THOMAS GOLONKA
VPIC CHAIR

KIMBERLY GLEASON
VPIC VICE-CHAIR

STATE OF VERMONT
VERMONT PENSION INVESTMENT COMMISSION

TO: Vermont House and Senate Committees on Government Operations

FROM: Thomas Golonka, Chair
Kimberly G. Gleason, Vice Chair

DATE: January 15, 2023

Re: Vermont Pension Investment Commission Annual Report

In 2021, the General Assembly of the State of Vermont enacted Act 75, relating to the membership and duties of the Vermont Pension Investment Commission (VPIC) and the creation of the Pension Benefits, Design, and Funding Task Force. Act 75 requires the VPIC to submit a comprehensive report to the House and Senate Committees on Government Operations on or before January 15th of each year and we are happy to submit it herewith.

Executive Summary

- Fiscal year 2022's -7.72% return fell short of the 7.00% actuarial assumed rate of return but ranked above median among similarly sized public pension funds.
- VPIC expects continued downward pressure on the actuarial assumed rate of return as the tail winds of falling interest rates, low inflation, and expanding earnings multiples abate.
- VPIC continues to focus its efforts on maximizing long-term investment returns within prudent levels of risk and liquidity.
- As VPIC continues to implement its autonomy under Act 75 of 2021, we respectfully request the legislature's assistance in implementing staffing recommendations from a recent independent study by Mercer conducted at your request.

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Fiscal Year 2022 Investment Performance

Fiscal Year 2022 (FY22) investment performance is detailed in Appendix A. The combined assets of the three statewide pension plans generated a -7.72% return for the fiscal year ended June 30, 2022 (FY22), as outlined on page 19 of Appendix A. While disappointing in an absolute sense, our performance ranked above median among our public pension fund peers. Further, Russia's invasion of Ukraine, increasing inflation, the ongoing pandemic, and declining globalization combined to create an extremely challenging investment environment where most asset classes became positively correlated and suffered contractions in valuations. As we mentioned in our report last year, we expected lower future investment returns across equity and debt investments given the high valuations relative to history. Investments have a propensity to deviate back to the average historical return, but we were surprised by how many investment challenges arose simultaneously during FY22.

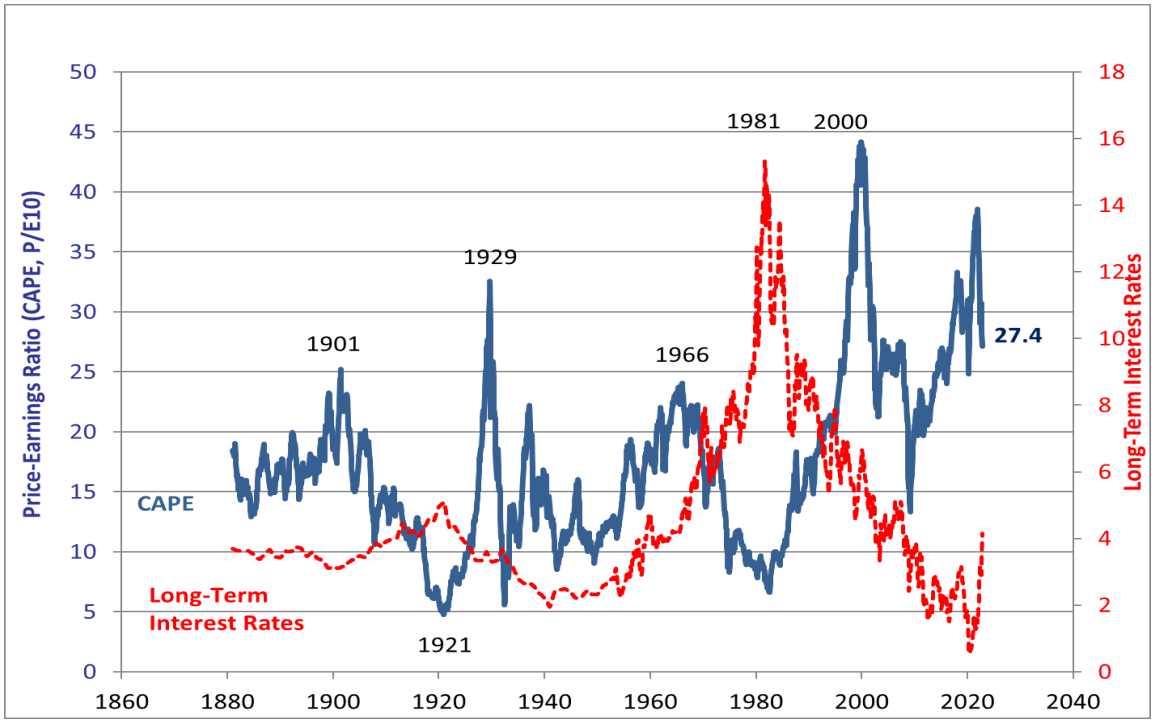
We still believe that most asset class valuations are high relative to history and, as relative valuation tends to be a powerful driver of future returns, we expect a challenging investment climate for the foreseeable future. Empirically, high valuations tend to be followed by periods of lower investment performance and low valuations tend to be followed by periods of higher investment performance. Indeed, our consultant's capital market assumptions have been lowered across the board in recent years as outlined on page 7 of Appendix B. Further, despite FY22's slight reduction in equity valuations and large increase in interest rates, we believe that valuations remain high across most asset classes.

