



SERS' Defined Benefit Plan Investment Policy Statement

Commonwealth of Pennsylvania
State Employees' Retirement Board

Amended by the State Employees' Retirement Board:
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1. Introduction

The State Employees' Retirement Fund ("Fund") was established in 1923 by an act of the Pennsylvania legislature. The purpose of the Fund is the accumulation of funds exclusively for the benefit of the members and beneficiaries of members of the State Employees' Retirement System ("SERS" or the "System") for the payment of withdrawal, retirement, disability, and death benefits as provided in Pennsylvania Consolidated Statutes Title 71, Part XXV ("Retirement for State Employees and Officers"). The Fund is under the exclusive control and management of an eleven-member Board of Trustees ("Board"). For the purposes of this document, the term Board shall include the full Board and/or committees established by the Board.

In addition to administering a multiple-employer, cost-sharing defined benefit plan, SERS also administers a defined contribution plan, and a voluntary deferred compensation plan. This Investment Policy Statement primarily focuses on the defined benefit plan investments.

SERS' defined benefit plan is funded from investment earnings, employer contributions and employee contributions. It is the responsibility of SERS' investment professional staff, on behalf of the Board, to safeguard and invest the assets in a fiduciary capacity, solely in the interest of the members of the system.

2. Purpose

This Investment Policy Statement ("IPS" or "Policy") specifically outlines the investment philosophy and practices of SERS and has been developed to serve as the governing policy for the management of the System's defined benefit assets. The purpose of this Policy is to formalize the Board's investment objectives and policies, and to define the duties and responsibilities of the various individuals and entities involved in the investment process.

This is an official investment policy document of SERS. Deviation from this document is not permitted without explicit written permission, in advance, from the Board.

This Policy may be amended by a majority vote of the Board.

3. Authority

The Board's investment authority is governed by the "prudent expert" standard as set forth in Title 71, Pennsylvania Consolidated Statutes, Section 5931(a):

Control and management of fund. The members of the board shall be the trustees of the fund. Regardless of any other provision of law governing the investments of funds under the control of an administrative board of the State government, the trustees shall have exclusive control and management of the said fund and full power to invest the same in accordance with the provisions of this section, subject, however, to the exercise of that degree of judgment, skill and care under the circumstances then prevailing which persons of prudence, discretion and intelligence, who are familiar with such matters, exercise in the management of their own affairs not in regard to speculation, but in regard to the permanent disposition of the funds, considering the probable income to be derived therefrom as well as the probable safety of their capital. The trustees shall have the power

to hold, purchase, sell, lend, assign, transfer or dispose of any of the securities and investments in which any of the moneys in the fund shall have been invested as well as of the proceeds of said investments, including any directed commissions which have accrued to the benefit of the fund as a consequence of the investments, and of any moneys belonging to said fund, subject in every case to meeting the standard of prudence set forth in this subsection.

No provision of this Policy shall be construed in contravention of the Board's statutory investment authority found in Title 71, Pennsylvania Consolidated Statutes, Section 5931.

4. Fiduciary Responsibility of the Board, Employees and Agents

In exercising this fiduciary responsibility, the members of the Board, employees of the Fund, and agents of the Fund are governed by the "prudent expert" standard and the exclusive benefit standard. The exclusive benefit standard requires these parties to act solely within the interests of SERS' participants and beneficiaries, and for the exclusive purpose of providing benefits to participants and beneficiaries.

Title 71, Pennsylvania Consolidated Statutes, Section 5931(e) provides, in part, as follows:

Fiduciary status of the board. The members of the board, employees of the board and agents thereof shall stand in a fiduciary relationship to the members of the system regarding the investments and disbursements of any of the moneys of the fund and shall not profit either directly or indirectly with respect thereto.

[In reference to Pennsylvania-based investments] The board may, when possible and consistent with its fiduciary duties imposed by this subsection or other law, including its obligation to invest and manage the fund for the exclusive benefit of the members of the system, consider whether an investment in any project or business enhances and promotes the general welfare of this Commonwealth and its citizens, including, but not limited to, investments that increase and enhance the employment of Commonwealth residents, encourage the construction and retention of adequate housing and stimulate further investment and economic activity in this Commonwealth.

5. Roles and Responsibilities

A. Board

The members of the Board are responsible as trustees for the proper management of the assets of the Fund.

In carrying out these duties, the Board is responsible for:

1. Approving the IPS that serves as the governing policy for the management of the System's assets.
2. Approving a long-term target asset allocation with asset class objectives and benchmarks as defined in the IPS.

3. Approving the engagement and termination of investment managers/funds and investment consultants. With regard to engagement and termination of investment managers/funds, the Board seeks recommendations from Investment Office Staff and consultants in a joint or separate recommendation memo/analysis.
4. Approving the Comprehensive Annual Financial Report.
5. Approving the annual actuarial report, assumptions, and funding level. Approving an actuarial experience study that is to be conducted no less than every five years.
6. Approving proxy voting guidelines.
7. Reviewing the investment performance and risk characteristics of the Fund.
8. Reviewing the results of an asset/liability study on a periodic basis, but not less than every five years.
9. Oversight and monitoring of staff including, but not limited to the hiring of the Chief Investment Officer, the Executive Director, the Director of Internal Audit, and the Chief Compliance Officer.

Act 5 of 2017 established additional duties for the Board. Specifically, Title 71, Pennsylvania Consolidated Statutes, Section 5902(q)(2) provides, in part, as follows:

Limitation on fees charged to the board. In order to strive towards actuarial savings of \$1,500,000,000 over 30 years from the effective date of this subsection while achieving the assumed annual rate of return at the least cost and maximum return on the system assets, the board shall:

Consider the findings and recommendations of the Public Pension Management and Asset Investment Review Commission. The board shall, at its discretion, adopt guidelines and procedures to implement any recommendations of the Public Pension Management and Asset Investment Review Commission that the board believes will ensure the highest return on investment at the lowest responsible cost.

Review, identify and implement any investment fee reduction and cost avoidance strategies identified to be prudent by the board, to reduce expenditures for investment.

B. Executive Director (Secretary)

Title 71, Pennsylvania Consolidated Statutes, Section 5902(a.1) provides, in part, as follows:

Secretary. The secretary shall act as chief administrative officer for the board with respect to both the system and the plan. In addition to other powers and duties conferred upon and delegated to the secretary by the board, the secretary shall:

1. Serve as the administrative agent of the board.

2. Serve as liaison between the board and applicable legislative committees, the Treasury Department, the Department of the Auditor General, and between the board and the investment counsel and the mortgage supervisor in arranging for investments to secure maximum returns to the fund.
3. Review and analyze proposed legislation and legislative developments affecting the system or the plan and present findings to the board, legislative committees, and other interested groups or individuals.
4. Direct the maintenance of files and records and preparation of periodic reports required for actuarial evaluation studies.
5. Receive inquiries and requests for information concerning the system or the plan from the press, Commonwealth officials, State employees, the general public, research organizations, and officials and organizations from other states, and provide information as authorized by the board.
6. Supervise a staff of administrative, technical, and clerical employees engaged in record-keeping and clerical processing activities for both the system and the plan in maintaining files of members and participants, accounting for contributions, processing payments to annuitants and terminated participants, preparing required reports, and retirement counseling.

C. Investment Office Staff

The Chief Investment Officer is charged with the coordination of all investment-related matters within the System and supervision of Investment Office Staff. The Chief Investment Officer is responsible for the day-to-day administration of investment-related matters in accordance with Board policies. In general, the Chief Investment Officer is responsible for the following day-to-day investment-related activities:

1. Authorize receipt or payment for the acquisition or disposition of investments.
2. Act as liaison on behalf of the Board with all investment-related contractors.
3. Review investment transactions for conformity to certain applicable laws, regulations, each manager's investment strategy statement, and this Policy.
4. Review investment proposals presented by investment managers, and where appropriate, summarize and recommend the same for Board consideration.
5. Review and summarize for the Board pertinent information from relevant publications, discussions, meetings, and research on current investment related topics.

