

SWIB Board Materials for September 9, 2020

Table of Contents

Agenda	Page 2
1. Committee Reports - Open Session Items	
2. Consent Agenda	Page 6
3. Trustee Education Policy	Page 12
4. Public Records Policies and Procedures	Page 22
5. Investment Performance and Market Updates	Page 44
6. Investment Committee Open Session Business	Page 67
7. Quarterly Investment Update, Q2 2020	Page 133
Closed Session	
8. Announcements of Board Actions Relating to Items Taken up in Closed Session	
9. Reports to Be Filed	Page 156
10. Future Items for Discussion	
10. Recess	

Regular Meeting of the Board of Trustees

Tuesday, September 8, 2020 – Wednesday September 9, 2020
STATE OF WISCONSIN INVESTMENT BOARD

*Joint Educational Session of State of Wisconsin Investment Board
Board of Trustees
CFA Society Madison*

Session 1
Tuesday, September 8, 2020
1:30 p.m.

INTRODUCTIONS – David Stein, Chairman and David Villa, Executive Director/Chief Investment Officer

MANUFACTURING IN WISCONSIN
Wilson Jones, CEO of Oshkosh Corporation

EMERGING TRENDS IN VENTURE CAPITAL
Scott Kupor, Managing Partner at Andreessen Horowitz

WISCONSIN CITY FINANCE DIRECTOR PANEL: ECONOMIC DEVELOPMENT OPPORTUNITIES ACROSS WISCONSIN
A panel of City Finance Directors will discuss regional and state-wide economic development issues.

Moderator:
Ananth Seshadri, Chair of the Department of Economics at the University of Wisconsin-Madison

Panelists:
Robert Scott, Director of Finance and Administration for the City of Brookfield
Kristi Palmer, Finance Director for Marathon County and SWIB Trustee
Jay Winzenz, Finance Director for the City of Eau Claire
Mark O’Connell, Executive Director of the Wisconsin Counties Association

** The Joint Educational Session is open to the public. Members of the public planning to attend this meeting should contact SWIB at (608) 261-9341 or e-mail Dawn.Tuescher@swib.state.wi.us for information about how to register.*

Regular Meeting of the Board of Trustees

**Tuesday, September 8, 2020 – Wednesday September 9, 2020
STATE OF WISCONSIN INVESTMENT BOARD**

Wednesday, September 9, 2020

**VIA TELECONFERENCE: Toll-Free Number: 608-512-0100 (Open Session)
Conference ID#: 645487795**

Approx.
9:30 a.m.

OPEN SESSION

1. **Committee Reports - Open Session Items**
 - A. Audit and Finance Committee
 - B. Strategic Planning and Corporate Governance Committee
2. **Consent Agenda**
 - A. Open, Closed and Executive Closed Session Minutes of June 9-10, 2020
 - B. Recommended Actions from Committee Agendas
3. **Trustee Education Policy**
4. **Public Records Policies and Procedures**
5. **Investment Performance and Market Updates**
 - A. Board Investment Performance Report, Q2 2020
 - B. Callan Quarterly Peer Report, Q2 2020
6. **Investment Committee Open Session Business**
7. **Quarterly Investment Update, Q2 2020**

CLOSED SESSION*

RECONVENE IN OPEN SESSION

8. **Announcements of Board Actions Relating to Items Taken up in Closed Session**

* The motion to go into closed session at this meeting is made pursuant to Sections 19.36(5) and 19.85(1)(e) of the Wisconsin Statutes to consider confidential and proprietary strategies for the investment of public funds relating to specific proprietary investment strategies of internal WRS portfolios and to approve prior closed session minutes that discuss the same; and pursuant to Section 19.85(1)(g) of the Wisconsin Statutes to confer with SWIB's chief legal counsel to receive advice concerning legal strategy for ongoing and/or potential litigation. The Board may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General's Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the Board will subsequently reconvene in open session to cover remaining agenda items.

9. **In the Absence of Questions, the Following Reports will be Filed Without Comment** (for informational purposes):
 - A. Draft Enterprise Risk and Compliance Committee Minutes of May 21, 2020
 - B. New Contracts, Q2 2020
 - C. Quarterly Charges to Funds Report, Q2 2020
 - D. Private Markets and Funds Alpha Commitments, Q2 2020
10. **Future Items for Discussion**
 - A. Annual Board Agenda Plan
11. **Motion to Recess // Lunch Break**

NOTES: Items may be taken in order other than listed.