Pension Plan Funding Overview

As outlined on the chart in Appendix C, FY22's disappointing investment performance was offset by the actuarial impact of Act 114 of 2022 for both the Vermont State Teachers' Retirement System (VSTRS) and the Vermont State Employees' Retirement System (VSERS). The Vermont Municipal Employees' Retirement System (VMERS), which was not impacted by Act 114, saw a slight reduction in funded status. The use of five-year smoothing leaves three-fifths of the FY21's excess return to offset any potential actuarial losses in the next three years. FY22's investment experience will be gradually reflected in actuarial calculations over the next four years. For all three statewide pension plans, FY22's actuarial investment experience comprised a minority of actuarial experience losses as over half of FY22's experience losses were caused by adverse COLA and retirement experience.

Actuarial Assumed Rate of Return

The actuarial valuations for both FY22 and FY21 reflect a 7.0% actuarial assumed rate of return, though actual returns were well below and above, respectively. As we think about future investment returns, we do so with an eye on current equity valuations and interest rates. As outlined in the chart below, both the Shiller Cyclically Adjusted Price/Earnings Ratio (CAPE) and the yield on the 10-year Treasury indicate that the valuations of both equity and debt investments are high relative to history despite some narrowing of that gap during FY22[1]. Further detail on current valuations relative to history can be seen on pages 5-7 of Appendix A. While accurately forecasting if, when, and how such metrics revert to more historically normal levels is very difficult, we do expect future returns to be lower than those of the recent past. That, in turn, implies a lower actuarial assumed of rate of return.



It is important to keep in mind that as fiduciaries we design the strategic asset allocation targets to maximize investment returns within prudent levels of risk and liquidity. We are not designing our strategic asset allocation targets to generate a return equal to the actuarial assumed rate of return. The actuarial assumed rate of return is informed by actual and expected future returns but is separate and distinct from the investment process. Other inputs into determining the assumed rate of return include actuarial valuations, experience studies, and asset/liability studies. Ultimately, the actuary recommends the assumed rate of return and the inflation assumption. Prior to 2021 when Act 75 was enacted, the boards of the three State pension plans and VPIC had to agree to change these assumptions. Act 75 tasked VPIC with determining them and we had

[1] Shiller, Robert J., Data Used in "Irrational Exuberance" Princeton University Press, 2000, 2005, 2015, updated

planned to conduct a comprehensive asset/liability study as of June 30, 2022; however, Act 114 of 2022 extended that deadline to June 30, 2023. Regardless, VPIC spent a significant amount of time over the past year evaluating and debating whether the current 7.0% actuarial assumed rate of return and 2.3% inflation assumption were prudent. The Commission ultimately decided to table the decision pending further analysis and discussion with the three statewide pension plan boards. VPIC is also formalizing an annual process to proactively affirm the actuarial assumed rate of return, the inflation assumptions, and the smoothing period in time for the pension Plans' actuary to incorporate any changes into their annual valuations.

