, and each system has a different design and broad discretion within their governing boards to adopt different amortization policies, contribution schedules, assumptions and other adjust other key levers relevant to the plan’s overall funding and solvency trajectory. Essentially, for Texas ERS and TRS, any funding policy that falls within a wide range of acceptable actuarial standards of practice would technically be permissible until funding levels drop so low that it makes it impossible to retain a 30- or 40-year amortization period. Worse, neither ERS nor TRS are actually funded on an actuarial basis—they rely on contribution rates established in state law, which are below the rate actuaries have determined are needed to fully fund the systems. This means deviations in assumptions tend to result in significant increases in unfunded liabilities that can be difficult to contain within any fixed amortization period from a fiscal perspective.

Current state law conflicts with the professional judgment of the Society of Actuaries’ Blue Ribbon Panel on Public Pension Funding, for example, which [found](#) that “that “keeping pension promises to employees” means that plans should be pre-funded in a rational and sustainable manner. The Panel went on to say that the standardized plan contribution should be calculated using a “fifteen-year amortization of the unfunded, with amortization amounts set as a level percentage of payroll and using a rolling base.”

The Blue Ribbon Panel’s view is arguably more fiscally responsible and respectful of taxpayers since it clearly aims to avoid the staggering levels of taxpayer-backed unfunded pension liabilities seen today in both ERS and TRS. Shortening the timeframe to pay off pension debt reduces the fund’s exposure to market factors, significantly reducing the ultimate long-term cost to taxpayers. Texas TRS currently holds over \$49 billion in pension debt, and billions more

if the pension plan's current actuarial, economic, and demographic assumptions are wrong—which they clearly have been, or else the \$49 billion in unfunded liabilities for TRS would not exist.

As a result, since 2000 taxpayers have been required to cover over \$22.8 billion in additional TRS pension debt payments alone due to missed actuarial assumptions—funding that could have instead been used to pay teachers more, support the classroom, or provide tax relief.

Rather than apply an abstract numerical definition of “actuarial soundness,” we believe it is more useful to instead begin an analysis of the long-term financial sustainability of ERS and TRS by analyzing the components of the systems’ current unfunded liabilities—e.g., what different factors produced the actuarial gains and losses of the plan over time—as this approach actually points to solutions in a way that the clearly ineffective state statutory definition of actuarial soundness does not.

Figure 7 breaks down the main drivers of unfunded liabilities being accumulated by TRS over the last decade, while Figure 8 shows similar drivers behind the growing ERS unfunded liabilities. Both systems rely heavily on investment returns in lieu of contributions directly from employers and members. Unfortunately, each system’s own annual reports are clear, investment return expectations have not aligned with market trends and have served as the largest driver behind the growth in unfunded liability.

Figure 7

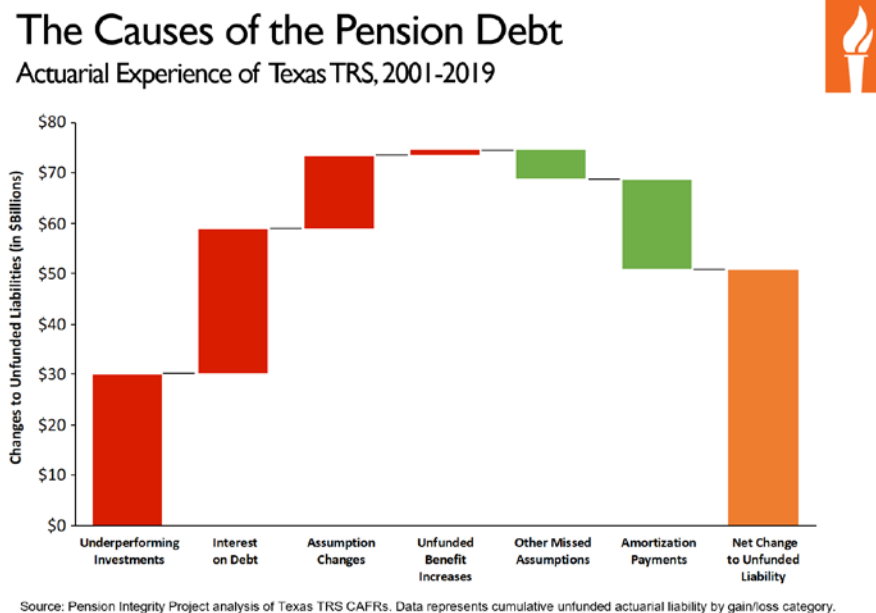
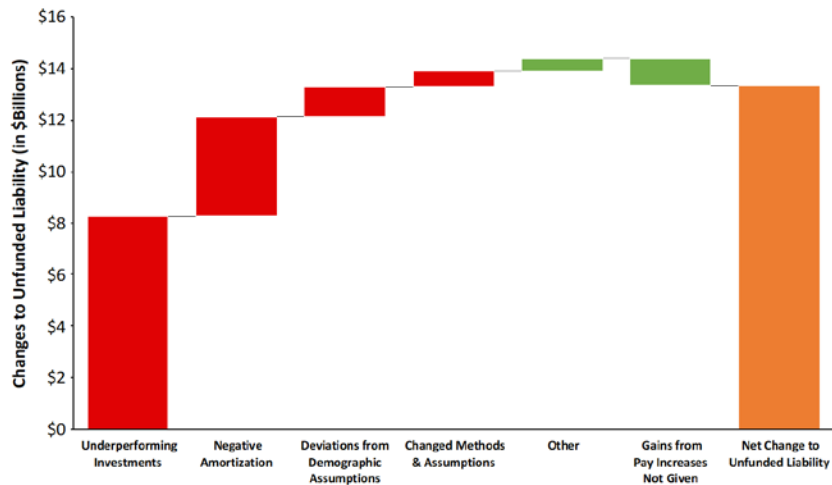