***Joint Educational Session of State of Wisconsin Investment Board
Board of Trustees
CFA Society Madison***

**Session 2
Wednesday, September 9, 2020
1:30 p.m.**

INTRODUCTIONS – David Stein, Chairman

MACRO ECONOMIC OUTLOOK

Cameron Crise, multi-asset/global macro strategist and portfolio manager at Bloomberg

POLITICS IN AN ELECTION YEAR

Libby Cantrill, Managing Director and Head of Public Policy at PIMCO

STEVEN LEVITT, AUTHOR OF FREAKONOMICS

Steven Levitt, author of the best-selling book, Freakonomics

ADJOURN – Chairman Stein

**** The Joint Educational Session is open to the public. Members of the public planning to attend this meeting should contact SWIB at (608) 261-9341 or e-mail Dawn.Tuescher@swib.state.wi.us for information about how to register.***

STATE OF WISCONSIN INVESTMENT BOARD
Board Meeting – Open Session

Wednesday, June 10, 2020

Via Teleconference

Board Members Present: Dave Stein, Chair
Barb Nick, Vice–Chair
Bob Conlin, Secretary
Esther Ancel, Trustee
Mark Doll, Trustee
Kristi Palmer, Trustee
Dave Schalow, Trustee

Staff and Others Present: Eric Barber, Senior Legal Counsel
Brandon Brickner, Internal Audit Director
Sara Chandler, Chief Legal Counsel
Edwin Denson, Managing Director–Asset and Risk Allocation
Anne-Marie Fink, Managing Director–Private Markets and
Funds Alpha
Vicki Hearing, Communications Manager
Brian Hellmer, Managing Director–Global Public Markets Strategies
Mike Jacobs, Agency Business Director
Rochelle Klaskin, Deputy Executive Director/Chief
Administrative Officer
Janet Klosterman, Legal Assistant
Dawn Tuescher, Executive Administrative Assistant
David Villa, Executive Director/Chief Investment Officer
Zach Cziryak, Financial Investment News
Mark Dietrich, Neuberger Berman
Dan Kleinmaier, Legislative Audit Bureau
Samuel Karasek, HFM Global
Sam Rebenstorf, Legislative Audit Bureau
Sara Sanders, Legislative Audit Bureau
Bob Schaefer, State Engineering Association/Wisconsin
Coalition of Annuitants
(Some of those listed may have attended only portions of the meeting.)

Trustee Stein, Chair of the Board, declared a quorum was present and called the Board of Trustees meeting to order at 9:01 a.m. The meeting was held telephonically.

1. Committee Reports – Open Session Items

A. Strategic Planning and Corporate Governance Committee

Trustee Nick, Chair of the Strategic Planning and Corporate Governance Committee, reported that in open session the Committee heard a report from SWIB’s Hedge Fund Consultant, Aksia

LLC, and Real Estate Consultant, StepStone Real Estate, and was updated by staff on (1) SWIB Foundations and Project Centum, (2) recruiting activities, and (3) enterprise risk management activities.

Trustee Nick further reported that during closed session the Committee was updated by staff on the new facility project and discussed board consultant performance and contract provisions, and during executive closed session the Committee met with David Villa, Executive Director/Chief Investment Officer, to discuss his 2020 performance goals.

B. Compensation Committee

Trustee Stein, Chair of the Compensation Committee, reported that the Committee met only in open session and continued their discussion about the 2020 Comprehensive RPM Methodology Review. The Committee discussed the analysis and determined that they were comfortable delaying the full comprehensive RPM review to 2021 to better align with compensation discussions, but that staff would work with Verus, the Board's RPM consultant, to do further analysis on the four RPMs presented in the meeting materials.