While our current capital market assumptions do anticipate returns for the target asset allocation lower than 7.0%, we caution that the ability to accurately forecast investment returns is very poor and that, unlike the volatility in our actual returns over time, the actuarial assumed rate of return trends much more slowly. This allows for some measure of predictability in state and local government budgets for funding the ADEC. If our assumptions prove to be either too optimistic or too pessimistic, annual actuarial valuations effectively reset funding requirements to assure intergenerational equity. Again, VPIC does not design our strategic asset allocation targets to generate a return equal to the actuarial assumed rate of return. We design a resilient portfolio that maximizes returns for a prudent level of risk and liquidity.

Asset Allocation Study and Portfolio Design

Since 1990, investment returns have provided 60% of public pension plan funding nationwide. Because investments provide more than half of required pension contributions, it is essential that we develop a thoughtful asset allocation model that reflects both the demographic and economic characteristics of the three Vermont statewide pension plans, as well as the risk appetite of VPIC. Portfolio design is based on and supported by comprehensive Vermont specific asset allocation studies, the most recent of which can be seen in Appendix B.

Annually, Segal, the actuary for the three statewide pension plans tabulates demographic data for all members and retirees and calculates a pension liability. This is essentially the present value of the obligation to provide a defined benefit pension plan to state employees, teachers, and municipal employees in Vermont. The actuary also tabulates the assets on hand to fund these pension liabilities and, ultimately, an unfunded actuarial liability (UAL). The UAL represents the shortfall between assets on hand and the liability to the members and beneficiaries of the Plans that must be made up by future investment returns and contributions from both members and their employers. These annual actuarial valuations, as described above, are meaningful inputs to VPIC's annual asset allocation studies. The goal of these studies is to assure that the portfolio is strategically aligned with the actuarial characteristics of the three statewide pension plans. By incorporating a thorough analysis of each Plan's demographic and economic characteristics, VPIC seeks to generate strong long-term returns to fund long-term pension liabilities at minimal cost to

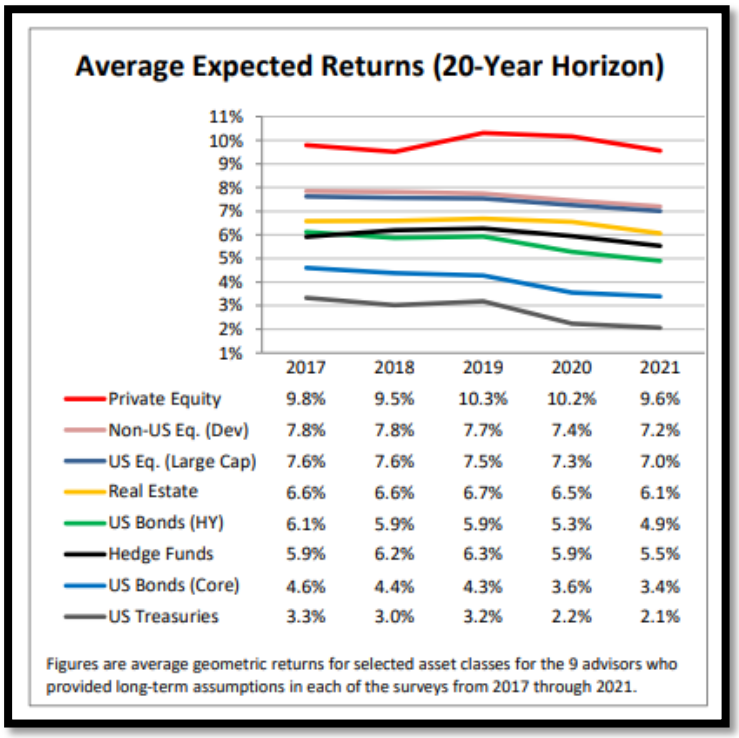
taxpayers, to maintain sufficient liquidity to fund current pension payments to retirees, and to balance these factors at prudent risk levels. The actuarial valuations and experience studies are important inputs to portfolio design, and they dictate prudent limits on illiquidity and risk factors, both of which drive investment returns.

VPIC evaluates these factors among three broad classes of investments: growth assets, downturn-hedging assets, and inflation-hedging assets. The portfolio design process begins with a high-level analysis of each Plan's funding and cash flow metrics. Understanding these characteristics is essential to fully understanding each Plan's tolerance for illiquidity, which, we believe, adds to long-term investment returns. Investors expect to be compensated for investing their money for longer periods of time.

