

INVESTMENT POLICY



MoDOT & Patrol
Employees' Retirement System

INVESTMENT POLICY

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¹ Revised September 25, 2014.



Statement of Investment Policy Objectives and Guidelines

PURPOSE AND OBJECTIVES²

The primary objective of the MoDOT & Patrol Employees' Retirement System ("System," "Plan," and "MPERS") is to provide retirement benefits to active and retired employees and their beneficiaries. As part of this charge, the Plan will invest its assets in a diversified portfolio following prudent standards for preservation of capital, with the goal of achieving the highest possible rate of return consistent with the System's tolerance for risk as determined by the Board of Trustees in its role as fiduciary.³

Guiding principles:

1. Preserve the long-term corpus of the fund.
2. Maximize total return within prudent risk parameters.
3. Act in the exclusive interest of the members of the system.

Our investment beliefs:

1. Diversification is critical because the future is unknown.
2. Prudent asset management must first focus on understanding and balancing risk.
3. Flexibility in investment policy implementation is critical because various asset classes will be in or out of favor at different points in the economic cycle.

ROLES AND RESPONSIBILITIES

This section addresses the roles and responsibilities of the Board of Trustees, Investment Committee, General Consultant(s), Specialty Consultant(s), Investment Managers, Master Custodian, and Actuary as they pertain to the investment of Plan assets. The roles of Executive Director and Chief Investment Officer are addressed in the applicable charters within the System's Governance Policy.⁴

Board of Trustees

The Board of Trustees ("Board") is responsible for the general oversight of the investment portfolio, including the review and approval of the policies and procedures contained in this document. The Board establishes the broad asset allocation policies and return objectives of the Plan, and retains Investment Staff, consultants, a master custodian, and other advisors to implement and execute these policies. The Board has established an Investment Committee to support this function.⁵

Pursuant to Sections 105.687 to 105.690, RSMo., the Board of Trustees is a fiduciary to the System and in fulfilling this responsibility shall:

1. Act with the same care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a similar capacity and familiar with those matters would use in the conduct of a similar enterprise with similar aims;
2. Act with due regard for the management, reputation and stability of the issuer and the character of the particular investments being considered;

² Revised September 25, 2014.

³ Revised September 30, 2010.

⁴ Revised September 25, 2014.

⁵ Revised September 30, 2010.

3. Make investments for the purposes of providing benefits to participants and participants' beneficiaries, and defraying reasonable expenses of investing the assets of the system;
4. Give appropriate consideration to those facts and circumstances that the investment fiduciary knows or should know are relevant to the particular investment or investment course of action involved, including the role of the investment or investment course of action plays in that portion of the system's investments for which the investment fiduciary has responsibility. For purposes of this subdivision, "appropriate consideration" shall include, but is not necessarily limited to, a determination by the investment fiduciary that a particular investment or investment course of action is reasonably designed, as part of the investments of the system, to further the purposes of the system, taking into consideration the risk of loss and the opportunity for gain or other return associated with the investment or investment course of action; and consideration of the following factors as they relate to the investment or investment course of action:
 - a. The diversification of the investments of the system;
 - b. The liquidity and current return of the investments of the system relative to the anticipated cash flow requirements of the system; and
 - c. The projected return of the investments of the system relative to the funding objectives of the system;
5. Give appropriate consideration to investments which would enhance the general welfare of this state and its citizens if those investments offer the safety and rate of return comparable to other investments available to the investment fiduciary at the time the investment decision is made.

In order to improve the efficiency of its investment operations, the Board of Trustees has elected to delegate the implementation of these policy decisions to the Executive Director, Chief Investment Officer and the appropriate Investment Consultant (either the General Consultant or Specialty Consultant). This decision is supported by Section 104.1069, RSMo., which states: "Trustees of a Board may delegate to employees of the system, or to an agent, functions that a prudent trustee acting in a like capacity and familiar with those matters could properly delegate."

Investment Committee⁶

While the Board of Trustees is responsible for the general oversight of the investment portfolio, the investment committee is charged with the responsibility of providing more in-depth analysis on a wide range of investment related issues. The investment committee reviews and/or provides the Board with recommendations on topics such as the organization's tolerance for risk, asset allocation strategies, total fund performance, and compliance with investment policy.

General Consultant(s)⁷

The General Consultant ("Consultant") serves as a fiduciary to the System and works with the CIO to develop and implement the Board's asset allocation strategies and investment policies. The decision to hire, retain, or terminate the Consultant shall be made by the Board of Trustees, with advice from the CIO and Executive Director. The Consultant will attend regular meetings with the Board to both educate and provide an independent perspective on the goals, structure and performance within the investment portfolio. The Consultant will monitor financial, economic and political developments that may influence the investment portfolio.

The Consultant must agree in writing to all hiring and termination decisions regarding external asset managers (when a Specialty Consultant is not utilized), and may also assist with the selection of other external service providers.

⁶ Revised September 30, 2010.

⁷ Revised November 28, 2007, September 30, 2010, September 26, 2013, September 25, 2014, and November 17, 2016.

The Consultant shall provide the Board with a quarterly evaluation of the System's investment performance, detailing the performance by individual manager and asset class, and collectively at the Total Fund level. The quarterly evaluation shall include, but not be limited to, a review of the Investment Manager's performance relative to the appropriate indices and peer groups, and also adherence to its specific style of management (*i.e.* growth, value, etc.).

The Consultant shall provide an annual report on the appropriateness of investment policy benchmarks and the rationale for each current benchmark for each asset class. At any time a new benchmark is identified as more appropriate or suggested by either the Consultant or the CIO, the Consultant shall opine on any proposed change prior to approval by the Board.

Specialty Consultant(s)⁸

Investment in certain investment strategies, such as private equity, hedge funds and real estate, may require specialized knowledge and expertise. The System may employ Specialty Consultants to assist in the development of policies for and implementation of these strategies. Specialty Consultants are expected to assist Staff in developing a greater level of expertise and understanding of their respective asset class. The General Consultant may also be retained as a Specialty Consultant if deemed by the Executive Director and CIO to be in the best interest of the System. In the event the Consultant is also under consideration as the outside service provider, the Consultant will be recused from the selection process and the selection will be made exclusively by the CIO and Executive Director.

The Specialty Consultant must agree in writing to all hiring and termination decisions regarding external asset managers (for funds which they advise).

Investment Managers⁹

Investment managers may serve as fiduciaries for the System, and will have full discretion in the management of assets, subject to the guidelines in their respective Investment Management Agreements (IMA). Quarterly communications with the Plan are required and these reports will, at a minimum, include:

1. Written statements, including actions taken in the portfolio along with, the current outlook of the portfolio and any expected changes within the portfolio.
2. Comparison of performance results to the performance objectives outlined in the IMA.

MPERS Staff should use all means available to encourage Investment Managers to report any pertinent changes in their organization in a timely manner. The changes contemplated by this provision include, but are not limited to, the following:

1. Changes in ownership structure.
2. Changes in key personnel.
3. Changes in process, philosophy or strategy.
4. Material changes in assets gained or lost, as well as clients gained or lost.
5. Pending litigation or regulatory agency investigation or action.

⁸ Revised November 28, 2007, September 30, 2010, September 26, 2013, and September 25, 2014.

⁹ Revised September 30, 2010 and September 26, 2013.

Master Custodian

The role of the Master Custodian is to accept possession of securities for safekeeping; collect and disburse income; collect principal of sold, matured or called items; provide periodic accounting statements; and process and maintain the securities lending program. However, the securities lending program may be outsourced in part or in whole to one or more third-party lenders.

The Master Custodian will meet as required with the Staff to report on its activities.

Actuary¹⁰

The Board retains an actuary to maintain appropriate funding of the System. Actuarial services typically include the following:

Annual Services:

- Provide an actuarial valuation of the System's assets and liabilities that:
 1. Measures the System's funding progress,
 2. Determines the employer contribution rate for the following fiscal year,
 3. Provides actuarial information used for financial reporting purposes, and
 4. Analyzes experience during the year;
- Consult on routine administration by email, phone and/or letter (including benefits calculations, 415 calculations, service purchase calculations, and other special calculations);
- Provide supplemental valuations of proposed system changes, including information necessary for MPERS to complete fiscal notes for the legislature;
- Provide suggestions on ways to improve or maintain financial health of the system;
- Provide projection utility to enable Staff to estimate future contribution requirements and funded status based on certain "what if" scenarios;
- Keep Board and Staff informed on industry changes, best practices and changes in standards.

Periodic Services:

- Five-year experience study: The actuary will perform a formal review of economic and demographic assumptions at least once every five (5) years and recommend changes.
- Perform special studies and calculations, as needed.
- Provide actuarial tables and factors to Staff (or vendor who maintains system software) as needed.