C. Audit and Finance Committee

Trustee Conlin, Chair of the Audit and Finance Committee, reported that the Committee met only in open session. After approving the previous meeting's minutes, the Committee heard from Brandon Brickner, Internal Audit Director, regarding (1) the role and function of Internal Audit; (2) the open audit issues report; (3) the draft Recruiting audit; (4) the annual affirmations and disclosures; (5) the status of the 2020 audit plan and 2020 Internal Audit goals; and (6) the five-year audit summary. The Committee then reviewed the proposed Total Cost of Management Plan for FY 2021, including staff's proposed approach to recruiting and existing FTE vacancies, and the quarterly cost of management information for Q1 2020. Trustee Conlin noted that two motions relating to the 2021 Total Cost of Management Plan are included on the consent agenda.

2. Consent Agenda – Open Session Items

Sara Chandler, Chief Legal Counsel, distributed a proposed open session consent agenda. Trustee Stein asked whether there were any motions listed on the consent agenda that should be removed for further discussion and individual action. Hearing none, he entertained the following motion.

Motion: A motion was made by Trustee Stein and seconded by Trustee Conlin to approve the open session consent agenda, as presented. The motion passed unanimously.

- A. Move to approve the Open Session Minutes of March 18, 2020 and April 22, 2020, as presented.
- B. Move to approve the Closed Session Minutes of March 18, 2020 and April 22, 2020, as presented.
- C. Move to approve the Executive Closed Session Minutes of March 18, 2020, as presented.

D. Move to approve the fiscal year 2021 Total Cost of Management Plan, as recommended by the Audit and Finance Committee, and reflected in the Committee materials.

E. In recognition that (a) there are currently 29 FTE vacancies; (b) SWIB's ability to increase its internal management is dependent on growing its staff; (c) management expects to increase staff by 19 staff members in the next 12-18 months in addition to the current FTE vacancies; and (d) staff has not requested position authority or budget increases for additional FTEs in connection with the approval of the FY 2021 Total Cost of Management Plan, move to authorize staff to:

- (1) advertise for open positions in excess of the current number of approved FTEs, so long as the total number of employees hired does not exceed the total number of approved FTEs;
- (2) allocate existing approved FTEs to positions as offers are ready to be made, including for positions previously approved and for those presented in the June 2020 Committee materials, so long as such offers do not in the aggregate exceed the allocated budget amounts for total compensation; and
- (3) return to the Board in subsequent meetings for approval of additional FTEs and corresponding adjustments to the Total Cost of Management Plan once the 29 current FTE vacancies are materially reduced;

as recommended by the Audit and Finance Committee.

3. Trustee Contact and Referral Policy

Sara Chandler, Chief Legal Counsel, reviewed the procedures for handling a referral under the *Board's Contact and Referral Policy*, included on pages 17-18 in the meeting materials. Ms. Chandler reminded the Trustees that the Board created the policy for itself and that contacts/referrals should be referred to the Executive Director/Chief Investment Officer, who logs the contact/referral and distributes it to the appropriate internal SWIB staff. The log is then provided to the Trustees and details who received the referral, when, how it was handled, and its disposition. This maintains the impartiality of SWIB consistent with its fiduciary duties. Ms. Chandler then answered questions.

4. Quarterly Investment Update, Q1 2020

Mr. Villa initiated a discussion of the *Quarterly Investment Update*, included on pages 20–51 in the meeting materials, with a brief commentary about the forecast for the five–year Core Trust Fund (CTF) return based on preliminary returns as of April 30, 2020. Mr. Villa noted that the market had rebounded significantly since March and that the 5–year annualized return could continue to change based on market performance through the end of the year.

Edwin Denson, Managing Director–Asset and Risk Allocation, started by discussing the near-term investment opportunities and challenges created by the COVID–19 pandemic. He went on to detail the impact of COVID-19 on assumptions for earnings growth and cash rates in different scenarios, considering the time to vaccine roll out and continued political appetite for stimulus. He explained that the impact of near-term fundamentals on asset class fair values

should be fairly muted as long as government actions are prudent. He also examined historical peak default rates in distressed periods, noting that outcomes narrow substantially over a five- year investment horizon. In conclusion, Mr. Denson explained that the Federal Reserve’s liquidity moves have made it more difficult for investors like SWIB to take advantage of market dislocations.

Mr. Denson was then joined by Brian Hellmer, Managing Director–Global Public Markets Strategies, and Anne-Marie Fink, Managing Director–Private Markets & Funds Alpha, and each commented briefly on investment challenges and opportunities for staff in their respective asset classes, and answered questions.