6. Respond to inquiries from the Board and Pennsylvania Legislature, the membership, the press, other governmental representatives, and the public concerning the investments of the Fund.
7. Provide an annual update to the Board summarizing what was accomplished over the past year and what the Fund will be doing in the next year in order to implement Policy Target Asset Allocation.
8. Update the IPS on an annual basis for Board review and approval.
9. Update investment-related policies and processes, and as appropriate, present to the Board for approval.
10. Perform such other duties as may be required to implement this Policy.

D. Internal Audit

The Director of Internal Audit reports functionally to the Audit, Risk, and Compliance Committee and administratively to the Executive Director. The internal audit department is independent of the System's operational activity and is responsible for providing objective audit and review services for the entire System, including the Investment Office. Internal audit's services emphasize the promotion of adequate and effective internal controls at a reasonable cost and result in suggested improvements that will lead to economies and efficiencies in the Systems' operations.

E. Chief Compliance Officer

The Chief Compliance Officer reports functionally to the Audit, Risk, and Compliance Committee and administratively to the Chief Counsel. The Chief Compliance Officer is responsible for, among other duties, monitoring the compliance activities of the Investment Office, with tasks including:

1. identifying potential areas of compliance vulnerability and risk;
2. assisting with the development, and implementation of risk management, and mitigation for resolution of problematic issues, and
3. providing guidance on how to avoid or address similar situations in the future.

F. Investment Consultants

The general and specialty consultants should be free of conflicts of interest or, where they potentially exist, make complete and total disclosure to the Board and obtain pre-clearance from the Board. The Board shall determine their specific responsibilities, which shall be set forth in their respective contracts with the Board.

General Investment Consultant

The general investment consultant makes recommendations to the Board on asset allocation, investment structure, policies, the investment managers' implementation of policy and strategy, and the appropriate investment horizon for the Fund given its actuarial

characteristics, and provide such other research as may be needed from time to time. The general investment consultant also assists with investment manager searches, performance measurement and performance monitoring. The general investment consultant provides other services as contractually agreed upon with the Board and Investment Office Staff.

Specialty Investment Consultants

The Board may retain other investment consultants as required for specialized needs, such as for particular asset classes or unique investment projects. These specialty consultants will report to the Board on emerging trends and issues that are germane to their respective assignments and that are of concern to public pension funds generally and to the Fund in particular. Within the scope of their assignments, the specialty consultants will also analyze and make recommendations with respect to this Policy, the investment managers' implementation of policy and strategy, and provide such other research as may be needed from time to time. Specialty investment consultants provide other services as contractually agreed upon with the Board and Investment Office Staff.

G. Investment Managers

All external investment managers shall be retained pursuant to written contracts. Investment managers shall construct and manage investment portfolios consistent with the investment philosophy and disciplines for which the Board retained them and their specific investment guidelines, all of which shall be set forth in their investment objectives and guidelines. The guidelines shall be subject to periodic amendment at the discretion of the Board.

It is the Board's policy to limit the allocation of Fund investments such that no more than 15% of the total market value of Fund assets should be invested in any one investment product offered by an investment manager, except where management of such investments is of a passive nature (e.g., index funds).

Each manager's benchmark will reflect that manager's particular style or strategic role in SERS' investment process. Each benchmark will be clearly specified, measurable, and replicable (when possible). Benchmarks do not have to be published or widely recognized; they may be "customized" for a particular investment style or styles. The benchmark shall be determined in advance of funding by mutual agreement between the manager, Investment Office Staff, and consultant (general and/or specialty consultant, as appropriate). In the event of a change in management style, agreed upon change in a manager's strategy, availability of a better benchmark construction methodology, or changes to or additions in indices, a manager's benchmark may be modified by mutual consent between the manager, Investment Office Staff, and consultant (general and/or specialty consultant, as appropriate).

The Board further requires those public markets investment managers selected and working on its behalf to perform the following activities:

1. Execute investment decisions that are consistent within the scope of the approved investment guidelines expressed in the respective management agreement and other relevant documents.

2. Execute investment transactions on behalf of the Board in a manner that maximizes the investment value of each transaction from the viewpoint of the Fund, utilizing such brokers and dealers as they deem appropriate to obtain best execution and/or valuable information with respect to the economy and the affairs of corporations at the lowest total cost to the Fund.
3. Report to the Board at least quarterly through the Investment Office, with the exact frequency and format of reporting to be determined by the Investment Office, on the composition and relative performance of the investments in their designated portfolios; the economic and investment outlook for the near and long term; significant changes in the portfolio during the preceding period; and the reasons for any significant differences between the performance of their portfolios and the appropriate market indices or metrics.
4. Make themselves available as needed for meetings with the Board, Investment Office Staff, or agents of the Board regarding investment matters.
5. Comply at all times with all laws, regulations, contractual investment guidelines, and reporting requirements as determined by Investment Office Staff.
6. Perform such additional activities as detailed in each manager's investment management agreement with SERS.

H. State Treasurer

The State Treasurer serves as the custodian of the Fund, pursuant to Title 71, Pennsylvania Consolidated Statutes, Section 5931(c). In this capacity, the State Treasurer is responsible for the safe physical custody of investment instruments and the safe custody of any book-entry investment instruments that are held in depositories on behalf of the Commonwealth. As custodian, the State Treasurer is also responsible for preparing and delivering securities for settlement as authorized by the Board, attending to corporate actions, maintaining a book of record for these securities, facilitating an annual examination of these securities and books, and for preparing payment for securities transactions upon presentation of warrants properly signed and authorized. The State Treasurer may enter into a contract with a sub-custodian bank to assist in the execution of these responsibilities.

The State Treasurer is responsible for the temporary investment of cash balances until funds are required to meet disbursements or to acquire investments.

I. Actuarial Consultant

Pursuant to Title 71, Pennsylvania Consolidated Statutes, Section 5902(j), the Board engages an actuary to perform a valuation of the various accounts of SERS on an annual basis within six months of the close of each calendar year. In every fifth year, the Board shall have the actuary conduct an actuarial investigation and evaluation of the system based on data including the mortality, service, and compensation experience provided by the Board annually during the preceding five years concerning the members and beneficiaries.

6. Investment Objectives

The objectives of the Fund are to provide benefit payments to participants and beneficiaries at the lowest cost to the Commonwealth and to fund the program through a carefully planned and executed investment program.