Working with its staff and investment consultant, VPIC examines a variety of model efficient investment portfolios with varying levels of liquidity and risk. Within each portfolio, VPIC assigns expected returns, risk, and asset class correlations to each component and runs *Monte Carlo* analyses. Such analyses show VPIC how each model portfolio is expected to perform on several metrics over the long-run and give VPIC important insights into expected investment returns, cash flows, funded status, and required employer (i.e., taxpayer) contributions.

It is important to note that VPIC's *Monte Carlo* simulations assume a normal distribution of returns and factors. We all know, however, that investment outcomes are not always normally distributed. In fact, they are impacted by events like periods of high inflation, falling interest rates, high growth, low growth, and other abnormal trends. Further, more amplified market disruptions do occur periodically (e.g. tech bubble, great financial crisis, Covid-19 equity selloff, Ukraine invasion, deglobalization). To better understand the impact of such events, VPIC conducts additional scenario analyses on the portfolios under consideration. The intent of these analyses is not to forecast any future trend; rather, it is to better understand the tradeoffs among alternative portfolios during different economic scenarios and market dislocations. This allows the VPIC to prudently design a resilient portfolio that can withstand market shocks and meet the financial objectives of the beneficiaries of the funds.

Capital market assumptions determine the portfolio's expected return over the long run



Capital market assumptions are long term forecasts of investment return and risk (standard deviation) for each asset class, as well as forecasts of correlation with other asset classes. These factors drive the *Monte Carlo* modeling described above. Many investment managers and consultants release their capital market assumptions on an annual basis, with interim updates when market volatility warrants. Such assumptions are specific to each firm's market outlook and, when applied to a portfolio's asset allocation targets, show the expected range of returns that will result if the capital market assumptions come to fruition. The capital market assumptions are based on long-term expectations and exhibit small deviations year-over-year. The chart to the right shows the results of an annual study conducted by Horizon Actuarial Services and evaluates the capital market assumptions of 39 investment firms[2]. The expected long-term return for each asset class has on average seen a small downward shift. This is in line with our expectation that the current high valuations will put downward pressure on future investment returns.

VPIC's current target portfolio, using its current consultant's (RVK) capital market assumptions, is expected to generate a long-term return of 5.6%, assuming all the capital market assumptions in the model come to fruition. This represents a slight increase in expected returns from the prior year's 5.4%. Our supporting capital market assumptions can be seen on page 5 of Appendix B. While there is some dispersion among the different sources of capital market assumptions, there has been a consistent trend lower over the past 20 years, reflective of high valuations and low interest rates. The chart below shows the increasing difficulty of generating a 7.0% rate of return over the past thirty years.[3] It is our view, that designing a portfolio with our capital market assumptions that is expected to generate a 7.0% return would involve taking on imprudent levels of risk and illiquidity. Accordingly, we do not view the actuarial assumed rate of return as return target. Rather, it is simply an actuarial tool for calculating pension contributions necessary to assure sound funding. Instead, we design the VPIC investment portfolio to maximize long-term returns within prudent levels of risk and liquidity.