Figure 8

The Causes of the Pension Debt

Actuarial Experience of Texas ERS, 2001-2019



Source: Pension Integrity Project analysis of Texas ERS CAFRs. Data represents cumulative unfunded actuarial liability by gain/loss category.

Our quantitative modeling finds that the current assumed rates of investment return used by ERS and TRS are inappropriately high, which is having the effect of driving billions of additional unfunded liabilities. Interest rates have plummeted over the last 20 years, making it ever more difficult to hit an average 7%+ assumed rate of return consistently over time.

In 2000 one could easily invest in low-risk bonds with yields on par with the assumed returns of pension systems; now those yields have fallen to below 2%, meaning that the task of averaging 7+% returns for a pension system today is really dependent on luck, hope and risk taking, which was not the original promise of how these pension systems would operate. Pensions were supposed to be low-risk, predictable and affordable, not—as they have become today—a preeminent source of financial risk taking in the public sector and the primary source for ever growing, taxpayer financed debt in Texas.

A probability analysis of TRS historical returns over the past 20 years (2000-2019), as shown in Figure 9 indicates a very modest chance (30%) of hitting the plan's 7.25% assumed return. ERS does not fare much better with a 25% probability of hitting its expected investment return (Figure 10) over the same time period.

Figure 9

Probability Analysis: Measuring the Likelihood of TRS Achieving Various Rates of Return



Possible Rates of Return	Probability of TRS Achieving A Given Return Based On:							
	TRS Forecast		Short-to-Mid-Term Market Forecast				Long-Term Market Forecast	
	TRS Forecast	TRS Historical Returns	BNY Mellon 10-Year Forecast	JP Morgan 10-15 Year Forecast	Research Affiliates 10-Year Forecast	Horizon 10-Year Market Forecast	BlackRock 20-Year Forecast	Horizon 20-Year Market Forecast
8.0%	39.8%	20.0%	28.2%	28.0%	18.3%	37.3%	51.3%	50.6%
7.25%	51.1%	30.1%	40.0%	38.5%	27.7%	48.4%	61.5%	61.7%
7.0%	54.6%	34.1%	43.9%	42.6%	31.4%	52.0%	65.0%	64.7%
6.5%	61.6%	42.4%	52.5%	50.7%	38.9%	59.0%	71.1%	71.4%
6.0%	68.8%	50.7%	61.3%	58.8%	46.8%	65.9%	76.6%	77.3%
5.5%	74.9%	59.0%	69.2%	66.2%	55.1%	72.4%	81.7%	82.4%
5.0%	80.7%	67.4%	76.5%	73.5%	63.0%	78.2%	85.8%	86.9%

Source: Pension Integrity Project Monte Carlo model based on TRS asset allocation and reported expected returns by asset class. Forecasts of returns by asset class generally by BNYM, JPMC, BlackRock, Research Affiliates, and Horizon Actuarial Services were matched to the specific asset class of TRS. Probability estimates are approximate as they are based on the aggregated return by asset class. For complete methodology contact Reason Foundation.

