Foundation for Public Pensions Risk Reporting
2024 Update

Risk reporting for public pensions should be transparent and accessible to all stakeholders and designed to inform long-term planning and decision making. First published in 2018, The Pew Charitable Trusts' "Foundation for Public Pension Risk Reporting" provides a comprehensive starting point for pension stress test and risk analysis, with the government plan sponsor as the primary target audience. Building on existing actuarial projections, risk assessments, and reporting standards, the framework is designed to assist budget decision-makers and government finance officials in evaluating the impact of investment and contribution risk on government budgets, pension system balance sheets, and the cost of current benefits under a range of economic conditions.

Beginning with the 2018 framework, this update reflects the dynamic nature of stress testing analysis. Reporting standards and practices evolve over time, and the ups and downs of the national economy prompt the routine need to adjust baseline assumptions and projections. For example, the current updates reflect a scenario in which inflation is not successfully lowered by current policies ("stubborn inflation"), leading to a recession. The supporting notes also reflect the relevant changes to actuarial standards of practice and underlying economic assumptions that inform this update.

Overall, public pensions risk reporting for plan sponsors should be tailored to the individual policies and features of the plan and should allow policymakers and plan administrators to understand the likely trajectory of plan funding and the share of budgetary resources needed to pay for pension benefits across a range of investment and economic scenarios. The following analyses represent an approach to answering these questions:

1. Sensitivity analysis of plan liabilities to different investment return assumptions, including the low-default-risk obligation measure as outlined in adopted revisions to Actuarial Standard of Practice (ASOP) No. 4.
2. Scenario analysis to assess investment risk, using regularly updated baseline projections that account for current economic conditions, and include forward-looking projections of five to 20 years under (a) a low-return scenario assuming a fixed reduced rate of return (for example, 5% or the 25th percentile of projected returns) on assets; (b) a downside, asset shock scenario that includes a significant initial loss, for example of 20% on plan investments, followed by a period of recovery, and then low returns over the remaining period; and (c) a scenario showing the impact of a period of higher inflation.
3. To assess contribution risk, projections, and measurements for modified versions of the scenarios above, assuming (a) full actuarial contributions based on current funding policies; and (b) contributions that are constrained by the rate of revenue growth (i.e., fixed as a percent of revenue).
4. Projections using stochastic analysis to simulate the volatility of annual investment returns above and below the expected rate of return to measure the range of possible contributions and funding levels over the forward-looking projection period.
5. Sensitivity analysis of service costs for current benefits, under the latest tier and the entire population as a whole, to different investment return assumptions.

To date, 25 states have implemented risk reporting targeted to government plan sponsors. Legislation or formal requirements in 20 of these states establishes the scope of analysis and

reporting, as well as the process for submitting the results to policymakers.

The resulting metrics provide executive and legislative officials with information that supports active monitoring of risk and measures of risk tolerance, a data-driven approach to long-term budgeting through all cycles of the economy, and a framework to evaluate the impact of proposed or adopted policy changes.

SUPPLEMENTARY NOTES
INTRODUCTION

1. Investment and contribution risk are cited and defined in section 3.2 of the Actuarial Standards Board, ASOP No. 51, Assessment and Disclosure of Risk Associated With Measuring Pension Obligations and Determining Pension Plan Contributions (2017). Additional risks identified in section 3.2 include asset-liability mismatch, interest rate, and longevity risks.
2. The sensitivity, scenario, and stochastic analyses included above are generally consistent with the quantitative measures identified in section 3.2 of ASOP No. 51; the methodology framework we applied to 10 states in "Assessing the Risk of Fiscal Distress for Public Pensions: State Stress Test Analysis" by Greg Mennis, Susan Banta, and David Draine, working paper for Harvard Kennedy School's Mossavar-Rahmani Center for Business and Government (May 2018); and guidance on implementation as presented in the Public Policy Practice Note developed by the Pension Committee of the American Academy of Actuaries for ASOP No. 51.
3. Individual features of the pension plan that should be accounted for in the analysis include benefit design, financing arrangements, legal framework, and an acknowledgment that post-pandemic reductions in government workforces and payroll may also affect pension contribution policies for certain plans. Measurements for scenario analysis should include, at a minimum, assets, liabilities, and funded ratios; employer contributions as a share of payroll and as a share of revenue; and total contributions, benefit payments, and the ratio of operating cash flow to assets.
4. Baseline pension and revenue projections should reflect the expected impact of current inflation and interest rates on benefit costs, pension liabilities, and investment returns. Pew's baseline macroeconomic assumptions are based on the most recent outlook published by the Congressional Budget Office. Downside economic assumptions are based on stress test scenarios published by Moody's Analytics and the Federal Reserve Bank. Pew's revenue forecasts, used solely for calculating costs as a share of state resources, are based on own-source revenues (OSR), a measure of taxes and fees controlled by the state that is tracked by the U.S. Census Bureau. In-state forecasts of revenue growth or contraction are used when available; and long-term revenues are estimated based on the expected path for economic recovery in the U.S. and the long-term relationship between OSR and state economic output, as measured by gross state product.