5. Motion to Convene in Closed Session

Motion: A motion to convene in closed session pursuant to Sections 19.36(5) and 19.85(1)(e) of the Wisconsin Statutes to consider confidential and proprietary strategies for the investment of public funds relating to specific proprietary investment strategies of internal WRS portfolios and approve prior closed session minutes that discuss the same; and pursuant to Section 19.85(1)(c) to review performance evaluation data for SWIB’s board of trustees was made by Trustee Stein and seconded by Trustee Palmer.

The Chair called for a roll call vote.

Ancel–Aye	Conlin–Aye	Doll–Aye	Nick–Aye
Palmer–Aye	Schalow–Aye	Stein–Aye	

There being seven ayes and no nays, the Chair declared the motion passed. The Board convened in closed session at 10:15 a.m. and reconvened in open session at 12:00 p.m.

6. Announcement of Board Actions Relating to Items Taken up in Closed Session

Trustee Stein reported that during its regular closed session the investment heads reviewed proprietary investment strategy information, and Mr. Villa reviewed recent Investment Committee closed session business, including the active risk budget and P/L by major asset class. During executive closed session, the Board conducted their annual self-evaluation exercise with Aon Hewitt.

7. Investment Performance and Market Updates

Mr. Villa noted that the *Investment Performance Report Q1 2020* and the *Midwest Peer Group Comparison* were included on pages 94-113 in the meeting materials for the Committee’s information. He offered to answer questions in lieu of a formal presentation. Ms. Chandler noted page 113, comparing SWIB to its Midwest Peer Group, noting that its funding ratio and 5-year effective rate both topped the peer group.

8. Investment Committee Open Session Business

A. Approved Minutes

Mr. Villa stated that the approved open session minutes of the February 27, 2020,

March 24, 2020, and April 28, 2020 Investment Committee meetings were included on pages 115-127 in the meeting materials for the Board's review and noted that he had previously reviewed the agendas for these meetings with the Board.

B. Agendas for Upcoming Meetings

Mr. Villa referenced the final open session agenda for the May 26, 2020 Investment Committee meeting and the draft open session agendas for the June 23, 2020 and July 28, 2020 meetings, which were included on pages 128-133 in the meeting materials.

9. Trustee Fiduciary Review

Ms. Chandler noted that Aon Hewitt Consulting provides an annual fiduciary review with the Trustees. She explained that this year the review is provided in a self-review and examination format, which is included on pages 135-176 in the meeting materials. She indicated that if the Trustees had any questions or concerns, they should feel free to contact Ms. Chandler, Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer, or Aon Hewitt, the Board's governance consultant.

10. Reports Filed Without Comment

In the absence of questions, the following reports, included on pages 178-195 in the meeting materials, were filed without comment: **(a)** New Contracts, Q1 2020, **(b)** Quarterly Charges to Funds Report, Q1 2020; and **(c)** Private Markets and Funds Alpha Commitments, Q1 2020.

11. Future Items for Discussion

Ms. Chandler noted that the Annual Board Agenda Plan was included on pages 197-198 in the meeting materials for the Board's information.

12. Motion to Adjourn

Motion: A motion to adjourn was made by Trustee Stein and seconded by Trustee Ancel. The motion passed unanimously, and the meeting was adjourned at 12:06 p.m.

Date of Board Approval: _____

Signed: _____
Robert J. Conlin, Board Secretary

Regular Meeting of the Board of Trustees

Wednesday, September 9, 2020

STATE OF WISCONSIN INVESTMENT BOARD

CONSENT AGENDA – OPEN SESSION ITEMS

Proposed Motions:

1. Move to approve the Open Session Minutes of June 10, 2020, as presented.
2. Move to approve the Closed Session Minutes of June 10, 2020, as presented.
3. Move to approve the Executive Closed Session Minutes of June 10, 2020, as presented.