Additional Services:

The Executive Director shall periodically retain an independent actuarial firm to perform an actuarial audit in order to evaluate the actuarial firm that is currently providing actuarial services to the Board and report the results of that audit to the Board at a Board meeting held during the first quarter of that year. The Executive Director may recommend changes to the contract with the actuarial firm that is currently providing actuarial services to the Board or the issuance of a request for proposal from additional actuarial firms:

1. Based on the information provided in the actuarial audit report or
2. Whenever the Executive Director determines it is appropriate to do so.

¹⁰ Revised September 25, 2014.

DELEGATION OF AUTHORITY¹¹

Pursuant to its authority to delegate functions to employees of the system under Section 104.1069, RSMo., the Board hereby delegates the responsibility of implementing its Investment Policy and managing the MPERS investment program to the Executive Director, Chief Investment Officer and relevant Investment Consultant(s). The requirements and limitations of the Executive Director and Chief Investment Officer are addressed in the applicable charters within the System's Governance Policy.

RETURN OBJECTIVES AND ASSET ALLOCATION¹²

The Board of Trustees, through this investment policy, defines the desired outcome of the investment program. With the assistance of Staff and outside service providers, the Board establishes a return objective that is intended to keep contribution rates at a reasonable level and consistent with historical levels, recognizing that changes to the benefit structure or actuarial assumptions will affect contribution rates. The Board will adopt an appropriate assumed rate of return based on market conditions and the Board's risk tolerance. The Board then establishes an asset allocation policy that is expected to both meet the assumed rate of return while minimizing the impact of the fund's volatility to contribution rates.

Diversification is the primary risk management tool to minimize volatility within the portfolio. The Board has consciously diversified the Total Fund to ensure that adverse or unexpected results from a single asset class will not have an excessively detrimental impact on the entire portfolio. Diversification is interpreted to include diversification by investment type, risk and reward characteristics, and by management style (core, value, growth, etc.). Each investment mandate shall also be diversified across holdings and not overly concentrated to any single position.

The current assumed rate of return and asset allocation are listed under Section XII of the Appendix.

MANAGER HIRING AND TERMINATION POLICY¹³

The Board has delegated all investment manager hiring and termination decisions to the CIO and relevant Consultant (either the General or Specialty Consultant), subject to the approval of the Executive Director. In establishing this policy, it is the Board's intent to assure interested parties that actions taken during the process of implementation and maintenance of the program occur in an environment of full disclosure that is characterized by a competitive process, objective evaluation and thorough documentation. The overriding consideration with respect to all decisions is that they are made solely in the best interests of plan participants and beneficiaries.

To assure that all new manager hiring and termination decisions adhere to the Board's intentions, all such actions shall be unanimously agreed to by the Executive Director, Chief Investment Officer and appropriate Consultant. Within 72 hours of the decision, the CIO or Consultant must provide documentation to the Board regarding the decision-making process, expectations, and rationale behind the hiring or termination decision.

Exception for existing relationships with alternative investment managers: The CIO is allowed to invest in affiliated or subsequent fund offerings of alternative investment managers if the offerings are substantially similar in structure, type and objective as the existing funds in which MPERS has invested with such manager. The General Consultant will provide a review of the investment, including whether the strategy fits within the overall goals of the asset class and amount of the investment relative to the targeted asset allocation. The process is subject to approval by the Executive Director.

Hiring and/or Termination of External Asset Managers

The Investment Staff and Consultant will take action to hire or terminate external asset managers under one or more of the following circumstances:

¹¹ Revised November 28, 2007, September 30, 2010 and September 26, 2013.

¹² Revised September 26, 2013.

¹³ Revised September 25, 2014.

- To implement a prudent and diversified manager structure for the portfolio,
- When the need for an assignment type has been identified that will materially improve the diversification and/or risk-return profile of the portfolio,
- To remove one service provider in favor of another, and/or
- When the need arises to eliminate an assignment within the portfolio.

Documentation of the Decision-Making Process

Documentation materials prepared by the Investment Staff and Consultant regarding action to hire or terminate a manager(s) will include a full description of the reason for the action, the expected benefits resulting from the action and a full review of the decision-making process. The primary focus of the Investment Staff and Consultant when preparing documentation regarding the hiring and/or termination of external asset managers will be on providing the Board with the level of information necessary to satisfy all parties that decisions were well reasoned, carefully considered and prudent.

Minimum Criteria for External Asset Managers

In order to receive consideration, an external asset manager must meet certain minimum criteria. In addition to these basic requirements, a manager must also comply with any additional search criteria defined by the CIO and Consultant that have been established for a particular assignment. The minimum criteria for external asset managers are described in the following paragraphs.

Organizational Qualifications. To be selected as an external asset manager, a manager shall meet the following organizational criteria:

- Qualified to serve as a fiduciary to the System if required by the CIO and Consultant for the particular assignment,
- Registered with the SEC (if applicable),
- Free of conflicts of interest unless previously disclosed and waived, and
- Maintain a proven record of professionalism and ethical behavior.

Scale. Managers must have a level of assets in the product such that the addition of funds from MPERS will not cause the System's investment to exceed 25 percent of the manager's total assets in the product.

Investment Style and Process. The investment style and process employed by a manager must be compatible with the System's investment objectives and policies. The manager should also have a proven record of adherence to an established investment philosophy over time.

Personnel. A manager must have an experienced professional staff with adequate resources to meet the System's requirements. A manager should be able to demonstrate policies designed to attract and retain key personnel.

Performance. The manager and/or its personnel shall have a demonstrated ability to achieve and maintain superior performance in the investment approach under consideration.

Manager Search Process

External asset managers qualified to fill assignments within the MPERS portfolio are identified through a manager search process. The Investment Staff and relevant Consultant are charged with the responsibility of conducting the necessary searches for qualified service providers. MPERS' Investment Staff will follow a clearly defined and formal process (typically prepared by the Consultant) that is available to the Executive Director and Board of Trustees for review. The manager search process is intended to provide documentation that all relevant issues have been disclosed,

that the search process was conducted fairly and that the policies and procedures outlined herein were followed to the Board's satisfaction.¹⁴

Competitive Environment. The search for external asset managers will be conducted in an open environment to ensure that qualified providers are identified, the process is fair and objective and that pricing is reasonable. In instances where multiple providers exist, a meaningful sample of qualified firms should be considered and evaluated in relationship to each other. If a situation arises in which an investment approach is unique to a specific firm, a full description of the unique characteristics of the firm and the reasons why a competitive alternative does not exist must be fully documented.

Manager Selection Criteria. The Investment Staff and Consultant will jointly develop the manager selection criteria used to identify potential service providers. In order to identify the most qualified service providers, criteria will be tailored to each specific assignment within the portfolios. The Investment Staff and Consultant will independently apply the criteria to the manager universe to ensure fairness and consistency including due consideration of minority and women service providers. See Section 104.621, RSMo.

Requests for Proposals. Broadly distributed Requests for Proposals ("RFPs") developed by the Investment Staff and Consultant are not required. RFPs may be sent to qualified service providers as determined by the CIO and General Consultant. In these cases, the Investment Staff and Consultant will independently assess and rank the RFP respondents based on a set of established criteria.

Due Diligence. The investment management firms receiving the highest rankings by the Investment Staff and Consultant will be subjected to an intensive due diligence effort. The Investment Staff and Consultant participate jointly in this process. Both parties conduct a number of quantitative and qualitative analyses on firms under consideration. Once "finalist" firms are determined, an on-site meeting will be held with each manager under consideration.

Manager Selection and Search Process Documentation. The manager receiving the highest collective ranking from the search team is selected to fill the designated assignment within the portfolios. The Investment Staff and Consultant are responsible for the preparation of all search process documentation, and for providing the documentation to the Board, if requested.¹⁵

Investment Management Agreements

Where appropriate, an investment management agreement (IMA) will be executed for each external asset manager, establishing guidelines for the particular role of that manager within the overall portfolio. The IMA, at a minimum, will address the following topics:

- a. Permissible investments,
- b. Style adherence,
- c. Diversification,
- d. Portfolio quality,
- e. Performance objectives, and
- f. Other manager-specific issues.

To the extent the manager relationship is governed by a limited partnership agreement, group trust agreement or the guidelines of a commingled investment vehicle, the prospectuses, offering documents, private placement memorandums, and other governing documents for those investments will be reviewed carefully by legal counsel and Investment Staff. Upon execution, the documents will govern those relationships and the terms of which shall be incorporated by reference into the System's Investment Policy.¹⁶

¹⁴ Revised September 26, 2013.

¹⁵ Revised September 26, 2013.

¹⁶ Revised September 26, 2013.

Management Fees

The Investment Staff and Consultant are responsible for securing the services of qualified service providers at reasonable and competitive fee structures, and will work diligently to assure the most favorable fee arrangements for the System. In accordance with that policy, the Investment Staff and Consultant will consider a number of different fee structures. Both asset-based and performance-based fee alternatives will be considered. All performance-based fee structures, however, will be carefully compared and contrasted to traditional asset-based fee options.