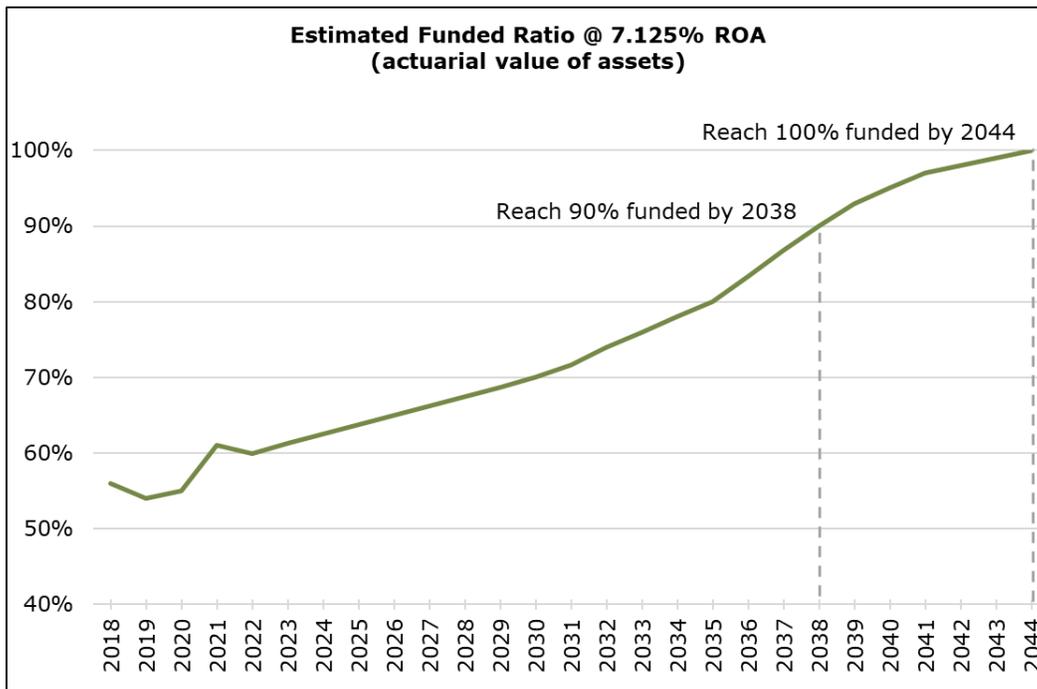
The Fund seeks to produce the highest return on investment that is consistent with acceptable investment risks while providing sufficient liquidity that will permit the Fund to meet the System's benefit obligations.

7. Investment Performance Objectives

SERS' Investment Performance Objectives:

- Achieve SERS' target rate of return over the long-term, net of fees.
- Achieve a SERS' total fund policy benchmark return over 10-year periods, net of fees. The fund policy benchmark index will be based on the asset allocation set forth in the IPS approved by the Board.

SERS' investment process requires a thorough analysis of the plan liabilities, liquidity requirements, and market opportunities. The Board, in collaboration with the Chief Investment Officer, actuarial consultant, and general investment consultant, establishes a target rate of return. Achieving, or exceeding this target rate of return is the primary investment performance objective of SERS' investment office to help meet the desired funded status. SERS' projected funded ratio is highlighted in the following chart.



Source: Korn Ferry

8. Asset Allocation Process

The Board accepts asset allocation as the primary determinant of the System's long-term contributor to investment return and risk. Asset allocation is substantially more influential than individual mandates deployed within asset classes, managers selected to implement the mandates, or tactical asset allocation decisions.

Among the factors that the Board considers in developing the policy target asset allocation are the following:

- Achieve SERS' investment return assumption over the long-term, net of fees, within risk and investment management fee levels deemed prudent by the Board.
- Maintain a level of liquid assets with a low correlation to the U.S. equity markets to pay retirement benefits and covenants during prolonged periods of market decline and potential state budgetary constraints.

In addition, SERS' asset allocation structure was developed by considering the Fund's liabilities, benefits policy, funding policy, and each asset class' expected return, volatility, and correlation with other asset classes. Investment Office Staff, in consultation with the Board and general investment consultant, combines asset classes in the most optimal structure to provide the highest expected return for a given level of risk, subject to implementation, liquidity, diversification, and cost constraints.

9. Liquidity

In addition to developing asset mixes to deliver on the Board's return and risk requirements, consideration is also given to ensure adequate liquidity which is sensitive to the duration of the plan liabilities, the ratio of active vs. retired members, and other factors. While maintaining a relatively large cash cushion has appeal, the Board is mindful of the potential drag on total portfolio returns over the long term, and as such, maintains a structure to provide adequate liquidity, while preserving earnings power.

10. Rebalancing

The Board recognizes the importance of rebalancing among liquid asset classes to maintain the risk-and-return characteristics of the Fund consistent with those of the policy target asset allocation and ranges approved by the Board. Liquid asset classes subject to rebalancing include:

- U.S. Equity
- International Developed Markets Equity
- Emerging Markets Equity
- Fixed Income
- Inflation Protection (TIPS)
- Cash

The goal of the rebalancing program is to periodically rebalance toward policy target weights to ensure that the actual portfolio allocations are consistent with the asset allocation targets approved

by the Board. Staff's goal is to manage the difference between the actual portfolio and target portfolio weights efficiently, with consideration for 1) current market conditions, and 2) transaction costs. Actual versus target allocations will be reviewed at least monthly.

To increase the level of accuracy at the lowest trading costs possible, SERS may use an overlay manager to efficiently implement a rebalancing program. Rebalancing transactions cannot cause a manager hiring or termination unless granted superseding authority by the Board on certain rebalancing transactions. The rebalancing process will target a consistent share of active and passive management, but a reduction in the share of active management during a rebalancing transaction is permitted.

Discretionary Rebalancing

Discretionary rebalancing decisions of liquid asset classes may be made by the Chief Investment Officer to reduce asset allocation drift from the policy targets. Rebalancing transactions will be considered attempts by the Chief Investment Officer to reduce portfolio tracking error in a cost-efficient manner.

Mandatory Rebalancing

The Board delegates to the Chief Investment Officer the authority to initiate transactions to correct any breach of the asset allocation minimum or maximum ranges. The Chief Investment Officer shall assess liquid asset class market values relative to policy ranges using the monthly asset allocation report developed by SERS' Office of Financial Management or reports generated by the SERS sub-custodian to support rebalancing between the monthly reports. When a minimum or maximum allocation is breached, the Chief Investment Officer will initiate a plan to rebalance within the minimum/maximum range as soon as practicable given current market conditions. This rebalancing must move market values for these liquid asset classes within their policy mandated minimum/maximum allocation ranges and towards the targets.

Accountability Reporting for Rebalancing Transactions

The Chief Investment Officer shall report all rebalancing actions at the next scheduled Investment Committee meeting.

11. Emergency Situations

The Board delegates authority to the Chief Investment Officer to make investment decisions on behalf of the Board in emergency situations. Emergency situations are defined as those that are unforeseeable and in the absence of action taken, the Fund may be adversely impacted. The Chief Investment Officer shall consult with the Investment Committee Chair and Board Chair prior to executing any emergency actions. In the event such action is taken, the Board will be apprised as soon as practical, but no later than the next scheduled Board meeting.

12. Prohibited Transactions

Investment managers are prohibited from entering into any transactions on behalf of the Fund that are not expressly authorized by this Policy or by specific investment manager guidelines including

all applicable laws and regulations. All managers and consultants shall disclose any and all economic positions that may conflict with SERS' investment objectives and guidelines.

13. Investment Manager Recommendation Process

Investment Committee Interviews Investment Manager: Two weeks prior to the Investment Committee meeting, SERS' Investment Office and Investment Consultants provide the Investment Committee with an executive summary, a comprehensive investment memorandum, and a presentation from the investment manager. The Investment Committee interviews the investment manager and makes the decision to recommend the investment to the full Board for approval.

Full Board Approval: The Investment Committee Chair or a designee of the Chair presents the investment motions to the full Board to vote on approving the investment opportunity.

Ultimately, the decision to commit to an investment opportunity is one for the Board to make. In making its decision, the Board will take into consideration the action, if any, taken by the Investment Committee, but it is for the Board to make the decision on whether to proceed with the investment.

14. Investment Manager Evaluations

The Board endeavors not to make adverse retention decisions about investment managers based upon performance absent at least three years of performance data, recognizing that investment strategies are best assessed over full market cycles.

The Board's time horizon to review performance trends shall normally be over full market cycles, although the trend in investment experience over other time periods may be judged important. Any extreme or unusual events or trends will be considered when evaluating intermediate and short-term investment results. The *Investment Manager Monitoring Policy* has been developed in order to assist Investment Office Staff in applying consistent criteria to evaluate investment managers.

Notwithstanding the above, Investment Office Staff will review manager performance, portfolio positioning, and transactions at least annually.

15. Corporate Governance Standards

Good corporate governance promotes responsible business practices that serve as an integral component to a corporation's long-term value creation process and is an indispensable element of an effective corporate risk management program.