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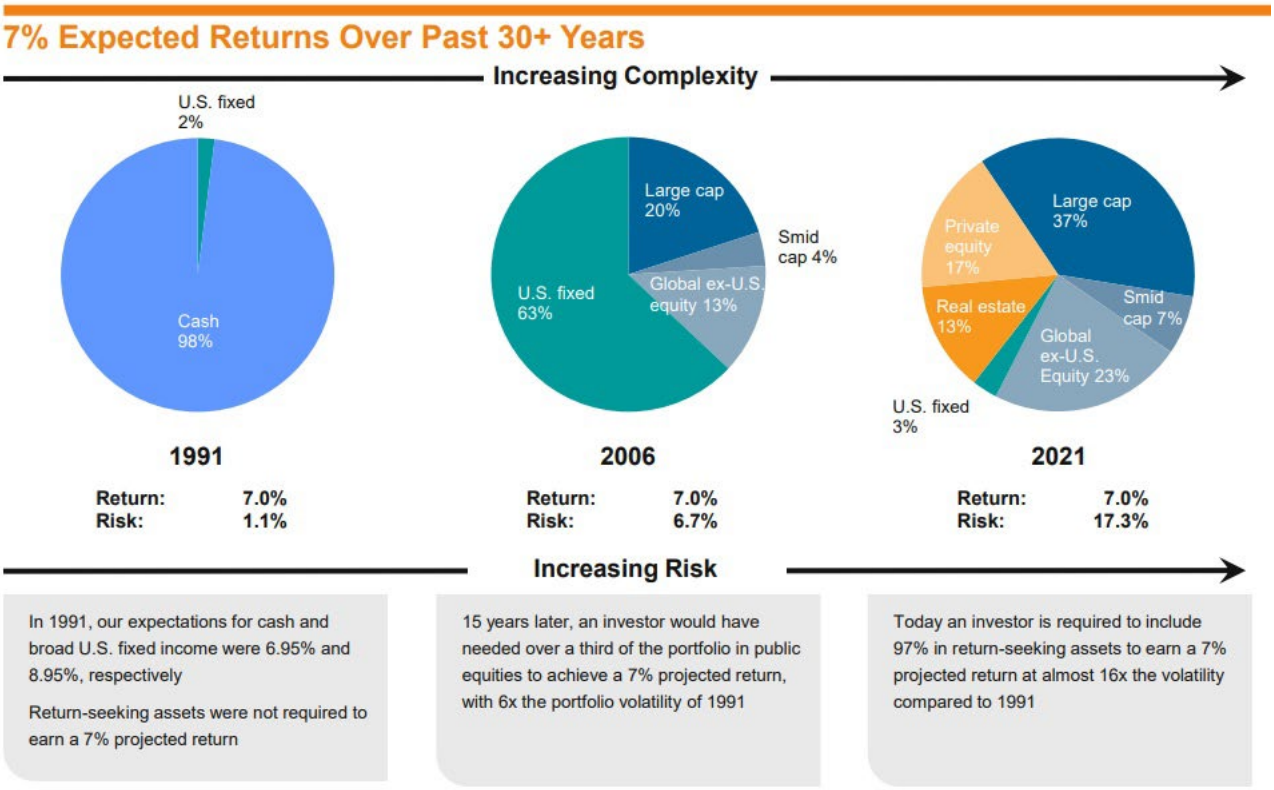
[2] Horizon Actuarial Services, "Survey of Capital Market Assumptions", 2021 Edition

[3] Callan Institute, "2021 Capital Market Assumptions", January 2021, P. 46



VPIC considers actuarial recommendations and capital market assumptions in setting the actuarial assumed rate of return