Ongoing Manager Evaluation¹⁷

The Investment Staff and Consultant are responsible for the monitoring and evaluation of the external asset managers employed by the System as part of the program. In fulfilling this role, Staff will meet at least annually, either in-person, telephonically or via some other electronic medium with each manager to formally review performance and investment activity, as well as to ensure each firm is adhering to the specific investment guidelines established for each mandate. In the event managers are in the redemption phase, or have side pockets of investments that are of minimal value (\$1 million or less), a meeting shall not be required, but shall be reported to the Board as required in the CIO Charter.

REVIEW PROCESS¹⁸

In view of the rapid changes within the capital markets and investment management techniques, this Investment Policy will be reviewed as needed by the Plan. Any revision to the policies and procedures set forth herein requires the approval of the Board of Trustees.

¹⁷ Revised November 17, 2016.

¹⁸ Revised September 26, 2013.

APPENDIX

Section I – Proxy Voting Policy¹⁹

Proxy voting shall be the responsibility of the investment manager and shall be done with the best interests of the Plan participants in mind. Managers shall maintain records of proxy votes and shall report this record annually to the Plan. Proxy voting and related procedures adopted by a manager or other service provider to the Plan shall be in compliance with applicable Missouri and federal laws and regulations. Additional information regarding proxy voting policies, and/or specific proxy initiatives may be requested by the Plan.

Section II – Securities Lending Policy

The Plan may elect to participate in a securities lending program that shall be implemented through the Plan's custodian or through a designated third party securities lending agent. Participation in such program shall continue until the Executive Director, Chief Investment Officer and Investment Consultant agree that the risk-reward relationship is no longer advantageous for Plan. If and when this determination is made, the Plan may discontinue participating in any securities lending programs that are currently in place. This shall be done without Board approval. The Board shall be notified at the next Board meeting that participation in the program(s) has ceased. Notification will also occur if and when the Plan decides to reinstate participation in such a program.

Participation in any securities lending program shall in no way inhibit the investment strategy or process of any investment manager. The program shall only take reasonable risks with respect to securities on loan, levels of collateral collected and investment of collateral proceeds. Any securities on loan shall be marked-to-market on a daily basis to ensure adequacy of collateral. The sponsor of the securities lending program shall provide an annual report to the Plan.

Section III – Securities Class Action Litigation Policy

It is the policy of this Plan not to serve as lead plaintiff in a class action litigation case unless the Plan is one of the largest shareholders of the security in question, and it is determined through consultation with legal counsel that serving in this status would be in the best interests of the Plan. Cases that present such an opportunity will be reviewed as they arise and determination on how to proceed will be outlined at that time.

The custodian will have primary responsibility for monitoring shareholder litigation settled in U.S. District Courts on behalf of the System. The custodian will notify the System when litigation has been settled that effects a security either currently owned, or previously owned while the custodial arrangement was in effect. Information regarding any class action settlements will be sent to Investment Staff and the General Counsel will be notified. If participation is elected by the System, the custodian will be responsible for submitting documentation so that the System may participate in any settlement distributions. Any distributions received by the custodian on behalf of the System shall be deposited into the System's cash account unless otherwise directed by the System.²⁰

Section IV – Deposit and Investment Risk Policies

Concentration of Credit Risk²¹

Concentration of credit risk is the risk of loss attributed to the magnitude of the System's investment in a single issuer. Within the traditional asset classes (equities and fixed income), the consultant will aggregate exposures across asset classes to create measures of concentration including industries, countries and security issuer for Investment Staff review.

¹⁹ Revised September 30, 2010.

²⁰ Revised September 26, 2013.

²¹ Revised September 26, 2013.

Investment Custodial Credit Risk

Custodial credit risk is an investment risk in that, in the event of the failure of the counterparty to a transaction, the System will not be able to recover the value of its investment or the collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the System and are held by either: a) the counterparty or b) the counterparty's trust department or agent but not in the System's name. It is the policy of the System to require that all investments be clearly marked as to ownership and, to the extent possible, shall be registered in the name of the System.

Cash Deposit Custodial Credit Risk

Cash deposit custodial credit risk is the risk that, in the event of the failure of depository financial institution, the System will not be able to recover deposits or will not be able to recover collateral securities that are in the possession of an outside party. Missouri state law requires that all public funds must be collateralized with acceptable securities having market values of at least 100% of the amount of funds on deposit (less any amount covered by FDIC insurance).

Interest Rate Risk²²

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The System does not have a formal investment policy that limits investment maturities as a means of managing its exposure to interest rates. Interest rate risk is most prevalent within the fixed income allocation, where the Board of Trustees has set a target allocation equal to 25% of System assets.

Investment Credit Risk

Investment credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. Unless authorized under a separate Investment Management Agreement, it is the policy of the System to limit fixed income managers to purchasing securities that possess a minimum credit rating of "Baa" by Moody's and "BBB" by Standard & Poor's. Issues subsequently downgraded below these ratings must be brought to the attention of the Chief Investment Officer for review.

Foreign Currency Risk²³

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. The System is subjected to foreign currency risk through its exposure to investments that are denominated in a foreign currency. While a certain amount of this exposure is desired for diversification purposes, the System's investment policy does allow its managers to utilize currency futures for defensive (hedging) purposes if deemed to be in the best interest of the System.

Section V – Anti-Terrorism Investment Policy²⁴

MPERS' custodian bank will comply fully with the requirements mandated by the US Department of the Treasury – Office of Foreign Assets Control (OFAC). The custodian bank must monitor the lists²⁵ published by the OFAC and may not allow MPERS to hold any security custodied with the custodian bank that appears on the lists.

On an annual basis, MPERS' Staff will research available information from governmental agencies regarding companies that are believed to be supporting terrorism. Such organizations include the Department of Homeland Security, the State Department, the Commerce Department, the Justice Department, the Treasury Department, the Securities and Exchange Commission, and any other governmental agency deemed to have useful information in

²² Revised November 28, 2007 and September 30, 2010.

²³ Revised September 30, 2010 and September 26, 2013.

²⁴ Revised November 28, 2007 and November 17, 2016.

²⁵ The lists include the Specially Designated Nationals List, the Consolidated Sanctions List and the Additional OFAC Sanctions List.

accurately identifying companies that are supporting terrorism. MPERS' Staff will also research any specific information available from the Missouri State Treasurer's Office and the Office of the State Attorney General in identifying these companies.

Upon receipt of such information, Staff will compare the list of companies with current holdings. In the event that MPERS is a holder of one of these companies, Staff will immediately contact the manager of the specific investment account to bring the situation to their attention and discuss appropriate actions for divesting from the company. In addition, Staff will forward on all information received from any of these governmental agencies to our investment managers so they can avoid making initial investments or divest of existing investments in companies that are identified as supporting terrorist activities. Finally, if MPERS is determined to be a holder of any company with links to terrorist activities, Staff will provide a report to the Board on an annual basis that identifies any investment actions taken.

This policy is intended to avoid 1) punishing companies whose activities abroad are supported by the US government, 2) punishing companies whose activities abroad do not further terrorism 3) unnecessarily harming US companies and jobs, and 4) compromising the Board's fiduciary duties to the beneficiaries of the System. Recognizing the dynamic nature of this issue, Staff will annually evaluate this policy to determine if changes need to be made to reflect recent developments in this area. In the event that Staff believes changes to this policy are warranted, they will bring the issue to the attention of the Board for consideration.

Section VI – Conduct and Conflict of Interest²⁶

MPERS has adopted a Board Governance Policy and a Personnel Policy strictly addressing conduct and conflicts of interest. Implementation of the Investment Policy is, and must be, in compliance with all other applicable policies adopted by MPERS. Managers and other service providers engaged under the Investment Policy shall comply with applicable laws and regulations regarding conduct and conflict of interest, and particularly related to gifts, contributions, or other payments for purposes of influencing the decisions or actions of public officials and employees affecting MPERS and the Board and Staff of MPERS. This should take into account prohibitions applicable to "pay-to-play" activities. Any Board member, Staff member, manager or other service provider becoming aware of improper conduct or activity that may suggest improper conduct shall report the same to MPERS' Executive Director or General Counsel.

Section VII – Placement Agent Fees²⁷

Placement agents are defined as any person or entity hired, engaged or retained by an external manager as a finder, solicitor, marketer, consultant, broker, or any other intermediary to raise money from or to obtain access to MPERS' investment portfolio. Typically placement agents are retained by investment firms to perform services such as designing marketing materials and/or making introductions to investment prospects (including pension funds). The agents are typically paid by the external manager or investment manager that hires them.

Placement fees are legal, but the disclosure of placement fees is required to protect against actual or potential conflicts of interest. Problems can arise if the pension officials receive undisclosed and/or inappropriate payments or other benefits from the placement agent that influence the decision making process of the pension system. Such conduct could be illegal and would likely present a breach of fiduciary duty.

Commencing October 1, 2010 Investment Staff shall ask that each service provider provide the following information to Staff prior to contract signing²⁸:

1. A statement regarding whether the external manager, or any of their principals, employees, agents, or affiliates has compensated or agreed to compensate any person or entity to act as a placement agent in connection with any investment by MPERS.
2. A description of any and all compensation of any kind, provided or agreed to be provided to a placement agent, including the nature, timing, value, and the entity making the compensation payment.