SERS is committed to improve corporate governance practices of the companies within the SERS portfolio. SERS' involvement includes: the development and periodic updating of the Board approved proxy voting policy, voting proxies, active participation in groups working to improve and enhance corporate governance practices, and ad hoc responses to important issues that affect the value of the portfolio, such as letters responding to regulatory and legislative proposals.

Updates to the proxy voting policies shall be prepared by the Investment Office and submitted to the Board for approval. In the update of the policies, the Investment Office shall seek to develop best practices. Best practices shall be developed through relationships with groups working to improve and enhance corporate governance practices and input that focuses on improving corporate governance practices from other prominent plan sponsors.

In addition, SERS monitors and, where appropriate, incorporates best corporate governance practice recommendations from organizations into the proxy voting guidelines. As good corporate governance practices are not static, the annual proxy voting modifications are designed to reflect the current trends in the marketplace.

Stock proxies are voted in accordance with guidelines and procedures contractually agreed upon with the Board and Investment Office Staff.

Corporate Actions

The custodian bank has standing instructions to forward notices of all corporate actions received, such as dividends, stock splits, mergers, acquisitions, spin-offs, or class action suits to SERS and/or its investment managers.

16. Trading and Brokerage Practices

The Board delegates the responsibility for the selection of brokerage firms to its investment managers, provided the investment managers select and utilize brokers. Notwithstanding this practice, the Board reserves the right to enter into brokerage commission recapture programs, and to establish goals for directed commissions provided the managers' investment processes are not being affected so as to adversely impact the Fund or place the Fund in a disadvantageous position relative to the managers' other accounts. As such, managers may be requested to direct a percentage of their brokerage activity on behalf of SERS. The Board will select the brokerage firms that are designated to receive such directed commissions and will communicate this information to the managers.

The Board also seeks to have managers direct a portion of trades through minority owned firms and reserves the right to establish proposed trading targets. However, the responsibility for the selection and use of minority brokerage firms is delegated to the investment managers.

Finally, all things being equal, the Board seeks to have investment managers trade through Pennsylvania-based brokers.

Efforts to monitor and control trading costs will be ongoing and may include the periodic use of formal trading cost analyses.

17. Transparency

SERS continues to work on enhancing its transparency efforts, while complying with the legal restrictions of its contracts. SERS requires general partners of new investment opportunities approved by the Board in private markets to provide SERS with the information found within the Institutional Limited Partners Association's (ILPA) Reporting Template through customized

reporting or completion of the ILPA Reporting Template. SERS will continue to publish its quarterly performance reports and its private markets specialty consultants' semi-annual performance report, unredacted to the greatest extent possible. SERS will use commercially reasonable efforts to publish net-of-fee and gross-of-fee returns on a prospective basis when reporting quarterly investment performance to the Board, effective with the 1st Quarter 2020 performance report. SERS will post summary board materials on SERS' public website, which includes a summary manager presentation, summary staff memo, and summary consultant memo for all new investment opportunities presented to the Board. SERS will publicly disseminate an annual report of all investment fees and expenses reported by its managers beginning with calendar year 2020.

Public Access to Records

Records of investment transactions are maintained by the System at its office located at 30 North Third Street, Harrisburg, PA 17101. Requests for public inspection or copies of documents that are a matter of public record will be honored in a manner consistent with the Pennsylvania Right-to-Know Law (RTKL), 65 P.S. §§ 101 - 3104, and SERS' Right-To-Know Law Policy regarding the dissemination of public information. Inquiries should be directed to SERS' Right-to-Know Law Open-Records Officer.

18. Diversity and Inclusion

The Board defines "diverse investment manager" as an investment management firm owned and/or controlled by a majority of persons who are women and/or minorities.

The Board encourages the use of diverse investment managers in managing the Fund's assets, encompassing all asset classes, within the bounds of financial and fiduciary prudence, and to take affirmative steps to remove any barriers to the full participation in investment opportunities afforded by the Fund.¹ SERS believes that professionals and decision-makers who come from diverse backgrounds contribute different points of view that enhance organizational quality and economic performance.

If a prospective manager meets the requirements of being a diverse investment manager, it will be noted in the presentation materials Investment Office staff provides to the Board.

SERS currently reports on Minority/Woman-Owned Managers and Brokers in the annual Budget Book, which shows the firms that classify themselves as minority and/or woman owned firms, as well as their AUM/Committed Capital/Commissions.

SERS' Master DDQ, which is sent out to prospective managers, has a Diversity and Inclusion section that requests information from the manager on related policies. It also encourages the completion of the ILPA Team Diversity Template. This template has the manager provide a breakdown of both gender and racial/ethnic composition by position for the firm.

¹ Language incorporated from Final Report and Recommendations: Public Pension Management and Asset Investment Review Commission (pg. 49) and Fiduciary Guide to Investing with Diverse Asset Managers and Firms (pg. 47).

19. SERS' Emerging Investment Manager Program

Objective

Consistent with the Board's fiduciary responsibilities, the Board established the SERS' Emerging Investment Manager Program ("SERS EIM Program") to:

- Identify and gain early access to talented investment managers in their early stages to generate above benchmark returns (net of fees); and
- Provide an evaluation platform of potential investment managers who have demonstrated superior risk-adjusted returns for consideration into the Fund.

Scope

The SERS EIM Program shall apply to emerging investment managers who manage long-only public equity assets.

Structure and Standards

The SERS EIM Program will be comprised of manager-of-managers selected in accordance with SERS' Hiring Investment Manager Process. The manager-of-managers will have the discretion and authority to select and invest with emerging investment managers based on the objectives and guidelines established by the Board and SERS' Investment Office. The manager-of-managers' fees shall be disclosed to the Board for evaluation.

Emerging Investment Manager Criteria

Investment managers selected by the manager-of-managers to participate in the SERS EIM Program must meet the following criteria:

- Registered under the Investment Advisors Act of 1940 or has an exemption from registration (and will maintain such registration or exemption);
- Total firm assets under management of less than \$5 billion and/or an investment strategy of less than \$1 billion at the time of the manager-of-managers' initial evaluation;
- A quantifiable track record for the investment product under consideration (or for a product with a similar investment philosophy and process as the product under consideration);
- Portfolio manager(s) with a minimum two-year track record (directly or indirectly attributable to that portfolio manager(s)) in an investment style and process similar to that which is under consideration;
- Historical performance must be GIPS compliant; and
- Disclosure of position and transaction level transparency (at least monthly).

As indicated in Section 4 of this Policy, “the Board may, when possible and consistent with its fiduciary duties imposed by law, including its obligation to invest and manage the Fund for the exclusive benefit of the members of the System, consider whether an investment in any project or business enhances and promotes the general welfare of the Commonwealth and its citizens. Where investment characteristics are equivalent, the Board’s policy will favor investments that will have a positive impact on the economy of Pennsylvania.”

Therefore, when making their selections, manager-of-managers may favor emerging investment managers who meet the SERS EIM Program objectives and criteria noted above, plus having one or more of the following characteristics:

- Pennsylvania investment management firms headquartered or incorporated within the Commonwealth; and/or
- Investment management firms owned and/or controlled by a majority of persons who are women and/or minorities; and/or
- A veteran-owned investment management firm, with proper DD-214 verification and honorable discharge; or a service-disabled-veteran-owned investment management firm with a letter from the United States Department of Veteran Affairs Administration.

Administration

The Investment Office shall be responsible for the oversight of the SERS EIM Program by recommending program policies and manager-of-managers for the Board’s consideration.

Source of Funding

Funding for the SERS EIM Program may come from assets within public equity assets or cash at the Board’s sole discretion, depending on the current equity allocation relative to the target allocation.