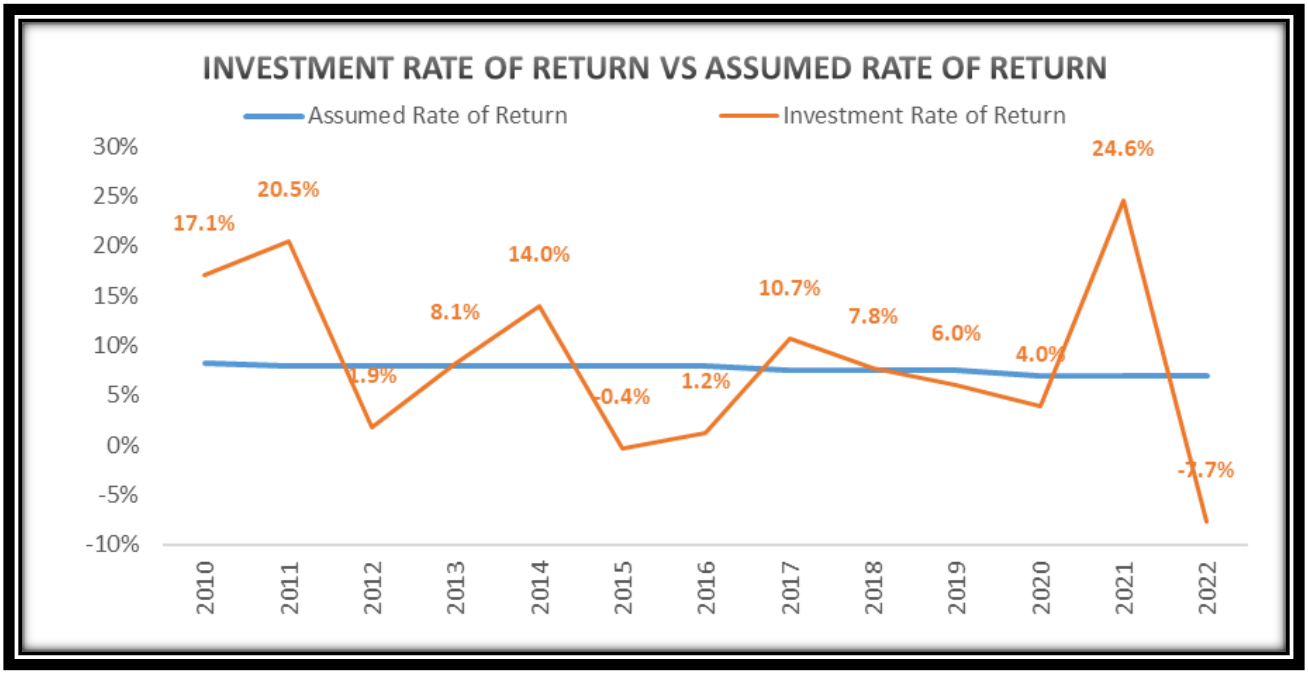
Nationwide, we have seen a gradual decline in actuarial assumed rates of return (AROR) for public pension plans. From 2002-2022, the average U.S. public pension plan assumed rate of return declined from 8.05% to 6.99%. As of February 28, 2022, the median actuarial assumed rate of return for U.S. public sector defined benefit plans was 7.00%, though many funds have since reduced their AROR below 7.0%. Because the AROR is used to discount pension liabilities and determine the actuarially determined employer contribution, a declining rate drives liabilities and employer contributions higher.

In Vermont, the process of setting the actuarial assumed rate of return incorporates input from the retirement Systems' actuary (i.e., actuarial valuations, actuarial experience studies, and a formal recommendation). Historically, to effect a change to the rate, the three statewide pension plan boards and VPIC had to convene jointly to receive the actuary's analyses and recommendations, then vote separately on the recommendations. The rate could only be changed by a positive vote of all four bodies convened in a joint session. Act 75 of 2021 changed this process and placed responsibility for setting the actuarial assumed rate of return, as well as the inflation assumption and smoothing period, with VPIC. It is our intent to conduct a comprehensive asset/liability study in conjunction with the actuarial valuations of the three statewide pension plans based on data as of June

30, 2023. These studies should shed light on the actuarial assumptions now under VPIC's oversight. Further, VPIC is formulating a policy to proactively affirm the actuarial assumed rate of return, the inflation assumptions, and the smoothing method every year prior to the commencement of the three statewide pension plans' actuarial valuations.

Recent market volatility highlights returns' end-point sensitivity

VPIC does not view its capital market assumptions, expected rate of return, or the actuarial assumed rate of return as accurate forecasts of future returns, especially over short periods of time. Instead, it uses these factors to better understand the tradeoffs among a variety of model efficient portfolios over varying economic scenarios. Indeed, a look at past returns reveals that, even over short periods of time, actual portfolio results can vary significantly and rarely equate with expectations. The chart below shows actual VPIC returns versus the actuarial assumed rate of return over time. To highlight this point, consider the nearly 25% return for fiscal year ended June 30, 2021, well above the 7.0% actuarial assumption. One year later, VPIC generated an investment return of -7.7%. While FY22's return ranked above median among its peers, it fell well short of the actuarial assumed rate of return. Again, the AROR does not represent VPIC's targeted investment return. Its role is simply to determine pension contributions necessary to assure sound actuarial funding.



To account for these differences between actual and expected performance, the actuary uses a variety of smoothing techniques to minimize volatility in employer funding requirements and to assure intergenerational equity.

VPIC investment themes

We have embraced several overarching themes in managing the investments of the three statewide pension plans, as summarized below:

Simplify: Simplifying the construction of the VPIC portfolios allows for stronger oversight by a lean investment team.

Reduce fees: Outperforming passive benchmarks consistently is difficult. Because most passive indices are investable at a very low fee, the bar is high for active managers and their higher fees.