²⁶ Revised September 30, 2010.

²⁷ Revised September 30, 2010.

²⁸ Revised September 26, 2013.

3. A statement whether the placement agent or any of its affiliates is registered as a lobbyist with any state or national government.

Section VIII – Internal Fixed Income Policy²⁹

Statement of Purpose

Effective June 20, 2013, MPERS' Board of Trustees approved new asset allocation targets for MPERS' investment portfolio. The fixed income portfolio has a new targeted allocation to core, long duration securities and inflation protected securities. Staff was granted approval to manage these allocations internally if deemed to be the most effective means of obtaining the exposure. Should the Chief Investment Officer (CIO) decide to internally manage a portion of MPERS' fixed income portfolio, this internal fixed income policy outlines the goals, objectives, and limitations that govern the program.

Goals and Objectives

MPERS' Board of Trustees has established asset allocation targets to core, long duration and inflation protected fixed income securities, as defined below:

Inflation Protected Securities: Fixed income securities that offer a stated real rate of return, plus a par value that rises with inflation (as measured by the Consumer Price Index for U.S. Treasury inflation protected securities).

Benchmark: Barclays Capital U.S. TIPS Index

Duration Target: +/- 25% of the benchmark duration

Maximum exposure to one issue: No restrictions on U.S. Treasury and government agency securities, or securities fully guaranteed by a U.S. government agency. Exposure to the Barclays Capital World Government Inflation-Linked Bond Index (WGLIB) is limited to 20% of the market value of the Inflation Protection portfolio.

Acceptable Investments:

- U.S. Treasury Inflation Protected Securities (TIPS)
- U.S. Government Agency Securities, or securities fully guaranteed by a U.S. Government agency, where the coupon or total Return is derived from an inflation-linked index (such as the Consumer Price Index).
- Exposure to the Barclays Capital World Government Inflation-Linked Bond Index (WGLIB). Markets included in the index are the UK, Australia, Canada, Sweden, the U.S., France, Italy, Japan and Germany. Minimum rating for inclusion in the index is A3/A- for G7 countries and euro area markets and Aa3/AA- otherwise.

Long Duration Securities: Fixed income securities with longer term maturities, designed to generate income and provide a hedge against falling interest-rate environments.

Benchmark: Barclays Long Duration U.S. Government Credit Index

Duration Target: +/- 25% of the benchmark duration

Maximum exposure to one issue: No restrictions on U.S. Treasury and government agency securities or securities fully guaranteed by a U.S. government agency. Non-government agency positions are limited to 5% of the market value of the Long Duration portfolio.

Acceptable Investments:

- U.S. Treasury securities
- U.S. Treasury futures contracts
- U.S. Government Agency securities, or securities fully guaranteed by a U.S. government agency
- Mortgage and other asset backed securities with minimum AAA credit rating by Standard & Poors, Moody's Investors, or Fitch at time of purchase or transfer

²⁹ Revised September 29, 2011.

- Corporate bonds with minimum AA credit rating (AA- by Standard & Poors or Aa3 by Moody's Investors) at time of purchase or transfer
- Municipal bonds with minimum AA credit rating (AA- by Standard & Poors or Aa3 by Moody's Investors) at time of purchase or transfer

Core Fixed Income Securities: Fixed income securities with short to intermediate term maturities, designed to generate a stable income with less interest rate risk relative to long duration securities.

Benchmark: Barclays U.S. Government Credit Index

Duration target: +/- 25% of the benchmark duration

Maximum exposure to one issue: No restrictions on U.S. Treasury and Government Agency securities, or securities fully guaranteed by a U.S. Government Agency. Non-government agency positions are limited to 5% of the market value of the Core Fixed Income portfolio.

Acceptable Investments:

- U.S. Treasury securities
- U.S. Treasury bond futures contracts
- U.S. Government Agency securities, or securities fully guaranteed by a U.S. Government Agency
- Mortgage backed securities or asset backed securities with minimum AAA credit rating by Standard & Poors, Moody's Investors, or Fitch at the time of purchase or transfer.
- Corporate bonds with minimum AA credit rating (AA- by Standard & Poors or Aa3 by Moody's Investors) at time of purchase or transfer.
- Municipal bonds with minimum AA credit rating (AA- by Standard & Poors or Aa3 by Moody's Investors) at time of purchase or transfer.

Cash/Collateral Guidelines³⁰

In the event the CIO utilizes total return swaps and/or investment derivatives to obtain exposure to an approved asset class (authorized in MPERS' broad investment policy and requiring the use of an external service provider), the CIO is authorized to utilize cash or purchase fixed income securities to serve as the underlying collateral of that investment. The underlying cash collateral shall be of equal or higher quality to the acceptable investments in the core and long duration fixed income sections. Securities held for cash collateral shall also have an expected maturity (final maturity, expected call or average life) that is before the expiration of the swap, or have a floating rate coupon that resets prior to the expiration of the swap or derivative contract. The type of collateral utilized will be consistent with the requirements/documents governing the derivative contract (where applicable), with the intent of generating a return that meets or exceeds the financing cost of the underlying derivative. The return differential from the cash collateral (relative to the financing cost of derivative), together with market exposure of the derivative instrument, is designed to generate a total return that exceeds the passive return of the targeted asset class.

Investments in Non-Rated Securities³¹

The CIO is allowed to invest a maximum of 20% of the targeted allocation to Opportunistic Debt (equivalent to 1.5% of total fund assets) in fixed income securities that do not possess a bond rating from a major rating agency. For purpose of reviewing the investment merits of the security, the CIO shall rely upon any available market research including, but not limited to, the offering documents and research from bond underwriters, local Chambers of Commerce and broker/dealers.

Within 72 hours of the decision to purchase a non-rated security, the CIO must provide documentation to MPERS' Investment Committee regarding the decision-making process and rationale behind the investment. Securities that meet this criteria will be held under a separate account within the Opportunistic Debt portfolio, and will be subject to the periodic review of MPERS' Investment Committee. The exposure to any one security is limited to 10% of the maximum exposure to non-rated securities (equivalent to 1/10 of 1.5% of total assets).

³⁰ Revised September 25, 2014.

³¹ Revised September 25, 2014 and September 29, 2016.

Downgrade Procedure (Subsequent to Purchase)³²

In the event an individual security is downgraded below the minimum credit rating criteria, the CIO has a period of six months to review the security and either, a) liquidate the holding or b) provide to the Investment Committee a rationale for continuing to hold the security and obtain their approval.

Trade Documentation

MPERS' Staff is responsible for broker selection and insuring that transactions are executed at competitive pricing and execution. MPERS's Staff must provide documentation for each trade made for the internal fixed income portfolio. The documentation will be attached to the trade authorization form(s) sent or used by the master custodian, and must include (at a minimum) the following:

- Description of security purchased,
- Settlement costs of trade,
- Investment yield of security,
- Yield of competing bids or similar investments, and
- Brief rationale of trade/investment.

Performance Reporting

Each internally managed fixed income account shall have a separate account established at the master custodian for safekeeping and reporting purposes. The performance of each account shall be calculated by the master custodian, included as a component to MPERS' overall fixed income portfolio, and reported in the same manner as an externally managed portfolio.

Compliance/Auditing

MPERS' general investment consultant will review the internally managed fixed income accounts no less than semi-annually to ensure compliance with this policy. The review will include, at a minimum, a review of holdings and purchases during the period to ensure the securities meet the eligibility requirements and goals of the program. This review will be presented to the Investment Committee for its approval.³³

Section IX – Liquidity Review³⁴

The CIO shall periodically conduct a liquidity study to analyze the current profile of contributions and benefit payments relative to the current liquidity profile of the portfolio. The liquidity analysis should model several market environments, including stressed scenarios, to test how the investment program would respond under various market conditions. The liquidity analysis is a useful tool in assessing how much of the portfolio can be allocated to illiquid investments before having a negative impact on the portfolio's ability to meet current and future liability obligations.

³² Revised September 29, 2012 and September 26, 2013.

³³ Revised September 26, 2013.

³⁴ Revised September 26, 2013.

Section X – Asset/Liability Study³⁵

The CIO, with the assistance of the General Consultant and actuary, shall perform an asset/liability study at least every five (5) years and report the results of the study to the Board of Trustees. Modeling an investment portfolio against the system's liability structure enables the Board to see how various asset allocations impact the system's ability to meet its projected cash flow needs. The study will establish expected growth rates for each asset class based on the expected return and standard deviation of the asset class. The various asset mixes (and resulting cash flows) are then compared against the expected growth rate of the system's liabilities, using projected interest and inflation rates. The product of an asset/liability study is the identification of investment portfolios that are most likely to meet the System's expected future spending needs while minimizing the risk that those needs will not be met.