[TBD after Committee meetings]

SWIB Trustee Education Policy

Adopted: March 9, 2005

Revised: June 14, 2006, May 12, 2010, August 17, 2011, September 14, 2011,
August 14, 2013, September 10, 2014, February 3, 2016, August 9, 2016

Purpose

As fiduciaries, the Trustees of SWIB are to provide professional investment management of the funds under its management and discharge their duties with the care, skill, prudence, and diligence under current circumstances then prevailing that a prudent person acting in a similar capacity, with the same resources, and familiar with like matters exercises in the conduct of an enterprise of a like character with like aims. This standard of care, known as the “prudent expert rule,” recognizes the ever-changing nature of investment opportunities and risk.

Education of Trustees is, therefore, essential to ensure that they meet their fiduciary responsibilities. It is the Board’s intention that all Trustees have a full understanding of the issues facing SWIB so that they may properly exercise oversight. To that end, this policy establishes the parameters for continuing education for Trustees, including mandatory fiduciary education and ethics training. This policy also outlines the availability of investment industry periodicals for Trustees to use in their ongoing educational pursuits.

Educational Conferences

Trustees may attend relevant educational conferences sponsored by an approved organization identified in Attachment A, subject to the Trustee Travel Procedures. These conferences represent the most useful and valuable opportunities determined by the Board to keep abreast of issues facing SWIB. The Executive Secretary will regularly update the approved list when new educational opportunities offered by the approved sponsors arise. The list will also be modified to reflect the evaluations from Trustees who have attended specific conferences to ensure that the conferences remain worthy of the Board’s time and expense. Trustees may attend educational conferences that are not sponsored by an organization on the approved list upon notification of the Executive Director who will confer with the Board Chair or Vice Chair. Conferences involving international travel require advance approval by the Chair or Vice Chair. Conferences that do not entail a cost to SWIB or the Trustee are subject to advance notification to the Executive Director and SWIB reporting guidelines. Approval for attendance at more than two conferences annually should be sought from the Board of Trustees.

Evaluation of Educational Conferences

Trustees must complete an education evaluation form upon completion of any educational conference and such form must be turned in with any request for reimbursement of expenses associated with the conference.

In-House Education Sessions

Based on the personal education needs of the Trustees, the Executive Director will arrange for staff or outside service providers to conduct educational sessions throughout the year at regularly scheduled Board meetings, the annual workshop or the Spring Investment Forum. Upon the request of the Board, the costs of these sessions will be discussed with the Board before sessions are scheduled or after the sessions occur. Immediately following the sessions the Board will be asked to evaluate their relevance and usefulness.

Fiduciary Education Session

Each year the Chief Legal Counsel will provide, or will arrange for, a fiduciary education session that will update the Trustees on issues affecting their service on the Board. Trustees are to attend or make special arrangements to receive the information.

State Ethics Training

Every two years the Chief Legal Counsel will arrange for ethics training to be conducted by experts from the Department of Justice or the Government Accountability Board. State ethics laws and examples of ethical breaches will be discussed. Trustees are required to attend the training or make special arrangements to receive the information.

Financial Industry Periodicals

Trustees are encouraged to subscribe to approved pension and investment-related periodicals from those listed in Attachment B. The expense for the periodicals will be paid by SWIB. The Executive Secretary will annually review and update this list with input from the Trustees.

Attachment A

Educational Seminars

Sponsor	Example of Programs Offered	Description
BCA Research www.bcaresearch.com 514-499-9550	<ul style="list-style-type: none"> • Annual Conference on Global Investment Topics 	BCA Research is a world leading provider of independent investment research. Since 1949, the firm has provided its clients with leading-edge analysis and forecasts of the major financial markets, with clear and focused investment strategy recommendations backed by countless proprietary models and leading indicators. Asset class coverage includes equities, fixed income, currencies, real estate, and commodities. The firm provides its services to financial professionals in more than 60 countries through a wide range of products, services, and meetings. BCA maintains a head office in Montreal, with local offices in New York, Los Angeles, London, Hong Kong, Sydney, and Buenos Aires.
CFA Institute www.cfainstitute.org 800-247-8132	<ul style="list-style-type: none"> • Annual Conference • Topical Seminars 	CFA Institute partners with leading business schools to offer executive education courses developed exclusively for experienced investment professionals.
Council of Institutional Investors (CII) www.cii.org 202-822-0800	<ul style="list-style-type: none"> • Semi-Annual Meetings 	The Council of Institutional Investors is a nonprofit association of pension funds, other employee benefit funds, endowments and foundations with combined assets that exceed \$3 trillion. CII educates its members, policymakers and the public about the importance of corporate governance, shareowner rights and related investment issues, and advocates on members' behalf.
Hewitt EnnisKnupp www.hewittennisknupp.com 312-381-1200	<ul style="list-style-type: none"> • Client Conferences 	Hewitt EnnisKnupp is a premier global investment consulting firm with best-in-class capabilities in every area of interest to institutional investors.