20. Asset Class Objectives, Structure, and Guidelines

Private Equity

Objective

The objective of Private Equity is to achieve a return in excess of its public equity benchmark (75% Russell 3000 Index / 25% MSCI World ex U.S. Index plus a 300 basis point premium) over 10-year periods (annualized, net of fees).

Structure

Private Equity investments are non-traditional investments made in the form of closed-end limited partnership structures organized to make domestic and international private investments such as buyouts, special situations, and growth equity.

| Strategy | Description | % of Total Plan | Allocation Range |
|--------------------|---|-----------------|------------------|
| Buyouts | A specialized form of private equity characterized chiefly by investments in established privately held firms that are undergoing a fundamental change in operations or strategy. | 10.4% | 4%-16% |
| Special Situations | Investments in funds which acquire distressed companies or companies in need of restructuring and funds from the secondary market. | 2.4% | 0%-5% |
| Growth Equity | Investments in specialized forms of private equity, characterized chiefly by investments in late stage venture, minority growth equity, and small buyout strategies. | 3.2% | 0%-6% |

Guidelines

a. Permitted Investment Vehicles

SERS may invest in fund-of-funds, separately managed accounts, or other non-closed-end vehicles, if by doing so SERS achieves access to investment opportunities and/or information that might not otherwise be attainable through closed-end funds.

b. Diversification

Achieved by investing in funds with differing vintage years, industry/sector, geographic area, and private equity focuses (e.g. buyouts, distressed, secondaries, late stage venture, minority growth equity, small buyout strategies, etc.).

c. Investment Size

The Fund's investment/commitment in a single Private Equity commingled closed-end fund may not exceed five percent (5%) of the net market value of the Private Equity portfolio at the time of initial investment.

The Fund's investment/commitment in a single Private Equity commingled closed-end fund may not exceed twenty percent (20%) of the commingled closed-end fund's total fund size.

These criteria exclude separately managed accounts where SERS is the sole investor.

d. Minimum Criteria:

Investment Strategy

There must be a sufficient universe of potential investments to accommodate institutional investing. The investment strategy must be set forth in sufficient detail to permit substantive and meaningful review of the opportunity, verification of investment concept, and comprehensive analysis of risk factors. The investment strategy shall also outline the Firm's corporate governance policies and procedures with respect to management of the Firm and its underlying investments. Finally, there must be sound evidence that the investment will provide reasonable probability of achieving the return and risk objectives of SERS.

Investment Process

The Firm shall demonstrate a sound process for sourcing, performing due diligence, selecting, monitoring, and exiting investments. This investment process shall describe the Firm's internal investment and management controls and should provide for regular monitoring and valuing of existing investments, as well as a strategy and procedure for exiting investments. The Fund shall have carefully documented its investment processes, including those related to hiring managers to manage the Fund's investments.

Management

The Manager must have expertise and experience in sourcing, pricing, selection, structuring and negotiating private equity investments. It is preferable that the Firm's key investment personnel have direct experience investing for institutional investors, a history of working together, a successful track record of implementing the strategy proposed for the particular investment and are managing portfolios of capital similar in size to the amount currently being sought. Depending on the strategy, operational experience in target industries is desirable.

Terms and Conditions

Each partnership agreement shall be negotiated such that SERS receives competitive terms and conditions.

e. Due Diligence:

Before any investment is recommended to the Board and an investment is made, Investment Office Staff and its Private Equity consultant will rigorously review the investment opportunity. Best efforts shall be made to complete a due diligence review by Investment Office Staff and Private Equity consultant prior to uploading to BoardDocs of the materials pertaining to the investment opportunity for Investment Committee and Board consideration. If the due diligence results are favorable, the Investment Office staff and Private Equity consultant shall recommend to the Board in writing the investment opportunity. The Investment Committee and Board shall be made fully aware of any due diligence matters that are outstanding, which must be satisfied prior to successful completion of contract negotiations. The due diligence materials shall include without limitation, meetings with the investment principals, reviews of pertinent offering documents and supporting materials, the Manager's completion of a due diligence questionnaire, and reference checks. Such reviews allow SERS to more effectively evaluate the soundness of the investment opportunity, and its adherence to SERS' investment guidelines as to investment strategy, process, management, and terms and conditions.

f. Monitoring and Reporting:

Each manager will provide SERS' Investment Office with quarterly unaudited reports (or semi-annual reports if customarily produced by the manager) and annual audited reports in sufficient detail to allow Investment Office Staff to assess the performance of each Private Equity investment. Each manager is expected to timely report on all material developments including, but not limited to, personnel changes, contractual problems or amendments, distribution issues, and any other items required for appropriate monitoring by Investment Office Staff. Each manager, as part of its investment report to SERS, is expected to provide information concerning its Pennsylvania portfolio activity (if any), including employment statistics.

Semiannually, the Private Equity consultant will submit to the Board a Private Equity performance report which includes Private Credit investments. Performance measurement will utilize an Internal Rate of Return metric ("IRR"). The IRR is based on inflows and outflows of partnership capital, giving consideration to the residual value of investment holdings, and calculated net of management fees, expenses, and the manager's share of carried interest. The IRR calculation is an annualized-since-inception measure, updated quarterly, and along with cash-on-cash return multiples, serves as the primary objective measurement of a manager's performance. The performance of each investment will be compared against Burgiss' relevant Vintage Year Median Returns (or other relevant relative return data made available by SERS' Private Equity consultant).

Investment performance for private market investments must be viewed over a longer time horizon than the assessment period used for publicly traded securities. Although the final performance of a Private Equity investment cannot be known until its

termination, it is recognized that the performance of a more mature investment (7–10 years) provides a more accurate indication thereof.

For Investment Office Staff to more actively monitor a manager's investments for compliance with the terms and conditions of the limited partnership agreement as well as SERS' expectations, SERS often seeks a seat on the fund's advisory board or valuation committee. In such capacity, Investment Office Staff will generally participate in the review and/or approval of: (i) the Manager's valuation policy, (ii) underlying investments remaining in the portfolio, (iii) the Manager's valuation of such underlying investments, and (iv) whether potential conflicts of interest exist. As the size of SERS' commitments decrease, so does the likelihood that it will be offered opportunities to serve on their advisory boards and valuation committees.

Real Estate

Objective

The objective of Real Estate is to generate returns through capital appreciation and current income to achieve a return in excess of its benchmark (NCREIF Fund Index – Open End Diversified Core Equity (“NFI-ODCE”)) over 5-year periods (annualized, net of fees). Real Estate investments may also lower overall fund volatility and provide a moderate hedge against inflation.

Structure

Real Estate investments are non-traditional investments made in the form of individually managed accounts and pooled investment vehicles organized to invest in private market equity and debt investments in real estate and real estate related companies and public market investments in real estate investment trusts (REITs) and real estate operating companies.

| Strategy | Description | % of Total Plan | Allocation Range |
|-----------------------------|--|-----------------|------------------|
| Core/Core Plus | Core and Core Plus investments are long-term investments in high-quality real estate that generate returns primarily from stable income producing properties. | 1.75% | 0%-3% |
| Value-Add and Opportunistic | Value-Add and Opportunistic investments have higher risk/return expectations than Core/Core Plus investments. Value-Add and Opportunistic strategies utilize greater leverage and active real estate strategies including leasing, repositioning, renovation and/or rehabilitation in addition to development, thereby taking higher risks but demanding higher returns. Returns are primarily generated from capital appreciation from opportunistic investments. | 4.9% | 3%-7% |
| Real Estate Securities | Investments in publicly-traded securities of companies whose primary business is to own real estate. Real Estate Securities provide SERS with direct exposure to U.S. and non-U.S. real estate markets and offer high dividend yield and liquidity. | .35% | 0%-1% |

Guidelines

a. Permitted Investment Vehicles

SERS' investments in Real Estate will be through vehicles that maximize the Fund's control, including the ability to exit an investment are preferred, but the Fund acknowledges that it may use vehicles with limited control in order to achieve certain goals, such as diversification, access to specialized investments, or manager expertise.