Section XI – Economic or Socially Targeted Investments³⁶

The System will not make investments that are economically or socially targeted (ETIs or STIs). For purposes of definition, ETIs or STIs are investments that are selected for the economic and social benefits they create in addition to the investment return to the employee benefit plan investor. The following criteria, applicable to any investment, will also be applied to investments that might be classified as ETIs or STIs:

- The fiduciary principles of prudence and exclusive interest of participants will not be abrogated or modified in order to increase the attractiveness of ETIs or STIs.
- There will be no concession on rate of return. This means there will be no hidden subsidies and that the classic "efficient frontier" test is applicable; a commensurate unit of return will be received for each unit of risk incurred.
- All participation should be voluntary on the part of the System and should not stem from a legal or policy mandate.
- Each ETI or STI will be evaluated using an integral, objective process -- that is, each will be meticulously analyzed solely on its own risk/return characteristics. No weight will be given to redeeming social interests.
- The System will participate only if at least one other comparable investor is participating.
- When evaluating an investment, appropriate consideration must be given to the role that the investment or investment course of action plays (in terms of diversification, liquidity, risk, and return) with respect to the entire investment portfolio of the System. Consideration should also be given to alternative investments with similar risks available to the System. The Board believes this set of investment criteria is in full compliance with Section 105.688, RSMo.

³⁵ Revised September 26, 2013.

³⁶ Revised September 26, 2013.

Section XII – Assumed Rate of Return & Asset Allocation³⁷

The current assumed rate of return of 7.00% was adopted by the Board on February 15, 2018³⁸. The Board has also adopted the following broad asset allocation targets for Plan assets effective January 1, 2019³⁹. The Board has granted the CIO the authority for establishing the allocation to each manager within the sub-asset classes. Based on a variety of considerations, the Board has established a range of allocations to sub-asset classes from which the CIO can operate. These ranges are outlined in the table that follows. The CIO shall adhere to the following guidelines when determining the dollar allocations to the managers:

- Changes to the manager allocations shall be based on longer-term expectations and should not be guided by short-term fluctuations in the capital markets and
- A prudent level of style and process diversification shall be maintained at all times, and any changes in the allocations to managers should be completed in a cost efficient manner, utilizing “natural” cash flows to the extent possible.

When the use of passive investment strategies is desired, the CIO is responsible for determining the most effective method of obtaining the exposure.

Beta Groups and Sub-Asset Classes ⁴⁰	Sub-Asset Class Ranges ⁴¹	Policy Benchmark Weight ⁴²	Policy Benchmark Index
EQUITIES		50%	
Public Equity	32.5% - 47.5%	40%	MSCI ACWI Index
Private Equity	2.5% - 17.5%	10%	S&P500 + 3%
RATES & CREDIT		30%	
Traditional Fixed Income	15% - 30%	22.5%	Barclays Govt./Credit Index
Opportunistic Debt	0% - 15%	7.5%	Barclays U.S. Corp. High Yield
REAL ASSETS		20%	
Real Estate	2.5% - 17.5%	10%	NFI-ODCE
Real Assets	2.5% - 17.5%	10%	CPI + 4%

The following are brief descriptions of the asset and sub-asset classes and the underlying philosophies currently utilized by the System.

APPROVED ASSET CLASSES AND STRATEGIES – EQUITIES⁴³

Public Equity⁴⁴: Publicly traded stocks from both developed and emerging markets around the world, diversified by capitalization, style, sector, company, country, and currency. Strategies and/or managers will generally invest in markets and securities contained within the MSCI All Country World Index (ACWI). Equities seek to provide a combination of long-term capital appreciation and dividend income that in the aggregate is expected to exceed the rate of inflation.

³⁷ Revised November 28, 2007, September 30, 2010, September 27, 2012, and September 26, 2013.

³⁸ Revised September 26, 2013 and November 29, 2018.

³⁹ Revised September 29, 2016, effective January 1, 2017; revised November 29, 2018.

⁴⁰ Previous asset grouping last revised September 29, 2016. Beta groups added November 29, 2018.

⁴¹ Revised September 29, 2016, effective January 1, 2017; revised November 29, 2018.

⁴² Revised September 29, 2016, effective January 1, 2017; revised November 29, 2018.

⁴³ Revised November 28, 2007 and November 29, 2018.

⁴⁴ Revised November 29, 2018.

Exposure to public equity may be achieved by investing in separate accounts, commingled funds, exchange traded funds, private limited partnership structures, or through derivatives and synthetic securities (where applicable).

Private Equity⁴⁵: Private equity investments include buyouts, venture capital, debt-related (primarily mezzanine finance and distressed debt), or other opportunities that do not fit into traditional asset classes.

The portfolio will be diversified across investment stage, manager style, sectors, and geographic coverage. MPERS will take a measured approach to obtaining exposure with the asset class, making annual allocations in lieu of large, one-time commitments to provide further diversification across vintage years. The actual portfolio will be built on a case-by-case evaluation of best available opportunities, maintaining these overall diversification guidelines.

Exposure to private equity may be achieved by investing with fund-of-funds managers, private limited partnership structures, or through derivatives and synthetic securities (where applicable). In establishing the private equity portfolio, a strategy of over-commitment to the asset class may be utilized in order to reach and maintain the target allocations.

APPROVED ASSET CLASSES AND STRATEGIES – RATES & CREDIT⁴⁶

Traditional Fixed Income⁴⁷: The fixed income portfolio is constructed with a number of unique, diversified strategies to provide a prudent risk and return profile within the asset class. Permissible fixed income strategies include:

Core Strategies: Fixed income managers and strategies that invest across the various debt instruments contained within the Barclays Capital Universal Index. The System may utilize strategies that either invest across the spectrum of securities in the Index, or that specialize in certain sectors or security types.

Inflation Protected Securities: Fixed income securities that offer a stated real rate of return, plus a par value that rises with inflation (as measured by the Consumer Price Index).

Long Duration Securities: Fixed income securities with longer term maturities, designed to generate income and provide a hedge against falling interest-rate environments.

Exposure to fixed income securities may be achieved by investing in separate accounts, commingled funds, exchange traded funds, private limited partnership structures, or through derivatives and synthetic securities (where applicable).

Opportunistic Debt Strategies⁴⁸: Managers and strategies that seek to take advantage of relative value opportunities across the global fixed income markets, oftentimes investing in sectors in need of liquidity. Such strategies may include, among others: high yield bonds, mezzanine debt, commercial and residential mortgage backed securities, and distressed corporate debt. Exposure may be obtained through long-only mandates, private equity and hedge fund structures, or through derivatives and synthetic securities (where applicable).

APPROVED ASSET CLASSES AND STRATEGIES – REAL ASSETS⁴⁹

Real Estate⁵⁰: Real estate strategies may include, but are not limited to, diversified core, value-added, and opportunistic strategies, along with other special situations. Core real estate strategies include high quality office, multi-family housing, industrial, and retail properties where the majority of the total return is derived from the rental income from the properties. Value added and opportunistic strategies typically include properties purchased with the intention of implementing a business plan to improve the attractiveness of the property and enhance return. This could include, among other strategies, certain modification or development to the property (or surrounding areas) and various lease-

⁴⁵ Revised November 28, 2007 and November 29, 2018.

⁴⁶ Revised November 28, 2007 and November 29, 2018.

⁴⁷ Revised November 28, 2007, September 30, 2010 and November 29, 2018.

⁴⁸ Revised September 29, 2016, effective January 1, 2017; revised November 29, 2018.

⁴⁹ Revised November 29, 2018.

⁵⁰ Revised September 27, 2012, September 26, 2013 and November 29, 2018.

up activities. In the case of value-added and opportunistic mandates, a strategy of over-committing to the asset class may be utilized in order to reach and maintain the target allocation. Exposure to real estate strategies may be achieved through publicly traded debt or equity instruments, private limited partnership vehicles, or through derivatives and synthetic securities (where applicable).

Apart from its administrative offices, and absent specific Board action or authorization, the System will not itself invest directly in real estate.

Real Assets⁵¹: Real asset strategies are investments that are ultimately backed by a tangible, physical asset. The backing of a hard asset offers a level of downside protection, inflation protection and diversification that is not present with traditional assets (such as stocks and bonds). Permissible strategies include commodities, along with private investments into energy, infrastructure, farmland, timber, and metals and mining strategies (discussed in more detail below).

Commodities are foods, metals and other raw materials that investors trade in the marketplace. Commodities are typically used as inputs in the production of other goods or services, and are interchangeable with other commodities of the same type. The quality of a commodity may differ slightly, but it is essentially uniform across producers. Examples include, but are not limited to, grains, metals, livestock, oil, cotton, coffee, sugar, and cocoa. Commodities are often used to enhance the risk/return profile of the investment portfolio, as they offer protection against inflation and low correlations to traditional equity markets. Exposure can be obtained by investing directly in the cash or futures markets, or by investing in a commingled fund or separate account structure with an approved investment manager.