Sponsor	Example of Programs Offered	Description
Institute for Fiduciary Education (IFE) www.ifecorp.com 916-594-9509	<ul style="list-style-type: none"> • Topical Seminars 	IFE conducts educational seminars, providing an excellent forum for executives of the world's largest corporation, public and Taft Hartley pension funds, foundations and endowments.
Institutional Investor Institute www.iiconferences.com 212-224-3645	<ul style="list-style-type: none"> • Topical Conferences 	Institutional Investor Forums delivers highly interactive forums for senior financial executives and investors to hear from global thought leaders and selected solutions providers. These Forums are designed to assess and offer potential solutions for the issues of most concern to investment decision-makers at the largest pension funds, endowments, foundations, family offices, and registered investment advisory firms as well as senior corporate executives of the largest global firms. The Institutional Investor Forums are held regularly in North America, Europe, Asia, the Middle East, Africa, and Central and South America.
International Foundation of Employee Benefit Plans (IFEFP) www.ifebp.org 888-334-3327	<ul style="list-style-type: none"> • Topical Conferences 	The International Foundation of Employee Benefit Plans is a nonprofit organization, dedicated to being a leading objective and independent global source of employee benefits, compensation and financial literacy education and information. The Foundation delivers education, information and research, and networking opportunities to thousands of benefits and compensation professionals.
International Foundation In Partnership with Wharton University of Pennsylvania www.ifebp.org/wharton 888-334-3327	<ul style="list-style-type: none"> • Investment Management • Overall Pension Policy • Investment Evaluation 	The International Foundation's longstanding relationship with the Wharton School brings prestige and excellence in education to you. Spanning over 30 years, the alliance has resulted in the distinguished Certified Employee Benefit Specialist (CEBS) designation as well as high-quality investment courses.

Sponsor	Example of Programs Offered	Description
<p>Milken Institute www.milkeninstitute.org 310-570-4600</p>	<ul style="list-style-type: none"> • Global Conference • Investment Topics on Human, Social and Financial Capital 	<p>The Milken Institute is a nonprofit, nonpartisan think tank that believes in the power of capital markets to solve urgent social and economic challenges and improve lives. They convene a network of influential decision-makers from the private and public sectors to help transform ideas into action. The Milken Institute partners with global leaders in finance, business, government, science and philanthropy -- people with the vision and resources to make a significant impact.</p>
<p>National Association of State Retirement Administrators (NASRA) www.nasra.org 202-624-1418</p>	<ul style="list-style-type: none"> • Annual Conference 	<p>NASRA is a non-profit association whose members are the directors of the nation's state, territorial, and largest statewide public retirement systems. NASRA members oversee retirement systems that hold more than two-thirds of the \$3.9 trillion held in trust for 15 million working and 8 million retired employees of state and local government. NASRA's mission is to serve its members in managing sustainable public employee retirement systems through education, research and collaboration.</p>
<p>National Council on Teacher Retirement (NCTR) www.nctr.org 916-897-9139</p>	<ul style="list-style-type: none"> • Trustee's Workshop • Annual Conference • Legal, governance, policy, and oversight responsibilities • Pension related topics 	<p>The National Council on Teacher Retirement is constituted as an independent association dedicated to safeguarding the integrity of public retirement systems in the United States and its territories to which teachers belong and to promoting the rights and benefits of present and future members of the systems.</p>
<p>National Institute on Retirement Security (NIRS) www.nirsonline.org 202-457-8190</p>	<ul style="list-style-type: none"> • Annual Policy Conference 	<p>The National Institute on Retirement Security is a non-profit research and education organization established to contribute to informed policymaking by fostering a deep understanding of the value of retirement security to employees, employers, and the economy as a whole.</p>