Underwrite everything: Understanding each investment manager's strategy, holdings, and role in the portfolio is essential for a prudent level of oversight by staff and VPIC. This theme resulted in the avoidance of an $80 million loss in the terminated Allianz Structured Global Alpha product.

Illiquidity premium increases returns: Illiquid assets (i.e., private equity, private credit, and non-core real estate) have a proven ability to outperform their public market equivalent benchmarks. Accordingly, we have targeted 24% of the fund to illiquid growth assets and are systematically building them out over a prudent number of vintage years.

Liquidity needs must be fully understood and assured: While illiquid assets tend to generate higher returns than their liquid counterparts, building a prudently diversified portfolio is not simply adding higher-returning assets and removing lower-returning assets. Because illiquid assets cannot be readily monetized to pay retirement benefits, their use is limited by the need for liquidity. Having a full understanding of current liquidity needs and a source for liquidity, especially during economic downturns, is essential to avoid the need to sell discounted assets and locking in losses.

Net returns must justify all investment manager fees: While we can and do invest in fully liquid stock and bond index funds for a very low fee, we also utilize active managers we believe have any ability to consistently add value in excess of their fees. To that end, we analyze all investment managers' performance net of all fees, and we have a formalized process for dealing with those that fall short of expectations.

Act 75 Implementation Status

Act 75 transitioned the Vermont Pension Investment *Committee* into an independent commission (the Vermont Pension Investment *Commission*) to oversee the assets of the three statewide pension plans and to set the actuarial return, inflation, and smoothing assumptions. The act added commissioners appointed by the Vermont League of Cities and Towns and the Vermont School Boards Association and expanded requirements for and expectations of commissioners. We have onboarded all new Commissioners and are

in the process of implementing Act 75's Commissioner term limits. Further, FY23 represents VPIC's first year with its own budget and we would like to thank the Vermont Legislature and Governor for implementing the funding tool necessary to carry out our very important mission of prudently investing the assets of the three statewide pension plans.

There are a few remaining pieces of Act 75 on which we seek the assistance of the Vermont Legislature and Governor, as outlined below:

1. Act 75 tasked VPIC with conducting an independent analysis and benchmarking of VPIC staffing and compensation. That study has now been conducted and its conclusions are set forth in the report in Appendix D. The report concluded that VPIC is significantly understaffed and that VPIC's existing staff is significantly undercompensated relative similarly sized public pension funds. We are not seeking any additional staff at this time, though we may do so in the future. We do, however, have serious concerns over the VPIC's low compensation levels relative to its small public pension fund peers. Specifically, we are concerned that turnover on our very small team of investment professionals could be disruptive and costly. Accordingly, we are asking the Vermont Legislature and Governor to declassify our two classified positions. If successful, we believe that implementing an exempt pay plan would allow us to begin to close the gap between current compensation levels among our small team and the median compensation levels of similarly sized public pensions plans, which we know are actively recruiting for institutional investor talent. Further, beginning to bridge the compensation gap would ease recruiting in the event one or more of our three investment professionals decides to accept another opportunity elsewhere.

2. As we highlighted at our Sunset Advisory Commission hearing last year, several references to the Vermont Office of State Treasurer remain in our enabling statute. As the intent of Act 75 was to formally separate VPIC from the Office of State Treasurer, we respectfully ask you to remove them and align the statute with current practice.

Conclusion

Managing the investment portfolios of the three statewide pension plans is an exercise in balancing risk and liquidity with the need for higher investment returns. Instead of just seeking to maximize investment returns, we are tasked with strategically aligning the portfolios with the pension fund's demographic and financial characteristics. As fiduciaries, our goal is to maximize long-term investment returns within acceptable levels of risk and liquidity. To that end, we have engaged best-in-class investment advisors to work with our professional staff to prudently oversee these important assets for the exclusive purpose of providing retirement benefits to Vermont Teachers, state employees, and municipal employees, at best cost to VT taxpayers.

We thank the legislature and Governor Scott for recognizing the importance of VPIC's independence and autonomy. We believe Act 75 positions us well for future oversight of the assets of the three statewide pension plans.

We look forward to discussing our annual report with you and your colleagues at your convenience.