Various private investment structures may also be utilized to provide additional diversification benefits to the real assets portfolio. Permissible private investment strategies include, but are not limited to, energy, infrastructure, farmland, timber, and metals and mining offerings. Energy investments include power generation facilities along with strategies focused on the drilling, transportation, storage, and distribution of energy resources (referred to as upstream, midstream and downstream strategies). Timber and farmland investments include strategies whereby the majority of the returns are derived from the biological growth of the product grown on the land, and with the respective market price of the product. Infrastructure investments include roads, bridges, water and sewer systems, and other services or utilities that support the economy and society. Metals and mining strategies focus on the development and production of basic metals (copper, zinc, iron ore) and precious metals (gold, silver, platinum).

Exposure to private real asset strategies may be achieved by investing in commingled funds, a separate account structure with an approved investment manager, private limited partnership vehicles, or through derivatives and synthetic securities (where applicable).

Investments that overlap asset class boundaries⁵²: Certain alternative investment strategies will have characteristics of more than one asset class. For example, a real estate or private debt offering could be structured in a way that more closely resembles an equity product, while an equity infrastructure fund can be structured with fixed income attributes. In these situations, the CIO will look to the volatility of the underlying strategy to determine the appropriate asset class for the investment. As examples, higher volatility strategies (possessing equity-like volatility) are more appropriate for the real estate or private equity allocations, while lower volatility strategies are more appropriate for the fixed income and absolute return portfolios.

Hedge Funds⁵³: These strategies utilize a broad range of investment management techniques to achieve a consistent positive return regardless of overall market conditions. Examples of hedge fund strategies include, but are not limited to, long/short equity, relative value, event-driven, and directional strategies. Exposure to hedge fund strategies and their sub-asset classes may be achieved by investing with fund-of-funds managers and/or through direct partnerships.

Hedge fund strategies may be used as a stand-alone asset class (i.e., as a tactical allocation in lieu of traditional fixed income) or as part of a portable alpha strategy with other traditional asset classes. Utilized in a portable alpha context,

⁵¹ Revised November 28, 2007, September 30, 2010, September 27, 2012, September 26, 2013 and November 29, 2018.

⁵² Revised November 28, 2007 and September 26, 2013.

⁵³ Revised November 28, 2007, September 30, 2010, September 29, 2012, September 26, 2013, and November 29, 2018.

the return streams of the hedge fund managers are designed to provide an alpha overlay (excess return) above the returns of an underlying asset class, or beta. In this structure, exposure to the underlying asset class is obtained synthetically, through the use of futures and/or swaps.

When utilizing hedge fund strategies, the CIO will look to the underlying exposures and/or volatility of the strategy to determine the appropriate asset class for the investment. For transparency purposes, the CIO will also break out and report all hedge fund investments separately under the appropriate asset class. For example, long/short equity strategies should be reported separately under the Equity portfolio (as a hedged equity allocation) and absolute return hedge fund allocations should be reported separately under the Rates & Credit portfolio.

The total exposure to all hedge fund strategies, regardless of the underlying asset class they are utilized in, is limited to 10% of the total portfolio.

Section XIII – MPERS’ Strategic Natural Resources Policy⁵⁴

Statement of Purpose

Effective January 1, 2016, the Board approved a unique policy for MPERS’ Natural Resources Program, which sits inside the Real Assets allocation. The Natural Resource Program will be managed by a combination of staff, consultants and outside parties. This policy outlines the goals, objectives, and limitations that govern the program.

Recognizing that capital markets change over time, this document will be revised and updated periodically to reflect changes in the marketplace. Amendments to the Policy must be approved by MPERS’ Board of Trustees.

Goals and Objectives

The Natural Resources program is designed to create a portfolio of high-quality Timber and Agriculture investments. The ultimate objective of the program is to preserve capital, provide a competitive rate of return and act as a diversifier to the total portfolio.

Meeting these objectives requires a flexible investment strategy so that, as capital market conditions change, staff may take advantage of opportunities in a timely and efficient manner. MPERS’ staff will actively direct the investment decision process, and will retain certain levels of control over major investment and management decisions. This active approach is unique in that MPERS’ staff will work directly with a number of third party advisors, asset managers, and consultants in lieu of hiring a single manager or consultant to administer the program. This process is designed to optimize the performance of the Natural Resources program by providing MPERS’ CIO the flexibility to utilize a wide range of structures.

Diversification

Should the Natural Resources portfolio develop into a large enough allocation, staff will seek to prudently diversify the program by investment structure, investment manager, vintage year, property type, property life cycle, and geographic and economic region. Consideration will also be given to the diversification benefits of the investment or strategy relative to the broader investment portfolio. It should be noted that during the ramp-up or build-out phase, the Natural Resources allocation will be heavily concentrated into the first few deals and may always be concentrated if opportunities don’t present themselves. While the goal is to fully diversify the Natural Resources allocation as a stand-alone strategy (over time), diversification during the ramp-up period will be viewed in the broader context of the Real Assets portfolio that is in place today.

Benchmark

The Natural Resource Program will sit within the Real Assets Allocation and share its benchmark.

Investment Structures

Staff will pursue Natural Resource opportunities that are structured to maximize flexibility with respect to control, acquisition and disposition of assets. Potential structures to be pursued by MPERS may include, but are not limited to, the following:

⁵⁴ Revised November 19, 2015.

1. Managed accounts. Assets are held directly in the name of MPERS, in accounts controlled by MPERS, in which an investment adviser may have authority to transact in the name of MPERS.
2. Direct investments in debt or equity. Investments held directly in the name of MPERS in accounts controlled and managed by MPERS' internal staff. Investments may include senior or subordinate debt instruments or common and preferred share classes of real asset investments listed on various international exchanges.
3. Co-mingled funds. Capital from multiple investors is combined with each investor sharing proportionately in the economic activities of the resulting portfolio. Investors own an interest in the fund rather than a percentage of each real estate investment. The investment manager usually has full discretion over investment decisions.
4. Investment advisory. Under certain circumstances MPERS may be better served to contract out the sourcing, procurement, and management of natural resource assets on behalf of MPERS. The structure is most commonly fee-for-service and may involve several different advisors over the life of the investment.
5. Joint ventures. Properly structured joint ventures, defined as any asset of which less than 100% is owned by MPERS, may also be considered. The underwriting of such an investment will include an evaluation of the joint venture partners(s) in addition to the normal underwriting of the proposed transaction.
6. Co-investment. MPERS may be introduced to co-investment opportunities through co-mingled funds. MPERS will typically not have discretion with respect to sourcing these opportunities, but can choose to accept or decline the opportunities as they are presented by the investment manager.

Sourcing, Review and Closing

Sourcing

Under the direction of the Chief Investment Officer ("CIO"), MPERS' staff has primary responsibility for sourcing potential investment advisors and managers, along with identifying and reviewing investment opportunities. Third party consultants may assist in this process at Staff's request. Investment proposals are received primarily from Advisors and Managers. Other sources may include third party marketers, consultants, investment banking firms, commercial banks, tax-exempt institutions, real estate brokers, and individual property owners.

Review Process

MPERS' CIO is ultimately responsible for reviewing investment opportunities that meet the investment criteria outlined in the Natural Resources' Policy. The CIO, along with MPERS' staff and any appropriate Consultant(s), will perform thorough due diligence on potential investments based on established policies. Such due diligence will include an on-site visit with the potential manager, review of all applicable documents, consultation with outside resources including consultants and legal firms as necessary, and site visit(s) to the potential investment, if applicable. The CIO is responsible for implementing policies & procedures that are sufficient to complete the transaction, including but not limited to, decisions concerning financing, contracting, and completion of closing documents.

Closing Process / Legal Review

The CIO will have the appropriate legal counsel review the contract of an approved transaction for compliance with the laws, statutes, rules and regulations that govern MPERS.

Role of External Consultant(s)

MPERS' CIO will utilize external consultant(s) and/or service providers to assist with the structuring and management of the Natural Resources program. Such assistance shall include, but is not limited to, the following:

- Maintaining regular contact with sponsors, operating partners, and/or management teams.
- Reviewing and assisting with deal flow, sourcing of potential investments, and overall adherence to MPERS' Natural Resource strategy.

- Reviewing and/or modifying investment documents to ensure terms and conditions are consistent with “market” terms.
- Reviewing investment performance and budgets for portfolio assets (where applicable).
- Reviewing/assisting with the annual valuation of portfolio assets.

Valuation Policy⁵⁵

The value of the Natural Resources’ portfolio should be based on fair value estimates provided by general partners, third-party service providers, portfolio managers, consultants, or appraisal firms. In the case of direct holdings that are internally managed by MPERS’ staff a) the initial valuation should reflect the estimated fair value, b) subsequent to purchase, fair value estimates should be obtained by an independent third party a minimum of every five years, and c) the system will perform due diligence on an annual basis to determine whether the fair value has been materially impacted (either higher or lower) to determine if an interim adjustment to fair value is warranted.

Board Communication / Due Diligence Documentation

Similar to MPERS’ broad investment policy, the CIO is required to provide documentation to the Board of Trustees within 72 hours of closing a Natural Resource investment. At a minimum, the documentation will include:

- An investment notification, along with the rationale used to make the investment.
- A description of the investment.
- Background on the partner that is assisting MPERS on the transaction.
- Discussion around the fit within the broader investment portfolio.