The Fund may purchase assets on a wholly owned basis through Individually Managed Account structures. The Individually Managed Account structure is the preferred investment vehicle due to its low-cost structure and control features provided to SERS, except when pooled investment vehicles offer an identifiable advantage for accessing a particular investment opportunity.

Investment opportunities may be accessed through the ownership of units or shares of a Pooled Investment Vehicle. Any legally organized vehicle is allowed, including, but not limited to, joint ventures, limited partnerships, public and private real estate investment trusts, insurance company separate accounts, and limited liability corporations. Preference will be given to those Pooled Investment Vehicles that offer greater investment and reporting transparency.

b. Individually Managed Accounts

The Individually Managed Account manager may consider joint venture or co-investment ownership within Individually Managed Account structures.

Individually Managed Accounts are actively managed programs with managers buying and selling investments as market conditions and opportunities dictate. All investments are made within the scope of approved investment guidelines in each manager's respective investment management agreement, as well as this IPS. The size of each individually managed account will be determined with reference to the overall allocation to real estate and the level of purchase and sale activity in any given manager's portfolio.

It is the intent that over the long-term each individually managed account be self-funded; i.e., that new acquisitions be funded out of portfolio cash flows and sales proceeds. However, it is recognized that the timing of cash flows in these portfolios is difficult to forecast given the uncertainties and lead time involved with the purchase and sale of commercial real estate investments. In addition, it is understood that commercial real estate investments are stand-alone business entities that may require periodic investment of new cash, some of which may be unanticipated and time sensitive, in order to enhance the value of any given investment and honor legal, health and safety, or other obligations, to which the owner (a SERS controlled entity) is bound. At no time will the total amount funded to any individually managed account exceed the

commitment amount plus total capital returned as monitored and reported by the Real Estate consultant to the Board.

The Investment Office and Real Estate consultant will monitor cash flow projections provided by the managers to ensure that the total real estate portfolio remains near the target allocation provided within this Policy. At no time, however, will an Individually Managed Account manager be required to liquidate investments at inopportune times for the purposes of rebalancing.

c. Diversification

Strategy

SERS anticipates that approximately 25% of its real estate program will be targeted to Core investments, 70% targeted to Non-Core investments (value-add and opportunistic) and 5% to REITs.

Manager

No single investment manager shall manage more than 30% of the total real estate allocation determined by the Board. However, there may be instances when the “denominator effect,” special situations such as portfolio take-overs and value appreciation of investments, can suddenly cause an “out of balance” situation with regard to any given manager. When this type of situation occurs the Investment Office and Real Estate consultant will work with the affected manager to bring the portfolio back into balance within a reasonable timeframe.

Property Type and Property Location

Diversification by property type and location will be monitored and prudently managed, but the Fund recognizes that its diversification relative to benchmark may vary due to current opportunities available in the market and expectations for optimal risk-adjusted returns going forward. Diversification by geography includes international investments.

Vintage Year Diversification

SERS’ Investment Office shall prudently monitor and manage the vintage year exposure of the total real estate portfolio, but the Fund recognizes that vintage year exposures will vary due to current opportunities and the expectations for optimal risk-adjusted returns available in the market.

International Investing

Targeted international investments totaling up to 20% of the total real estate portfolio shall be permitted as approved by the Board. Incidental non-domestic real estate exposure may exist from Pooled Investment Vehicle investments.

d. Investment Size

At no time shall the net investment amount in a single property within an Individually Managed Account exceed five percent (5%) of the net market value of the total Fund's real estate portfolio at the time of initial investment.

The Fund's investment in a single closed-end Pooled Investment Vehicle may not exceed five percent (5%) of the net market value of the real estate portfolio at the time of initial investment.

The Fund's investment/commitment in a single closed-end Pooled Investment Vehicle may not exceed twenty percent (20%) of the closed-end fund's total fund size.

The Fund's investment in a single open-end pooled fund may not exceed 15% of the net market value of the real estate portfolio at the time of initial investment.

e. Leverage

The Fund shall seek to constrain overall leverage within the real estate program to a loan-to-value ratio ("LTV") of 50% at the time the debt is placed. The LTV ratio in the separate account portfolios shall not exceed 60% at the time that debt is placed. It is understood that market value fluctuations may cause the LTV of all or a component of the program to exceed the limits expressed herein; in such an event, SERS shall not be required to sell investments or pay down debt in order to meet LTV limits expressed herein. The preference is to provide the managers the discretion to use leverage within contractual guidelines, when accretive to returns, without significantly increasing risk; however, debt that is recourse to a separate account will not be permitted unless approved by SERS' Investment Office.

f. Valuation

All investments in an Individually Managed Account will be independently valued not less than once every three years by a qualified Member Appraisal Institute (MAI) designated appraiser approved by SERS' Investment Office. During interim periods, the Investment Manager responsible for the investments will perform the valuations. Investments held in Pooled Investment Vehicles shall be valued using the methodology approved with the selection of the Pooled Investment Vehicle.

g. Selection Criteria for Individually Managed Accounts:

Manager Selection Process

Investment managers (both Individually Managed Account and Pooled Investment Vehicle managers) must have significant and direct experience investing and managing money for institutional investors. The manager must have expertise and experience in

pricing, selection, structuring, and negotiating real estate investments. It is preferable that key investment personnel have a successful track record of implementing the strategy proposed for this investment and managing portfolios of capital similar in size to the amount currently sought. Investment Office Staff and Consultant shall establish specific qualification criteria, desired levels of competency, and respective evaluation factors consistent with the purpose of each search for an Individually Managed Account manager.

Investment Office Staff and Real Estate consultant shall meet with, review, and evaluate preferred candidates based upon the established criteria.

Investment Office Staff and Real Estate consultant shall recommend to the Board in writing the manager to be interviewed and selected by the Board.

Control and Monitoring

Preliminary Investment Summary

Individually Managed Account managers shall have full discretion over the acquisition, management, and sale of individual investments. Prior to closing an investment, the manager shall provide a Preliminary Investment Summary to Investment Office Staff. The preliminary package shall include an analysis of the merits, projected return, and exit strategy for the proposed investment, together with sufficient information for SERS' Investment Office to confirm the proposed investment's consistency with this IPS and the investment manager's guidelines and strategy under its investment management agreement.

Reporting

Individually Managed Account managers shall adhere to the most recent version of the Real Estate Information Standards established jointly by the National Council of Real Estate Investment Fiduciaries, the Pension Real Estate Association, and the National Association of Real Estate Investment Managers, as well as, generally accepted accounting principles (GAAP). Managers will submit on an annual basis a third-party audited financial statement of the account managed by the Individually Managed Account manager.

Responsible Contracting

Managers of the Fund's wholly-owned assets in Individually Managed Accounts shall support and encourage the engagement of responsible contractors to provide building construction and maintenance services for such assets, subject to adherence to the Fund's fiduciary principles of loyalty, care, skill, prudence, and diligence. In all respects, such managers shall recognize and adhere to the principle that only the involved contractor has control over (1) the means and manner by which the contracted services are provided, and (2) the contractor's labor relation policies.

A responsible contractor is a contractor who, among other things: (1) has the appropriate experience, reputation, employee relations, responsiveness, fees, and dependability to perform required work; and (2) provides workers a fair wage and fair benefits for the required work, based on local market conditions. The utilization of such contractors may add value to the Funds' investments by ensuring that essential building and construction services are provided by adequately trained, experienced, and motivated workers.