Figure 10

Probability Analysis: Measuring the Likelihood of Texas ERS Achieving Various Rates of Return



Possible Rates of Return	Probability of Texas ERS Achieving A Given Return Based On:							
	Texas ERS Forecast		Short-to-Mid-Term Market Forecast				Long-Term Market Forecast	
	ERS Forecast	ERS Historical Returns	Horizon 10-Year Market Forecast	JP Morgan 10-15 Year Forecast	BNY Mellon 10-Year Forecast	Research Affiliates 10-Year Forecast	Horizon 20-Year Market Forecast	BlackRock 20-Year Forecast
8.0%	60.5%	9.9%	25.6%	17.8%	16.6%	10.3%	39.7%	40.0%
7.0%	74.4%	25.0%	40.4%	32.3%	30.5%	21.0%	55.9%	55.3%
6.5%	80.4%	36.0%	48.3%	40.6%	38.7%	27.6%	64.2%	63.3%
6.0%	85.4%	48.6%	56.0%	48.9%	47.5%	35.2%	71.3%	70.2%
5.5%	89.8%	60.6%	64.1%	57.4%	56.4%	43.8%	78.3%	76.5%
5.0%	92.9%	71.5%	71.2%	66.4%	65.2%	52.6%	83.8%	82.1%

Source: Pension Integrity Project Monte Carlo model based on Texas ERS asset allocation and reported expected returns by asset class. Forecasts of returns by asset class generally by BNYM, JPMC, BlackRock, Research Affiliates, and Horizon Actuarial Services were matched to the specific asset class of Texas ERS. Probability estimates are approximate as they are based on the aggregated return by asset class. For complete methodology contact Reason Foundation.

TRS investment return forecasts imply a 51% chance of achieving their 7.25% investment return target over the next 20 years, but our modeling suggests that TRS has closer to a 50% chance of

achieving 6.5% average returns, suggesting ever more unfunded liabilities are in store for TRS—and the costs of servicing those debts will increasingly crowd out dollars from the classroom. Returns over the short to medium term can outweigh long-term effects on funding and costs. Analysis of capital market assumptions publicly reported by leading financial firms (BNY Mellon, JPMorgan, and Research Affiliates) suggests that over a 10-15 year period, TRS returns are likely to fall short of assumptions.

Longer-term projections typically assume TRS investment returns will revert back to historical averages. The “reversion to mean” assumption should be viewed with caution given historical changes in interest rates and a variety of other market conditions that increase uncertainty over longer projection periods, relative to shorter ones. Forecasts showing long-term returns near 7.25% being likely also show a significant chance that the actual long-term average return will fall far shorter than expected. In other words, even if a rosy capital market forecast were to suggest that a pension system like ERS or TRS had a 50% probability of averaging a 7+% return, the inverse is also true—there would be a *50% chance that the pension system will underperform* that target.

Evaluating the Resiliency of ERS and TRS Using Stress Testing

Chasing resiliency is a fairly routine matter in various aspects of risk management in the business world, and public sector entities are starting to pay more attention to the concept, especially in the wake of infrastructure condition and capacity challenges revealed through major urban flooding catastrophes like Hurricanes Katrina and Harvey.

The same thinking should apply on the public finance front too, and with no real progress on improving public pension funding since the Great Recession—both ERS and TRS are in worse position today despite a historic decade-long bull market—and unfunded liabilities likely to approach nearly \$61 billion in fairly short order across Texas’ two major state-sponsored pension systems, it’s time for policymakers and stakeholders to recognize that ERS and TRS have serious financial sustainability issues that impact taxpayers, teachers and classroom in various negative ways, and they need to start building on prudent, but preliminary, efforts to pursue pension resiliency like SB 12 of 2019.

Defenders of the status quo argue that these public pension systems are resilient already today due to several factors, including:

- Their long-lived investment horizon and long-term focus (e.g., the “stay calm, we’re long term investors, we plan for this” argument)
- A belief that long-term investment returns will revert to the historical mean
- The multiyear smoothing techniques employed in reporting investment returns, that then feed back into contribution rate calculations (which limit contribution rate volatility from the stakeholders’ perspective)
- They continue to reliably provide constitutionally protected benefits regardless of the whims in the market

Yet while there is some legitimacy to every one of those oft-repeated arguments from pension industry professionals, the instance of any one of them being true—or all, for that matter—is

not sufficient to leap to an assumption of those pension systems *actually being resilient* in any real fiscal or policy-relevant way.