During the ramp-up stage (portfolio construction) of the Natural Resources program, MPERS’ staff will provide an update/progress report to the Board of Trustees at each regularly scheduled Board Meeting. The update will include an overview of activities since the prior Board meeting, along with an updated assessment on the appropriateness of this policy.⁵⁶

Section XIV – Use of Leverage Within the Investment Portfolio⁵⁷

Statement of Purpose

Effective June 18, 2020, the Board granted authority for the CIO to use leverage at the total portfolio level. This policy outlines the goals, objectives, and limitations that govern MPERS’ use of leverage. Leverage may be obtained through borrowing, derivatives and/or other financial instruments.

Core Beliefs Governing the Use of Leverage

MPERS’ use of leverage is intended to enhance the long-term return of the investment portfolio, both from the direct impact of borrowing at attractive rates and through the added flexibility it provides for MPERS’ staff. The Board of Trustees believes the prudent use of leverage is consistent with MPERS’ core investment beliefs.

MPERS’ core investment beliefs:

1. Diversification is critical because the future is unknown.
Relevance to leverage: The use of leverage enhances MPERS’ ability to keep a diversified portfolio in times of market volatility. In lieu of selling assets in times of stress, the CIO has the authority to rebalance the portfolio using leverage which historically has represented an attractive entry point for new investments.
2. Prudent asset management must first focus on understanding and balancing risk.
Relevance to leverage: Leverage facilities work better within diversified portfolios with stable cash flows. MPERS’ diversified portfolio of assets and management strategies has created a risk profile that is well below the average public fund in our peer universe, and one of the primary reasons MPERS can tolerate the incremental risk (defined as volatility of returns) that leverage may have on the portfolio.
3. Flexibility in investment policy implementation is critical because various asset classes will be in or out of favor at different points in the economic cycle.

⁵⁵ Revised November 29, 2018.

⁵⁶ At the November 29, 2018 the board adopted a change to add leverage to the portfolio. At the February 21, 2019 meeting, the board rescinded that decision. Section XIV – Use of Leverage Within the Investment Portfolio, followed this section.

⁵⁷ Revised June 18, 2020.

Relevance to leverage: In addition to improving the flexibility when rebalancing, the ability to use leverage provides increased flexibility for the CIO to manage the portfolio and make tactical asset allocation decisions across the permissible allocation ranges of each underlying asset class (+/- 7.5% of targeted allocations).

Limitations on the Use of Leverage

MPERS' use of leverage is limited to the following restrictions:

1. The use of leverage is designed to be a long-term management tool, and should not be based on a speculative or short-term view of the markets.
2. Leverage should only be utilized when the total borrowing cost is attractive relative to the expected return on the investment portfolio.
3. The CIO is limited to a maximum leverage amount of 20% at the total fund level.

Role of External Consultant(s)

MPERS' CIO will utilize external consultant(s) and/or service providers to assist with the structuring and management of any leverage facilities. Such assistance may include, but is not limited to, the following:

- Maintaining regular contact with lenders, counterparties, and custodial banks.
- Monitoring the overall adherence to MPERS' leverage policy.
- Reviewing and/or modifying financing documents to ensure terms and conditions are consistent with "market" standards.
- Reviewing and reporting the impact of leverage on investment performance.

Board Communication

The CIO shall incorporate the use of leverage into MPERS' quarterly investment performance report, including the amount of leverage utilized by the fund at the time of the report.

Section XV – Cost/Management Fee Policy⁵⁸

Statement of Purpose

MPERS' overriding goal is to maximize investment return, net of all management fees and expenses, within the stated risk parameters of the system. The Board acknowledges that maximizing net-of-fees investment return does not equate to minimizing management fees, and that a pension plan's overall fee structure is largely driven by the system's asset allocation. Given that understanding, MPERS' staff will strive to obtain the most advantageous total fee structure. Staff's decision to utilize active management and alternative investment strategies will be considered only when MPERS is expected to be adequately compensated in expected returns for the higher fees associated with those strategies.

Fee Requirements Associated with Managing the Overall Fee Structure

1. MPERS' performance shall be calculated and presented net of all manager fees and expenses.
2. MPERS shall establish and approve policy benchmarks for the total fund and each targeted asset class. Policy benchmarks measure what MPERS would expect to earn by investing passively (where applicable) across the respective benchmarks of each asset class.
3. In the absence of the perceived ability of an investment manager to create valuable alpha within its particular strategy, MPERS' staff will give preference to lower fee structures and passive (index) strategies over active management strategies.
4. When negotiating fees, MPERS' staff shall strive to structure active manager compensation to best align the managers' interests with those of MPERS. This includes incorporating performance-based fees with high water marks, waterfalls, hurdles, clawbacks, floors, or caps that are appropriate to the given strategy. The investment team shall also consider a wide array of strategies to reduce the overall cost of the portfolio, including the following:

⁵⁸ Revised September 23, 2021.

- Increasing the initial investment size
- Working with consultants to seek aggregate discounts from firms, which MPERS and/or the consultant have multiple investment strategies
- Utilizing co-investments where appropriate in private markets
- Quantifying and monitoring the effectiveness of active implementation across public market asset classes relative to a lower fee, i.e., passive, strategy

Role of External Consultant(s)

In conjunction with external consultant(s), staff shall prepare quarterly performance reports to track, among other things, the actual fund performance relative to passive policy benchmarks (where applicable). Consistent underperformance relative to passive benchmarks shall be noted and presented to MPERS' Investment Committee and/or Board of Trustees for discussion. MPERS' staff, in coordination with external consultants, shall negotiate the best possible fee structures with investment managers.

Reporting

Management fees shall be reported in the annual financial report. The details in the annual report will reflect the highest practical level of detail for the management fees staff can accurately obtain. There are no standards for public pension plans as it relates to reporting management fees. As a result, public pension plans report investment costs in a variety of ways; very few reflecting the transparency MPERS provides. If/when standards are developed through the Governmental Accounting Standards Board, or other applicable entity, MPERS shall conform the management fee reporting to the published standard.

Staff shall present a report detailing all investment management fees to the Investment Committee at least annually. This report will compare management fees, by asset class, to commonly used peer universe data to determine if MPERS' costs are consistent with the public pension universe. Furthermore, staff will encourage managers to report costs and management fees consistent with evolving practices and in the most transparent manner possible.

Section XVI – Risk Policy⁵⁹

Statement of Purpose

MPERS' primary risk management goal is to maintain a financially sound retirement system. Market risk is necessary in order to achieve MPERS' long-term investment goals.

The Use of Benchmarks in Risk Management

A critical factor in risk management is the proper selection of benchmark comparisons. Benchmarks are an important way of showing proper stewardship of the assets relative to internal expectations and external comparisons. To measure and evaluate the risk-adjusted performance of the total fund, MPERS utilizes the "Policy Benchmark" and peer universe comparisons. A description of each benchmarking method follows:

1. **Policy Benchmark Index**: This measure is used for performance attribution and risk measurement. The policy benchmark is customized for MPERS' asset allocation, internal performance attribution, and risk management purposes. It is developed by taking each of the respective asset classes' benchmarks weighted by the policy target asset allocation for a specific time period. Some asset class benchmarks are customized for MPERS' specific goals and objectives, and as such may not be available to and/or investable by the public. In addition, because MPERS' portfolio utilizes long-term illiquid securities, benchmark comparisons become difficult over shorter time periods. Of note, many of the illiquid asset classes are not investable options for members of the public for the aforementioned reasons.

⁵⁹ Revised September 23, 2021.

2. **Peer Comparisons:** Peer comparisons are used to ensure the fund is investing in a similar fashion to similarly situated investors. In particular, peer returns and volatility measures are used to ensure MPERS is taking a similar level of risk for a similar level of return as other public pension funds.

Risk Management Requirements and Beliefs

Risk management of MPERS' investment portfolio can be separated into three distinct areas and are governed by the following investment beliefs:

1. **Liquidity Risk:** MPERS' investment program shall provide adequate liquidity to pay member benefits and fund investment activities. The Investment Committee shall review the liquidity profile of the fund, along with the current funding policies and projected cash flow needs.
2. **Market Risk:** MPERS' investment program shall seek asset diversification to manage concentration in a particular market, strategy, or geographic region.
3. **Funding Risk:** Within prudent levels of risk, MPERS shall strive to become a fully funded retirement system and ultimately reduce MPERS' funding costs.

The risk management approach for each of these risks is discussed in more detail below.

Risk Management of Liquidity Risk

The two primary funding requirements that necessitate liquidity risk management are the following:

1. Provide funds for benefit payments and related obligations to plan participants, including retirement, death, and disability benefit payments.
2. Provide funds for the following MPERS' investment activities:
 - Rebalancing the portfolio to maintain compliance with MPERS' asset allocation policy and the permissible ranges around the asset allocation targets
 - Funding capital commitments that MPERS is legally obligated to fund (i.e., managing MPERS' unfunded capital commitments)
 - Funding derivative instruments that require liquidity for collateral, margin, and payment obligations at the time of a reset, call or, maturity

Role of Staff and External Consultant(s) in Liquidity Risk Management

MPERS' staff, in conjunction with the external consultant(s), shall prepare and present a liquidity study and pacing plan to MPERS' Investment Committee on an annual basis.