APPENDIX A

VPIC Investment Performance Report[4]

(June 30, 2022)

[4] https://outside.vermont.gov/dept/VPIC/Shared%20Documents/VPIC%20Website/Investment%20Performance%20Reports/20220630_VPIC_IPR.pdf

APPENDIX B

RVK 2022 Asset Allocation Study[5]

[5] https://outside.vermont.gov/dept/VPIC/Shared%20Documents/VPIC%20Website/Asset%20Allocation%20Reports/2022/2022-06%20RVK%20AA%20Presentation%20-%20Second%20Read.pdf

APPENDIX C

Pension Plan Funding Overview

	VT State Teachers' Retirement			VT State Employees' Retirement			VT Municipal Employees' Retirement		
	6/30/22	6/30/21	Change	6/30/22	6/30/21	Change	6/30/22	6/30/21	Change
Fiscal Year Investment Return	-7.41%	24.75%	-32.16%	-7.42%	24.59%	-32.01%	-7.88%	24.32%	-32.20%
Actuarial Metrics									
Actuarial funded percentage	57.28%	52.91%	4.37%	69.85%	67.56%	2.29%	77.05%	77.93%	-0.88%
Actuarial accrued liability	$ 4,289,799,354	$ 4,142,014,660	$ 147,784,694	$ 3,444,133,789	$ 3,280,867,677	$ 163,266,112	$ 1,159,279,879	$ 1,074,167,813	$ 85,112,066
Actuarially determined employer contribution	$ 194,281,051	$ 205,161,651	$ (10,880,600)	$ 121,873,370	$ 125,938,400	$ (4,065,030)	$ 0	$ 0	$ 0
Funding policy contribution rate (VMERS only)	n/a	n/a		n/a	n/a		0	0	
Assumed rate of return	7.00%	7.00%	0.00%	7.00%	7.00%	0.00%	7.00%	7.00%	0.00%
Inflation assumption	2.30%	2.30%	0.00%	2.30%	2.30%	0.00%	2.30%	2.30%	0.00%
Smoothing period (years)	5	5	-	5	5	-	5	5	-
Remaining amortization period	16	17	(1)	16	17	(1)	16	17	(1)
Actuarial Gains and (Losses)									
Investment	$ (29,490,344)	$ 57,785,688	$ (87,276,032)	$ (32,287,646)	$ 52,180,733	$ (84,468,379)	$ (2,912,871)	$ 21,858,431	$ (24,771,302)
Net turnover	(8,153,540)	(10,518,767)	2,365,227	13,686,201	3,446,914	10,239,287	8,419,883	(1,910,229)	10,330,112
Retirement	(13,883,165)	(16,872,089)	2,988,924	(22,922,279)	(19,015,951)	(3,906,328)	(3,610,731)	(2,674,401)	(936,330)
Mortality	5,596,133	1,761,346	3,834,787	10,206,668	(4,440,365)	14,647,033	216,665	515,840	(299,175)
Disability retirements	44,922	(560,942)	605,864	(1,598,758)	(158,342)	(1,440,416)	(52,895)	(192,529)	139,634
Salary increases and service increases	7,256,908	9,493,027	(2,236,119)	(30,740,425)	(4,448,937)	(26,291,488)	(10,247,586)	1,670,345	(11,917,931)
COLA experience	(28,712,344)	(22,593,555)	(6,118,789)	(46,706,996)	(35,588,639)	(11,118,357)	(7,223,911)	(4,281,130)	(2,942,781)
Miscellaneous	(10,887,957)	(6,407,934)	(4,480,023)	(9,601,714)	(3,195,329)	(6,406,385)	(5,465,715)	407,804	(5,873,519)
Net experience gain/(loss)	$ (78,229,387)	$ 12,086,774	$ (90,316,161.00)	$ (119,964,949)	$ (11,219,916)	$ (108,745,033.00)	$ (20,877,161)	$ 15,394,131	$ (36,271,292.00)

APPENDIX D

Mercer 2022 Compensation Study[6]

[6] https://outside.vermont.gov/dept/VPIC/Shared%20Documents/VPIC%20Website/Meetings/VPIC%20General%20Meetings/Meeting%20Materials/2022/11-01-2022/Mercer%20VPIC%20Compensation%20Study.pdf