Given the massive amounts of taxpayer risk inherent in ERS and TRS—as indicated by tens of billions in unfunded liabilities that will be borne by taxpayers—it is inappropriate for policymakers to continue relying on misplaced faith that pension systems, their consultants and their actuaries have a “crystal ball” for investment returns. Past performance is no indicator of future results, and thus the concept of “reversion to the mean”—looking in the rear-view mirror, essentially—is an unacceptable benchmark on which to base the most important assumptions driving the financials of the system—the assumed rate of return and discount rate on liabilities.

Members of each committee with jurisdiction over state-sponsored pension systems is likely to hear many assurances that the current unfunded liabilities are going to be manageable and that it should be no cause for concern that both ERS and TRS are worse off today than before the Great Recession, despite an unprecedented decade-long bull market. While Texas and its economy remains strong, the national economy and the global economy are what pension systems invest in, and there is no cause for optimism today that either plan will meet their assumed investment returns.

How To Measure Resiliency?

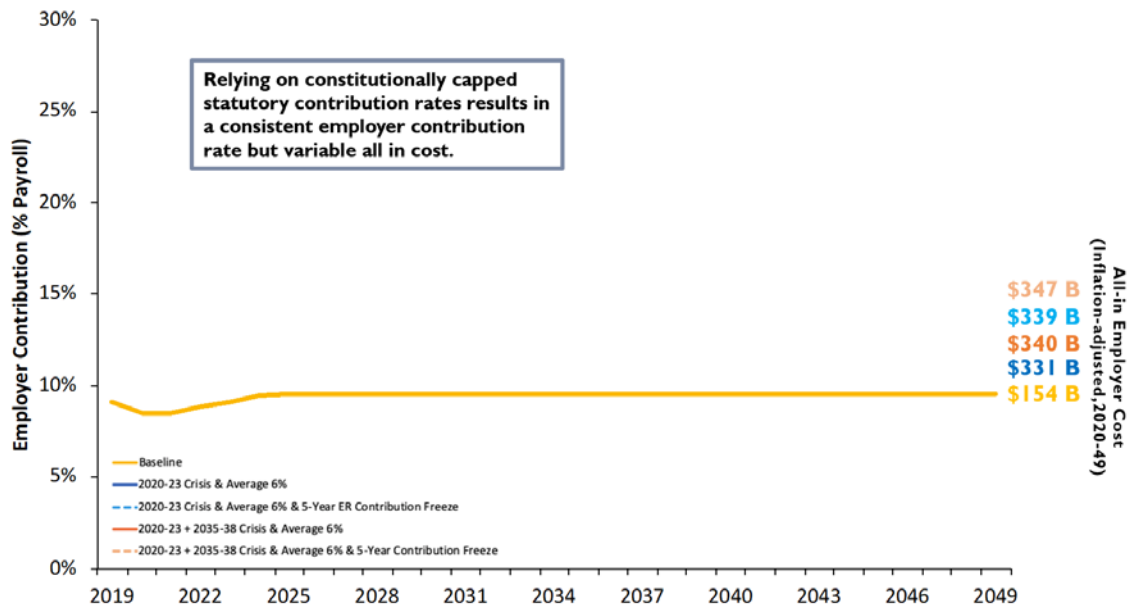
To avoid the classical investment mistake of using past performance to predict future results many policymakers and pension administrators are starting to embrace the practice of stress testing, applying forward looking projections of how pension system funding and contribution rate requirements would change in the event of future market distress scenarios. Figure 11 shows a 30-year forecast for TRS under five different underperforming market scenarios derived from the Dodd-Frank stress testing required of large commercial institutions.

Figure 11

TRS Stress Testing: All-in Employer Cost Projections

How a Crisis Impacts TRS Cost

Discount Rate: 7.25%, Assumed Return: 7.25%, Actual Return: Varying, Amo. Period: 30-Year, Layered



Source: Pension Integrity Project actuarial forecast of TRS. Values are rounded and adjusted for inflation. State is assumed to make statutory contributions. The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