Sponsor	Example of Programs Offered	Description
NEPC, LLC www.nepc.com 617-374-1300	<ul style="list-style-type: none"> Client Conference 	NEPC is one of the largest independent consulting firms focused squarely on generating innovative ideas, creating customized solutions, and offering unbiased advice to its clients.
Pacific Pension Institute (PPI) www.pacificpension.org 415-576-1187	<ul style="list-style-type: none"> Semi-Annual Roundtables Investment Issues Risk Management Corporate Governance International Pension Reform 	Pacific Pension Institute, a member-driven, nonprofit educational organization, assists pension funds, corporations, financial institutions and endowments worldwide with carrying out their fiduciary responsibilities, especially with respect to Asia and the Pacific region.
The Pension Bridge www.pensionbridge.com 561-455-2729	<ul style="list-style-type: none"> Annual Conference 	The Pension Bridge is a company offering educational conferences to the institutional investment community. Its objective is to provide the highest level of education with an impressive and influential speaker faculty in a setting that is conducive to networking. A mix of public and corporate funds, foundations, endowments, Taft-Hartleys, consultants and investment managers come together for these conferences.
Pensions & Investments www.pionline.com 877-812-1586	<ul style="list-style-type: none"> Various Conferences 	<i>Pensions & Investments</i> delivers news, research and analysis to the executives who manage the flow of funds in the institutional investment market. The international publication is written for pension, portfolio and investment management executives and includes business and financial news, legislative reports, global investments, product development, technology, investment performance, executive changes, corporate governance and other topics crucial to the people who drive the world of professional money. <i>Pensions & Investments</i> offers conferences that complement its international publication.

Sponsor	Example of Programs Offered	Description
Rotman Int'l Centre for Pension Management (ICPM) www.rotman.utoronto.ca/icpm 416-925-4153	<ul style="list-style-type: none"> • Board Effectiveness Program 	Rotman ICPM and Rotman Executive Programs have designed a Board Effectiveness Program to support the Boards of pension and other long-horizon investment institutions in clarifying their role in addressing the following key strategic issues: <ul style="list-style-type: none"> • Organization Mission • Fiduciary Duties • Board Dynamics • Roles of Boards vs. Management • Investment Beliefs • Risk Management • Organization Design • HR Management/Compensation Participants are provided with an integrated framework to critically examine how these issues are linked together.
Stanford Law School Executive Education www.law.stanford.edu 650-723-5905	<ul style="list-style-type: none"> • Fiduciary College • Fiduciary Duties and Liabilities • Board Governance • Staff Accountability 	Stanford Law School's Fiduciary College provides specialized training for experienced fiduciaries. Targeted to fund trustees and key staff, their programs provide important insights pertaining to challenges fiduciaries can expect to face and strategies to fulfill their duties to beneficiaries. Further, fiduciaries will learn best practices for discharging their responsibilities prudently and effectively under the guidance of experts from academia, government, and seasoned practitioners from the institutional investor community.
WI School of Business Executive Education http://exed.wisc.edu/Conferences-Summits/Directors-Summit 800-292-8964	<ul style="list-style-type: none"> • Director's Summit • Corporate Governance 	Summits and conferences are annual events for various types of executives. Flagship offerings, summits and conferences provide an opportunity to sample Executive Education in a meaningful, highly-structured, two- to three-day format.

Sponsor	Example of Programs Offered	Description
World Pension Forum www.worldpensionforum.com 415-925-8200	<ul style="list-style-type: none"> • Topical Seminars • Investment Mgmt./ Policy and Practice 	World Pension Forum provides topical, timely and stimulating educational opportunities to experienced fiduciaries of public, corporate, Taft-Hartley pension trusts and endowment funds. Their goal is to supply the highest quality, graduate level fiduciary education geared specifically toward the key senior members of these funds including chief executive officers, chief investment officers and the chair of the board of trustees and/or investment committee.