The Board recognizes the right, as provided by law, of eligible employees to organize into a union or to not organize into a union, as the employees choose, and encourages contractors providing building construction and management services for the Fund's wholly-owned assets in Individually Managed Accounts to recognize and not impermissibly interfere with the lawful exercise of those rights and, upon a proper request, to bargain in good faith with any such lawfully recognized union.

Managers of the Fund's wholly-owned assets in Individually Managed Accounts and contractors providing building construction and maintenance services for such assets shall comply with applicable federal, state, and local laws, regulations and ordinances, including (but not limited to) those related to insurance, tax withholdings, minimum wage, health and safety, labor, and environmental matters.

With respect to those assets that the Fund does not wholly-own, it is desirable that the entity owning such assets comply with the foregoing policy statement.

Budget and Management Plan

Not more than 90 days after the end of the calendar year, Investment Office Staff and Real Estate consultant shall meet with the manager of personnel directly responsible for an Individually Managed Account portfolio and asset management for a review and evaluation of the Manager's Budget and Management Plan, which shall include a summary of the prior year's financial performance, budgeted projections for the ensuing year, and the Manager's current hold/sell recommendation for each property.

h. Selection Criteria for Pooled Investment Vehicles:

Selection Process

Investment Office Staff and Real Estate consultant will conduct screenings of the universe of available investment offerings that may be identified through Real Estate consultant's real estate databases, meetings with fund sponsors and their agents, and established SERS' relationships. The initial screen will focus on the identification of high-quality candidates that clearly meet SERS' real estate investment guidelines and strategy, and which conform to the diversification and other risk management policies set forth in this Policy.

After identifying potential candidates, Investment Office Staff and Real Estate consultant will conduct due diligence to ascertain which will provide optimal investment opportunities for SERS. The candidates will be assessed across a variety of criteria, including but not limited to:

- investment track record;
- quality, stability, depth and experience of investment professionals;
- clearly defined investment strategy that complements or is otherwise accretive to SERS' current or projected real estate portfolio construction;
- alignment of general partner's interests with limited partners' interests;
- adequacy of operational, accounting, legal compliance and reporting systems and personnel;
- terms and conditions of the fund, including but not limited to fees, promoted interests, key person provisions and removal and/or replacement of the general partner by the limited partners;
- client base and references; and
- unique advantages to the investment that benefit SERS, such as negotiation of preferred fees by Investment Office Staff and/or Real Estate consultant.

Best efforts shall be made by Investment Office Staff and the Real Estate consultant to complete due diligence prior to uploading to BoardDocs of the materials pertaining to the investment opportunity for Investment Committee and Board consideration. If due diligence results are favorable, the Investment Office staff and Real Estate consultant shall recommend to the Investment Committee and the Board in writing the investment opportunity to be interviewed and selected by the Board. The Investment Committee and Board shall be made fully aware of any due diligence matters that are outstanding, which must be satisfied prior to successful completion of contract negotiations.

Closing Process

Completion of due diligence requires Fund counsel's review of the Pooled Investment Vehicle's formation and associated legal documents.

i. Discretionary Authority:

The Board provides complete investment discretion within contractual guidelines to its managers regarding the acquisition, management, and disposition of real estate holdings.

j. Performance Measurement Report

Real Estate consultant shall provide performance measurement reports on a semi-annual basis. The report shall also include attributes for both the investment managers and the total portfolio including: income, appreciation, gross and net returns, cash flow, diversification, and comparisons with relevant industry performance indices.

U.S. Equity

Objective

The objective of U.S. Equity is to generate returns through capital appreciation, income from dividend payments and to generate returns comparable to its public equity benchmark (90% Russell 1000 Index / 10% Russell 2000 Index) over 5-year periods (annualized, net of fees).

Structure

U.S. Equity investments are equity investments made in the form of separate accounts and commingled funds. U.S. Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

| Strategy | Description | % of Total Plan | Allocation Range |
|------------------|---|-----------------|------------------|
| US Large/Mid Cap | Investments in U.S. large-cap and mid-cap companies as benchmarked to the Russell 1000 Index. | 28% | 25% to 31% |
| US Small Cap | Investments in U.S. small-cap companies as benchmarked to the Russell 2000 Index. | 3% | 0% to 6% |

Guidelines

- a. The U.S. Equity strategies should be within the ranges established by this policy. If the range is breached, the CIO must follow the IPS' Rebalancing Policy to restore compliance.
- b. The aggregate U.S. Equity allocation must be +/- 5% of its target allocation as a share of the total portfolio value. If the range is breached, the CIO must follow the IPS' Rebalancing Policy to restore compliance.
- c. Focus on cost control by utilizing passive strategies as the first option.
- d. Focus on active management only when there is conviction in, and empirical data support for the use of active management.

International Developed Markets Equity

Objective

The objective of International Developed Markets Equity is to generate returns through capital appreciation and income from dividend payments that meet or exceed the MSCI World ex U.S. Index over 5-year periods (annualized, net of fees).

Structure

International Developed Markets Equity investments are traditional equity investments made in the form of separate accounts and commingled funds. International Developed Markets Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

Guidelines

- a. Maintain an allocation to International Developed Markets Equity within +/- 5% of its target allocation as stated in this Policy.
- b. Contain tracking error and maintain cost control by investing in passive strategies in more efficient areas of the International Developed Markets Equity.

Emerging Markets Equity

Objective

The objective of Emerging Markets Equity is to generate returns through capital appreciation and income from dividend payments that exceed the MSCI Emerging Markets Index over 5-year periods (annualized, net of fees).

Structure

Emerging Markets Equity investments are traditional equity investments made in the form of commingled funds since there are legal challenges for SERS to use separate accounts to open sub-custodial trading accounts in certain emerging market countries. Emerging Markets Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

Emerging markets are generally regarded as less efficient than developed markets and historically have been more volatile than developed markets. Returns have been influenced by capital flows into and out of these markets; however, longer term, emerging markets can be attractive to those investors seeking to access the financial returns derived from rapidly expanding economies. Due to the high return volatility associated with emerging markets, the SERS Fund takes a diversified approach using a variety of investment strategies. The SERS Fund employs a structure diversified by investment advisor, style, and type.

Guidelines

- a. Maintain an allocation to Emerging Markets Equity within +/- 4% of its target allocation as stated in this Policy.
- b. Contain tracking error, maintain cost control, and the ability to efficiently rebalance to the Emerging Markets Equity asset class by keeping a passive strategy.
- c. The percentage allocation to the actively managed segment, which could make up the majority of the Emerging Markets Equity asset class, will be determined by conviction in and the availability of actively managed investment strategies.

Fixed Income

Objective

The objective of the Fixed Income allocation is to provide liquidity to minimize capital impairment risk, diversify investment risk, and enhance return to meet the fund’s obligations. It is expected that the returns from the Fixed Income allocation will meet or exceed its benchmark (Bloomberg U.S. Aggregate Bond Index) performance over 5-year periods (annualized, net of fees).

Structure

Fixed Income investments are traditional investments made in the form of separate accounts and commingled funds. They include investments in publicly-traded debt obligations of sovereign, quasi-sovereign and corporate entities and securitized assets.

| Strategy | Description | % of Total Plan | Allocation Range |
|----------------------------|---|-----------------|------------------|
| Core Fixed Income | Investments in intermediate duration investment grade bonds of various types (e.g. agency government bonds, corporate bonds, agency-mortgage backed securities), which provide capital loss protection in difficult market conditions, and offer risk mitigation due to low correlation with equity. | 15% | 12%-18% |
| Nominal U.S. Treasuries | Investments in securities matching the risk and return profile U.S. Treasury Notes (30% Treasury bonds as benchmarked by the Bloomberg U.S. Intermediate Treasury Index/70% Bloomberg U.S. Long Treasury Index). | 5% | 2%-8% |
| Opportunistic Fixed Income | Investments in sovereign debt, commercial and residential nonagency mortgage-backed securities, asset-backed securities, credit strategies, and high yield debt, which seek to provide excess return when performance conditions are favorable, and offer varying potential return with a corresponding variance in expected risk | 2% | 0%-4% |

Guidelines

- a. The Fixed Income strategies should be within the ranges established by this policy. If the range is breached, the Chief Investment Officer must follow the IPS' Rebalancing Policy to restore compliance.
- b. The aggregate Fixed Income allocation must be within +/- 5% of its target allocation as a share of the total portfolio value. If the range is breached, the Chief Investment Officer must follow the IPS' Rebalancing Policy to restore compliance.
- c. Focus on cost control and liquidity by utilizing passive strategies as the first option.
- d. Focus on active management only where there is conviction in, and empirical data support for the use of, active management.