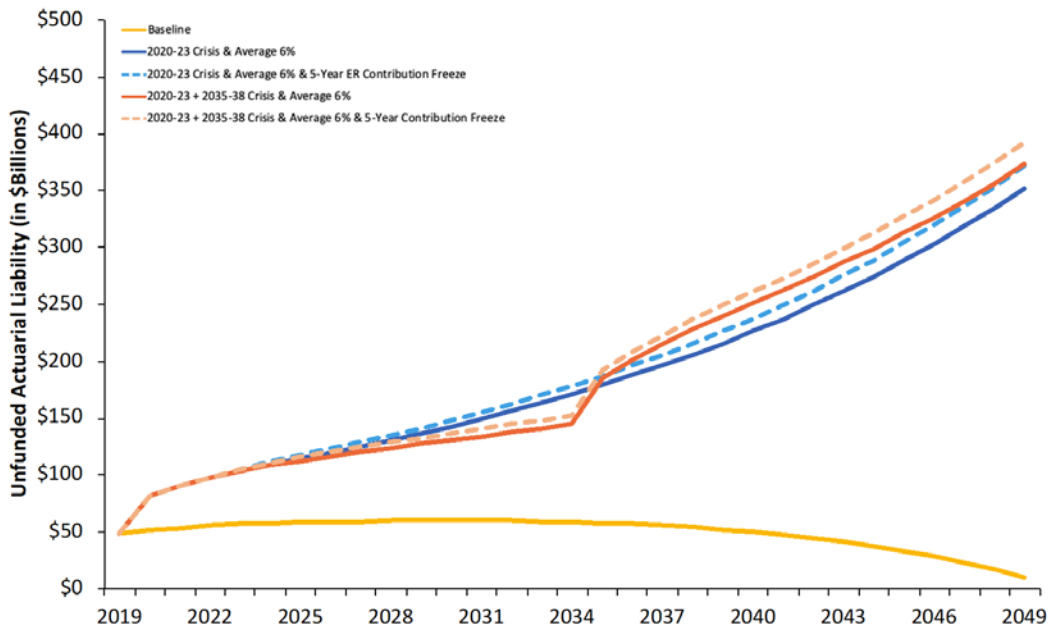
The "all-in" cost reflected in Figure 11 and Table 1 reflects the true cost of TRS to employers/taxpayers under each scenario using an "All-in Employer Cost" that combines the total amount paid in employer contributions over the forecast period with the total amount of unfunded liabilities remain at the end of the forecasting window under the logic that all are ultimately taxpayer responsibilities. Figure 12 and Figure 13 show the effects of unfunded liabilities and funded ratio respectively.

Figure 12

TRS Stress Testing: Unfunded Liability Projections

Unfunded Liabilities Increase Under Crisis Scenarios

Discount Rate: 7.25%, Assumed Return: 7.25%, Actual Return: Varying, Amo. Period: 30-Year, Layered



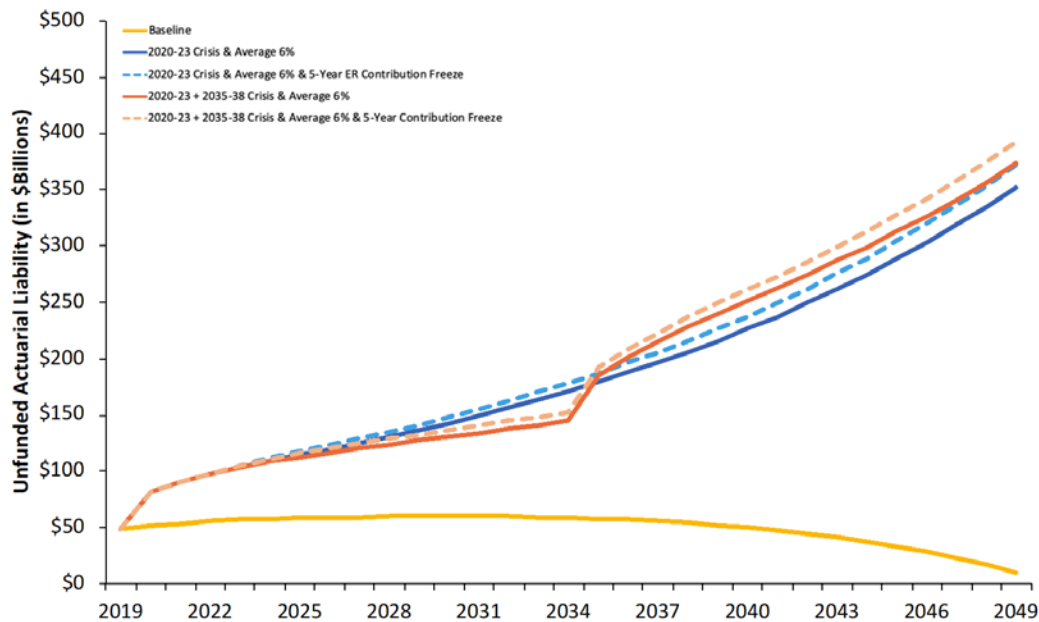
Source: Pension Integrity Project actuarial forecast of TRS funding. State is assumed to make statutory contributions.