During periods of market stress, investment staff shall maintain sufficient liquidity in the portfolio. Steps to maintain sufficient liquidity may include, but are not limited to, the following:

- Changing the pace of new investments
- Rebalancing the portfolio to comply with the asset allocation ranges approved in the investment policy
- Securing additional sources of liquidity that could be utilized in times of market distress

It is important to note that any decision to utilize private markets and illiquid strategies should only be made when

- the investment offers an appropriate illiquidity premium over a comparable liquid asset or
- the investment offers a compelling diversification benefit.

Reporting/Risk Measurement of Liquidity Risk

MPERS' staff, in conjunction with the external consultant(s), shall prepare and present a liquidity study and pacing plan to MPERS' Investment Committee on an annual basis. In addition to these reports, staff will report commitments that exceed the annual pacing models within the respective manager's due diligence material. It is important to note that this policy acknowledges that models are designed as guidelines, and the actual pace of commitments will vary from year to year depending on market opportunities and the timing of fundraising by investment managers.

Liquidity Study

Not less than annually, the liquidity of the policy asset allocation shall be stress tested across different market environments to better understand the fund's liquidity profile during adverse market environments. This information is also the basis for the annual private market pacing plan presented by MPERS' staff in coordination with the external consultant.

Pacing Plan

A private market pacing plan will be presented annually by MPERS' staff in coordination with the external consultant. This plan should disclose the targeted commitment amounts for the coming year across private markets based on the current positioning of the portfolio and long-term asset allocation targets. The pacing plan will model estimated commitments and allocations for the next ten years, with the acknowledgment that the first three years are more certain and the following seven years will be less certain. Also, the pacing plan will project estimated net cash flow defined by estimated capital calls and estimated distributions. This estimated net cash flow is one tool that staff utilizes to manage liquidity risk.

Risk Management of Market (Investment) Risk

MPERS' market risk is largely defined by the Board's choice of asset allocation. Since no single metric adequately conveys market risk, MPERS will evaluate market risk holistically, incorporating quantitative and qualitative assessments into the management of the portfolio. Investment staff and external consultants will establish a framework for managing market risks that includes, but is not limited to, the following:

1. **Market Volatility:** Market volatility is the risk of drawdowns or large swings in market returns defined by standard deviation of returns.

Role of Staff and External Consultant(s) in Market Volatility Risk Management

The expected market volatility of any investment portfolio is primarily determined by the targeted asset allocation. Staff, in coordination with the external consultant, are responsible for the recommendation and implementation of MPERS' asset allocation. The Board of Trustees approves the asset allocation.

Reporting/Risk Measurement of Market Volatility Risk

MPERS' investment staff and/or system consultants shall review annually the System's asset allocation and present a report to the Board that highlights any recommended changes to the targeted asset allocation. In addition, at least quarterly, the Board will be provided with a report that shows the targeted allocations to investment classes relative to the implemented allocations. Large differences between the targeted and actual investments would elicit further explanation from staff. To ensure market volatility is consistent with the Board-approved target allocation, the portfolio will be constrained to the asset allocation percentages and ranges prescribed by the Investment Policy.

MPERS' investment staff and/or external consultants shall establish a framework for measuring market volatility for both the total fund and the established policy benchmarks, including any transition benchmarks employed during asset allocation shifts. An annual report of the realized market volatility relative to the expected volatility of the portfolio shall be presented to the Investment Committee for review. In addition, quarterly reports will disclose the standard deviation observed from the implemented portfolio relative to the standard deviation expected from the Board's target allocation.

Lastly, MPERS' target and actual allocation will be compared to a peer group in order to provide a reasonable comparison of MPERS' risk position in the market place. Investment staff and/or external consultants shall incorporate a review of MPERS' market volatility relative to the relevant public fund peer universe into MPERS' quarterly performance reporting package.

2. **Active Risk:** MPERS' staff, in coordination with the System's external consultant, make active risk decisions based on the availability of passive alternatives, the inefficiency of the relevant benchmark based on peer universe data and the overall valuation environment of the investment markets. Active risk is intended to add return, increase diversification, or offset an undesired risk exposure.

Role of Staff and External Consultant(s) in Active Risk Management

The Board has delegated responsibility to MPERS' staff and external consultants for the active management decisions to implement MPERS' target asset allocation. These decisions include two dimensions: 1) hiring/firing external managers and 2) over-/under-weighting asset classes relative to the targets.

Reporting/Risk Measurement of Active Risk Management

MPERS' staff, in coordination with the external consultant, shall provide quarterly reports that statistically quantify active risk and list performance relative to an applicable benchmark. In addition, quarterly reporting shall be provided disclosing the over- and under-weights relative to the Board's target allocations. Lastly, on an annual basis and in conjunction with the annual financial report, a report that discloses external management fees shall be provided to the Board.

3. **Valuation Risk:** Valuation risk is defined as the risk that an entity will experience a loss due to the inaccurate determination of the fair value of the investment portfolio on the financial statements. This risk is more significant for private market investments or financial instruments with complex features and/or with limited liquidity or with valuations that rely on pricing models rather than publicly derived sources.

Role of Staff and External Consultant(s) in Valuation Risk Management

For publicly traded securities and separate accounts that hold publicly traded securities, staff shall confirm that the accounts will be valued at fair market value according to the custody bank's pricing service. For illiquid investment vehicles, MPERS' investment staff shall ensure each line item in the portfolio is either audited by a reputable auditing firm or valued consistent with the general partner's or fund's valuation policy. For strategies with separate authorization under MPERS' Investment Policy, staff shall confirm the valuation of those strategies is consistent with the applicable policy. MPERS' external auditor also validates this process as part of MPERS' annual audit.

Reporting/Risk Measurement of Valuation Risk Management

MPERS' staff shall communicate any security pricing irregularities to the Board as soon as practical after obtaining information relating to such irregularities. The asset pricing policy is reviewed in conjunction with due diligence reviews and any observations relating to that policy shall be disclosed as part of the due diligence report.

4. **Legal Risk:** Legal risk is defined as the risk that legal documentation required for investments may contain provisions that could negatively impact the investment and/or the System.

Role of Staff and External Consultant(s) in Legal Risk Management

In an effort to mitigate this risk, the legal documentation for all accounts, investment subscriptions, external managers, private investment funds, and derivatives shall be reviewed, negotiated, and approved for MPERS' execution by internal and/or external legal counsel. MPERS' investment staff, in consultation with counsel, will exercise diligence to ensure that all contracts are legally binding and enforceable under applicable laws.

Reporting/Risk Measurement of Legal Risk Management

MPERS' staff shall communicate any legal matters arising out of investment activities as soon as practical after obtaining information relating to such legal matters. Any legal matters would be reviewed in conjunction with due diligence reviews and any material observations shall be disclosed as a part of the due diligence report.

Risk Management of Pension Funding

MPERS' liquidity sources come from a combination of employer/employee contributions and investment income. The actuarial formula for the relationship between sources and uses is represented by the following equation:

$$\text{Contributions} + \text{Investment Income} = \text{Benefits} + \text{Expenses}$$

or

$$C + I = B + E$$

Given that the actual investment income will vary from year to year based on overall market returns, employer contributions is the variable that must change when there is any deviation (either positive or negative) between actual investment returns and the actuarial return assumptions. The employers' contribution rate is set annually by the Board and governed by statute and governance policy. Employee contributions are limited to only those members of the 2011 Tier and are set by statute at four percent. In addition, the Board has adopted a funding policy in order to achieve a fully funded status.

Role of Staff and External Consultant(s)

MPERS' staff, in conjunction with the System's actuary, shall recommend and implement the funding policy. The ability to achieve the actuarial assumed rate of return is a critical factor in the risk management of the system. Investment markets are inherently volatile, and short-term returns will likely vary from the long-term return assumptions. Staff, the external consultant, and the actuary shall routinely examine how the risk of short-term investment market volatility impacts the prospects for long-term investment success.

Reporting/Risk Measurement of Pension Funding Risk

The System's actuary shall prepare and present annually a valuation of system assets and projected contributions to MPERS' Board. As part of this review, the Board, with the assistance of staff and/or the external consultant, will review the actuarial assumed rate of return relative to the expected rate of return of the investment portfolio to ensure reasonableness of the return assumption.

The annual actuarial review and periodic performance reviews are designed to manage the long-term funding needs of the System. The review is designed to balance the following scenarios:

1. An appropriate assumed rate of return will provide a contribution rate that is both stable and gradually improves the funded status of the System.
2. An improperly calibrated assumed rate of return will impact the stability of the contribution rate and the probability that the funded status improves consistent with the actuarial model.