Inflation Protection (TIPS)

Objective

The objective of Inflation Protection is to protect against both expected and unexpected higher inflation, provide liquidity to minimize capital impairment risk, reduce volatility of the total fund, and contribute total return to the fund that meet or exceed its benchmark (Bloomberg Barclays U.S. TIPS Index) over 5-year periods (annualized, net of fees).

Structure

Treasury Inflation-Protected Securities (TIPS) are traditional investments made in the form of separate accounts and commingled funds. The primary advantage of TIPS is that their return offers protection against both expected and unexpected higher inflation, as the securities' coupon payments are directly tied to the rate of inflation. TIPS, therefore, maintain the purchasing power of the investor. The coupon payments of TIPS have two components: a real coupon rate that is established at the issuance of the bond, and an accrual equal to the rate of inflation which adds to the principal balance of the security. TIPS are also useful for hedging liabilities which are affected by inflation and for hedging a cash flow stream against the need to liquidate equities and conventional bonds at depressed prices, in order to meet pension obligations during periods of unexpected inflation.

Guidelines

- a. Maintain an allocation to TIPS within +/- 3% of its target allocation as stated in this Policy.
- b. Maintain cost control and the ability to rebalance to Inflation Protection by keeping a passive strategy or a low-cost active strategy alternative approved by the Board.

Cash

Objective

The objective of Cash is to serve as the primary source of liquidity and generate returns that meet or exceed its benchmark (ICE BofAML U.S. 3-Month Treasury Bill Index) over a three-year period.

Structure

Cash investments emphasize the use of higher credit quality debt instruments that are liquid and have short maturities and durations, or have floating rates and have historically been invested in the Pennsylvania Treasury Group Investment Fund, a short-term investment fund.

Guidelines

- a. Maintain a maximum allocation to Cash of 7% as stated in this Policy.

21. Benchmarks

22. Asset Class Benchmarks

| Asset Class | Asset Class Benchmarks |
|--|---|
| Private Equity | 75% Russell 3000 Index / 25% MSCI World ex U.S. Index plus 300 basis points |
| Real Estate | NCREIF Fund Index – Open End Diversified Core Equity (“NFI-ODCE”) |
| U.S. Equity | 90% Russell 1000 Index / 10% Russell 2000 Index |
| International Developed Markets Equity | MSCI World ex U.S. Index |
| Emerging Markets Equity | MSCI Emerging Markets Index |
| Fixed Income | Bloomberg U.S. Aggregate Bond Index |
| Inflation Protection (TIPS) | Bloomberg U.S. TIPS Index |
| Cash | ICE BofAML U.S. 3-Month Treasury Bill Index |

Total Fund Benchmark

The total fund benchmark is calculated monthly using asset class benchmark returns and policy target asset allocation weights, respectively (as shown in the table below).

| Asset Class | Asset Class Benchmarks | Policy Target Asset Allocation % |
|--|---|----------------------------------|
| Private Equity | 75% Russell 3000 Index / 25% MSCI World ex U.S. Index plus 300 basis points | 16.0% |
| Real Estate | NCREIF Fund Index – Open End Diversified Core Equity (“NFI-ODCE”) | 7.0% |
| U.S. Equity | 90% Russell 1000 Index /10% Russell 2000 Index | 31.0% |
| International Developed Markets Equity | MSCI World ex U.S. Index | 14.0% |
| Emerging Markets Equity | MSCI Emerging Markets Index | 5.0% |
| Fixed Income | Bloomberg U.S. Aggregate Bond Index | 22.0% |
| Inflation Protection (TIPS) | Bloomberg U.S. TIPS Index | 3.0% |
| Cash | ICE BofAML U.S. 3-Month Treasury Bill Index | 2.0% |

23. 2020 Investment Initiatives for SERS' Investment Office

1. Provide the Board with a report defining the operational risks, costs, resource requirements, and benefits associated with internally managing passive equity and fixed income securities.
2. Provide the Board with a report defining the operational risks, costs, resource requirements, and benefits associated with internally managing private market co-investments.
3. Implement Board approved Public Pension Management and Asset Investment Review Commission investment-related recommendations to enhance transparency of fees and performance.
4. Update investment-related policies and processes.

24. SERS' Policy Target Asset Allocations

Based on input from Board members, the following key themes were factored into the development of the SERS' policy target asset allocations.

The policy target asset allocation is projected to:

1. Target a lower annual investment management fee structure
2. Maintain a high allocation to liquid assets with low correlation to the U.S. equity markets
3. Target a lower allocation to less liquid assets
4. Increase the estimated rate of return to more closely align to the actuarial rate of return

SERS' Policy Target Asset Allocations

| | Policy Target Asset Allocation* | Policy Ranges |
|---|--|----------------------|
| Real Estate | 7.0% | n/a |
| Private Equity | 16.0% | +/- 2% |
| U.S. Equity | 31.0% | +/- 5% |
| International Developed Markets Equity | 14.0% | +/- 5% |
| Emerging Markets Equity | 5.0% | +/- 4% |
| Fixed Income | 22.0% | +/- 5% |
| Inflation Protection (TIPS) | 3.0% | +/- 3% |
| Cash | 2.0% | 7% max |

*Approved by SERS' Board on 5/5/2022

| | |
|--|--------|
| Estimated Return (Geometric) | 6.32% |
| Estimated Risk (Standard Deviation) | 14.07% |

25. Projected Liquidity of Policy Target Asset Allocation

| | Capital Preservation Assets | | | Return Seeking Assets | | | | |
|---|-----------------------------|-----------------------------|--------------|-----------------------|-----------------------|----------------------|-------------|----------------|
| | Cash | Inflation Protection (TIPS) | Fixed Income | US Equity | Int. Dev. Mkts Equity | Emerging Mkts Equity | Real Estate | Private Equity |
| Policy Target Asset Allocation | 2% | 3% | 22% | 31% | 14% | 5% | 7% | 16% |
| Expected Return (Geometric) | 1.20% | 1.25% | 1.75% | 6.60% | 6.50% | 6.90% | 7.37% | 8.00% |
| Expected Volatility | 0.90% | 5.05% | 3.75% | 17.95% | 19.90% | 25.15% | 19.23% | 27.60% |
| Liquidity | HIGH | HIGH | HIGH | HIGH | HIGH | MEDIUM | LOW | LOW |
| Correlation to US Equity | -0.06 | -0.08 | -0.10 | 1.00 | 0.77 | 0.79 | 0.64 | 0.77 |
| Months of Benefit Payments | 2.5 | 3.8 | 25.2 | | | | | |
| Months of Benefit Payments (includes EE & ER contributions) | 8.6 | 12.9 | 86.3 | | | | | |
| Cumulative Months of Benefit Payments (includes EE & ER contributions) | 107.8 | | | | | | | |

Source: *Callan 2022 Capital Market Projections

*Months of Benefit Payments based on \$92 million (net) and exclude Opportunistic Fixed Income

Assumptions:

- Total fund assets as of 12/31/2021 at \$39.9 billion
- Monthly benefit payments at \$317 million
- Monthly benefit payments net of contributions at \$92 million