Figure 13

TRS Stress Testing: Unfunded Liability Projections

Unfunded Liabilities Increase Under Crisis Scenarios

Discount Rate: 7.25%, Assumed Return: 7.25%, Actual Return: Varying, Amo. Period: 30-Year, Layered



Source: Pension Integrity Project actuarial forecast of TRS funding. State is assumed to make statutory contributions.

Table 1 also compares the cost of policymakers choosing to adhere to the current contribution schedule in lieu of accepting contribution increases according to system recommendations over a 30-year period.

Table 1

TRS Scenario Comparison of Employer Costs

Scenarios	Statutory Contributions			Actuarial Contributions		
	30-Year Employer Contributions	2049 Unfunded Market Liability	Total All-in Employer Costs	30-Year Employer Contributions	2049 Unfunded Market Liability	Total All-in Employer Costs
Pre-Crisis Baseline (Statutory)	\$148.7 B	\$5.3 B	\$154.0 B	\$148.7 B	\$0.5 B	\$149.2 B
2020-23 Crisis + Average 6%	\$148.7 B	\$182.7 B	\$331.4 B	\$230.8 B	\$20.9 B	\$251.7 B
Two Crises + Average 6%	\$148.7 B	\$191.4 B	\$340.1 B	\$239.7 B	\$15.1 B	\$254.9 B
2020-23 Crisis + Average 6% + 5-Year Cont. Freeze	\$145.4 B	\$193.1 B	\$338.5 B	\$242.2 B	\$24.8 B	\$267.0 B
Two Crises + Average 6% + 5-Year Cont. Freeze	\$145.4 B	\$201.8 B	\$347.2 B	\$250.6 B	\$18.4 B	\$269.0 B

Source: Pension Integrity Project actuarial forecast of TRS funding. Values are rounded and adjusted for inflation.
The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

The similar trends can be seen when ERS is put under the same stresses. The "all-in" cost associated with ERS experiences deviating from current assumptions is also highlighted in Figure 14-16 while Table 2 reflects the true cost of ERS given the respective economic and social volatility.