REPORT COMPONENT I: SENSITIVITY ANALYSIS

1. GASB Statement No. 67, Financial Reporting for Pension Plans (2014), requires disclosures of net pension liabilities, calculated using the plan's discount rate as well as discount rates that are one percentage lower and one percentage higher than the current rate.
2. The adopted revisions to ASOP No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions (December 2021), require a calculation of plan liabilities, referred to as the low-default-risk obligation measure, using a low-risk, or risk-

free discount rate. The difference in liabilities calculated using the assumed rate of return compared to liabilities based on a low-risk or risk-free rate of return can offer a way of assessing the economic value of the risk borne through investment choices.

REPORT COMPONENT 2: INVESTMENT RISK SCENARIO ANALYSIS

1. The 5% nominal return assumption in Pew's model is identified as a reasonably likely downside scenario for a typical public pension fund that equates to a 3% real return, plus 2% for expected inflation, based on current Congressional Budget Office long-term assumptions. Using the 25th percentile return allows the low-return scenario to be modeled based on the plan's specific asset allocation, investment assumptions, and expected volatility in returns. Examining trials from stochastic analysis that have low long-term rates of return can provide similar information while also reflecting real-world market volatility.
2. When accounting for a near-term market or economic downturn, applied downside scenarios may be adjusted. For fiscal year 2023, our "severe recession" scenario is based on the economic and financial market assumptions in the Federal Reserve's "severely adverse" scenario included in its 2023 bank stress tests. More information on the severely adverse scenario can be found in the Fed's February 2023 publication, "2023 Stress Test Scenarios." Our adaptation of the Fed's scenario includes a severe recession in the first two years, with a cumulative GDP decrease of 3.5%. Based on this scenario, we estimate that U.S. equity returns would fall by 30% in the first year and 10% in the second year, followed by a recovery over the next three years with annual returns of 10% to 30%. Our "stubborn inflation" scenario is based on Moody's Analytics "stagflation" scenario and includes stubbornly elevated inflation levels above 4% in 2024 and 2025, followed by inflation settling at 2.5% in the long term, slightly above the baseline. In this scenario, U.S. equity experiences a 20% loss in year two, 0% returns in year three, and a period of recovery with 25% returns in year four and 18% returns in year five.
3. Additional scenarios may include an initial return of 0%; twice the assumed rate (see page 18 of the ASOP No. 51 practice note); projections at +/- 1% of the assumed rate; or an asset shock scenario followed by a period of market recovery, in which the long-term rate of return averages to the expected rate of return over time. Baseline projections, in which all investment and actuarial assumptions are met, should be applied to provide a point of comparison for all scenarios.

REPORT COMPONENT 3: CONTRIBUTION RISK SIMULATION ANALYSIS

1. For plans that have not received the full actuarially determined employer contribution from plan sponsors in a given year, a supplemental disclosure should also be included that provides an explanation for the shortfall, and an estimate of its fiscal impact based on a consistent methodology developed by the plan actuary and budget officials.
2. This type of analysis can be most informative if it also incorporates projections of plan contributions that account for any impact of recession-related payroll reductions, particularly for plans with fixed-rate funding policies.

REPORT COMPONENT 4: STOCHASTIC ANALYSIS OF A BROAD RANGE OF OUTCOMES

1. Stochastic analysis is typically designed to provide multiple trial simulations based on the fund's actual investment policy and asset allocation in which the annual returns over the forecast period vary to provide a range of possible outcomes of funded status and cost over time, based on a uniform set of capital market assumptions.

REPORT COMPONENT 5: SENSITIVITY ANALYSIS OF SERVICE COSTS FOR CURRENT BENEFITS UNDER VARYING RETURN ASSUMPTIONS

1. Investment return assumptions used for normal cost sensitivity may include, for example, +/- 1% of the expected rate of return and a 5% rate of return (or the 25th percentile of projected returns). Sensitivity of normal cost should incorporate the effects of any risk-sharing policies built into the plan design, including variable cost of living adjustments (COLAs) and employee contribution rates. In addition to measuring cost sensitivity for the latest tier of benefits, calculations for total service cost across the workforce should also be included.

CONCLUSION

A ROUTINE PROCESS AND STANDARDIZED REPORTING TO SUPPORT ACTIVE RISK MONITORING AND BUDGET DECISION MAKING

1. Pension plan actuaries and investment consultants regularly produce studies for their clients (the retirement systems) that include long-term projections based on plan-specific assumptions, as well as asset-liability studies and risk assessments that examine outcomes based on a range of investment return scenarios. These serve as essential inputs to plan administrators and fiduciaries; however, routine and transparent risk reporting that is designed to inform plan sponsors' broader policy deliberations and long-term planning goes a step further by also factoring the jurisdiction's overall economic conditions, revenues, and historical willingness to make required contributions.
2. Furthermore, stress testing analysis can best inform all key stakeholders when the results are publicly available and presented in a consistent format.
3. Policies to actively monitor and manage key risks should include setting thresholds, or "risk boundaries," for specific measures (e.g., a plan's funded status) and require corrective actions (e.g., increased contributions) if a plan falls below these thresholds. Risk boundaries can be as simple as minimally acceptable funded ratios or contribution levels, or more complex measures based on the likelihood of breaching these boundaries.
4. As of March 2023, 25 states have implemented routine risk reporting, as documented in Pew's report, "Risk Reporting Practices Across Pension Plans" (2023). This includes 12 states adopting statutory stress testing requirements, eight requiring regular risk assessments as part of a formal policy adopted by a board of trustees or a legislative oversight body, and five that have incorporated forward-looking assessments into routine actuarial valuations.