Texas ERS Stress Testing: All-in Employer Cost Projections

How a Crisis Increases Texas ERS Costs

Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current

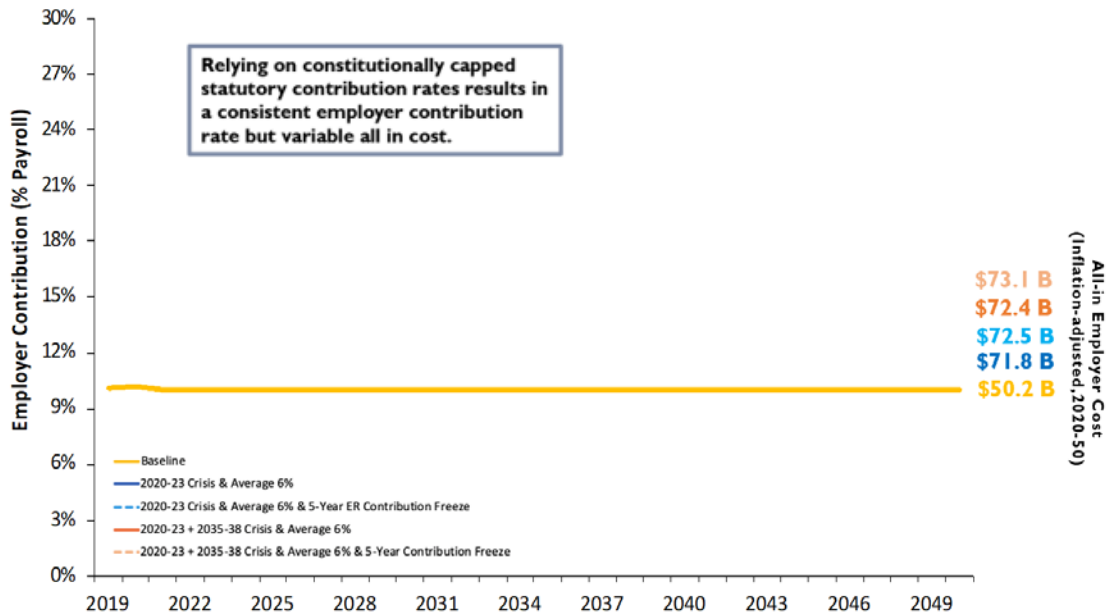


Figure 15

Texas ERS Stress Testing: Unfunded Liability Projections

Unfunded Liabilities Increase Under Crisis Scenarios

Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current

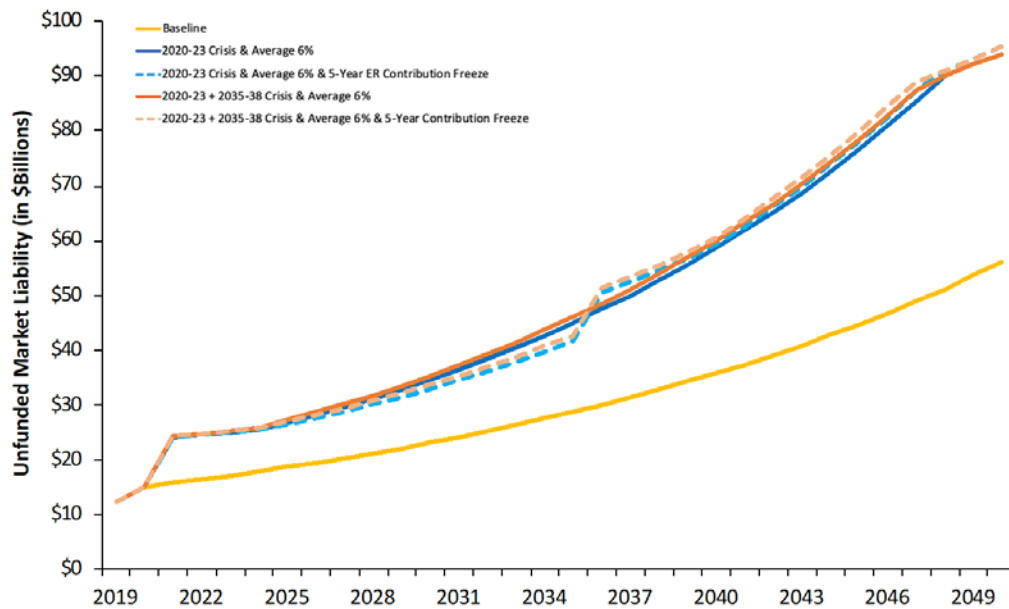
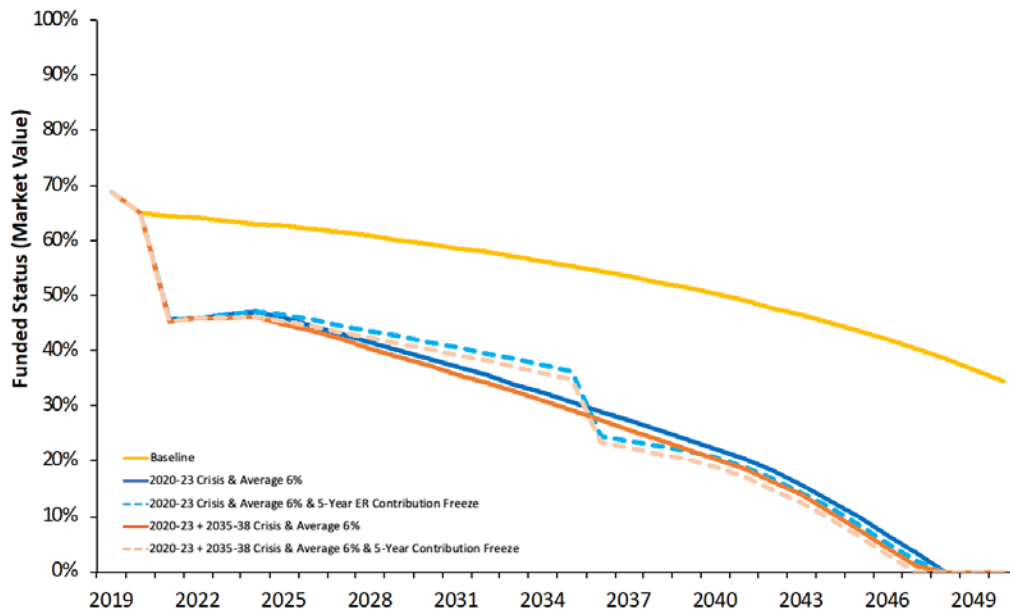


Figure 16

Texas ERS Stress Testing: Funded Status Projections

Texas ERS Solvency Degrades Under Crisis Scenarios

Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current



Source: Pension Integrity Project actuarial forecast of Texas ERS. Values are rounded and adjusted for inflation. State is assumed to make statutory contributions under baseline and Actuarial under crises scenarios. The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

Table 2

ERS Scenario Comparison of Employer Costs

Scenarios	Statutory Contributions			Actuarial Contributions		
	30-Year Employer Contributions	2050 Unfunded Liability (Market Value)	Total All-in Employer Costs	30-Year Employer Contributions	2050 Unfunded Liability (Market Value)	Total All-in Employer Costs
Pre-Crisis Baseline	\$23.4B	\$26.8 B	\$50.2 B	\$36.7B	-\$2.1 B	\$34.6 B
2020-23 Crisis + Average 6%	\$30.9 B	\$40.9 B	\$71.8 B	\$47.8 B	\$0.2 B	\$48.0 B
Two Crises + Average 6%	\$31.6 B	\$40.9 B	\$72.5 B	\$48.8 B	\$-0.4 B	\$48.3 B
2020-23 Crisis + Average 6% + 5-Year Cont. Freeze	\$31.6 B	\$40.9 B	\$72.4 B	\$50.1 B	\$0.8 B	\$50.8 B
Two Crises + Average 6% + 5-Year Cont. Freeze	\$32.2 B	\$40.9 B	\$73.1 B	\$51.1 B	\$0.0 B	\$51.1 B

Source: Pension Integrity Project actuarial forecast of ERS funding. Values are rounded and adjusted for inflation. The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

The above results are based on our modeling at the Pension Integrity Project, but this is the kind of information that pension systems should be providing regularly to policymakers in order

to provide better oversight, given the massive risk taxpayers are exposed to today in ERS and TRS. Virginia, Hawaii and several other states have recently enacted legislation requiring more regular, robust pension system stress testing, a best practice in transparency that should be considered by policymakers in Texas.

How To Make ERS And TRS More Resilient

Stress testing pension systems spotlights the range of financial risks affecting them and points to areas where improvements in funding policy or assumptions would be prudent. But, stress testing alone is only part of the answer. Risk assessments need to be accompanied by strong contingency planning and “what if?” thinking by both plan administrators and the policymakers who ultimately sponsor the systems. Having data-centric information is just as useless as not having the information at all if it does not prompt analysis and actions that mitigate identified risks before they impact plan assets.

This leads to five principles of pension resiliency to help guide the redesign process for US states and local governments:

- Resilient retirement systems rely on a governance structure designed to minimize the role of politics.
- Resilient retirement systems can take many forms but are designed to manage risk through autocorrecting features (like variable contribution rates not fixed into statute) and other policy guardrails around assumption setting, amortization policy and more.
- Resilient retirement systems use realistic assumptions and are disciplined in maintaining full funding of their pension plans.
- Resilient retirement systems create a pathway to lifetime income for employees while avoiding intergenerational equity disparities, public service crowd-out, and runaway taxpayer costs.
- Resilient retirement systems assess—and plan for—downside risk.

II. Regarding Investment Transparency In The 21st Century

The Pension Integrity Project recently [reported](#) to the Sunset Advisory Commission staff our findings regarding TRS investment reporting shortfalls, particularly as it relates to alternative investments. In summary, we found that TRS continues to expand their reliance on highly volatile and opaque alternative assets, including private equity and real estate holdings, in search of higher returns resulting in a greater percentage of the system’s asset allocation being less transparent and more difficult to value. The same comments and findings are also applicable to ERS given asset allocation trends over the last two decades.

Thank you once again for the opportunity to provide our insights and analysis for consideration during this interim period. Our team stands ready to answer any questions or provide any resources that may help build the long-term resiliency and transparency of Texas’ state sponsored pension systems.

Appendix

Methodology:

1. Adapting the Dodd-Frank stress testing methodology for banks and Moody's Investors Service recession preparedness analysis, the following scenarios assume one year of -26.4% returns in 2020, followed by three years of 11% average returns.
2. Recognizing expert consensus regarding a diminishing capital market outlook, the scenarios assume a long-term investment return on 6% once markets rebound.
3. Given the increased exposure to volatile global markets and rising frequency of Black Swan economic events, we include a scenario incorporating a second Black Swan crisis event in 2035.
4. In the event plan sponsors are unable to appropriate their full actuarially determined employer contributions amid budget stress, additional scenarios show the impact of a five-year employer contribution freeze.

Stress Testing Scenarios:

1. 6% Consistent Returns Over a 30 Year Period
2. 2020-23 Crisis + Average 6.0% Long-Term
3. 2020-23 Crisis + 2035-38 Crisis + Average 6.0% Long-Term
4. Scenario 1 + 5-Year Employer Contribution Freeze
5. Scenario 2 + 5-Year Employer Contribution Freeze