Attachment B

Approved Financial Industry Periodicals and Websites

<p>Barron's 1211 Avenue of the Americas New York, NY 10036</p>	<p>www.barrons.com Tel: 800-544-0422</p>
<p>Bloomberg Businessweek P.O. Box 53235 Boulder, CO 80322-3235</p>	<p>www.businessweek.com Tel: 800-635-1200 Fax: 303-604-7644</p>
<p>Council of Institutional Investors Alert Newsletter 1730 Rhode Island Ave., N.W. Suite 512 Washington, D.C. 20036</p>	<p>www.cii.org Tel: 202-822-0800 Fax: 202-822-0801</p>
<p>Economist The Economist Subscription Services P.O. Box 58524 Boulder CO 80322-8524</p>	<p>www.economist.com Tel: 303-945-1917; 800-456-6086 Fax: 303-604-7455</p>
<p>Financial Times 1330 Avenue of the Americas New York, NY 10019</p>	<p>www.ft.com Tel: 800-628-8088 Fax: 845-566-8220</p>
<p>Harvard Business Review Harvard Business Publishing 60 Harvard Way Boston, MA 02163</p>	<p>www.hbr.org Tel: 800-988-0886</p>
<p>Institutional Investor 225 Park Avenue South New York, NY 10003</p>	<p>www.institutionalinvestor.com Tel: 212-224-3300 Fax: 212-224-3171</p>
<p>Investor's Business Daily Subscriber Services 12655 Beatrice St Los Angeles, CA 90066-7300</p>	<p>www.investors.com Tel: 800-831-2525</p>
<p>Milwaukee Journal Sentinel P.O. Box 661 Milwaukee, WI 53201</p>	<p>www.jsonline.com Tel: 800-759-6397</p>
<p>New York Times Subscription and Customer Care Services 229 West 43rd Street New York, NY 10036</p>	<p>www.nytimes.com Tel: 212-556-1234</p>

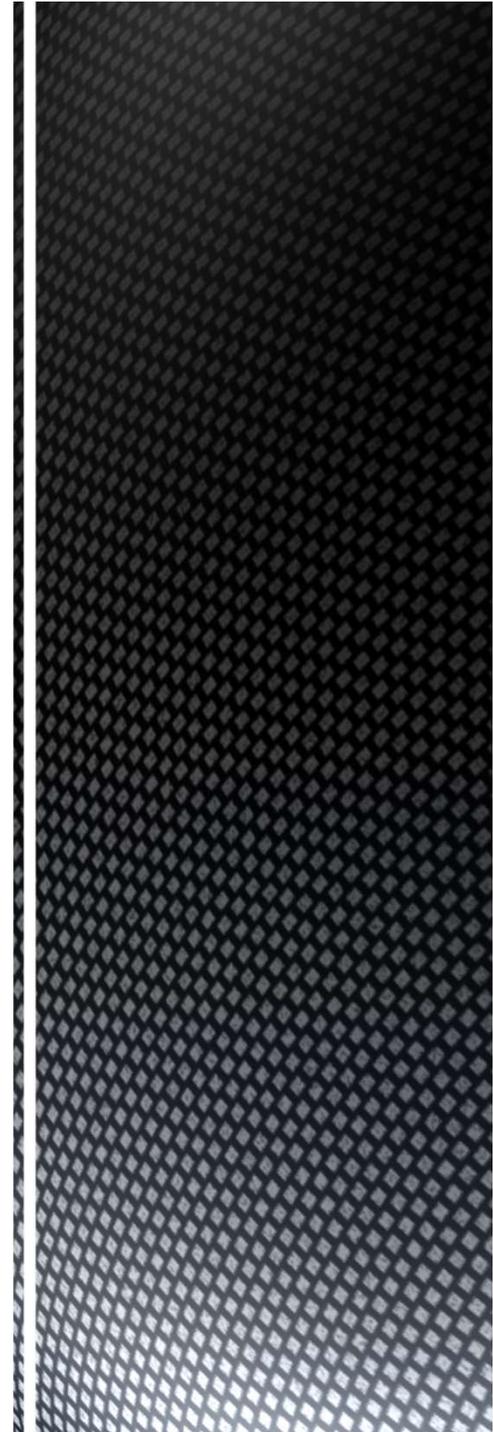
<p>Pensions & Investments Subscriber Services 1155 Gratiot Avenue Detroit, MI 48207-2912</p>	<p>www.pionline.com Tel: 888-446-1422 Fax: 313-446-6777</p>
<p>PLANSPONSOR 125 Greenwich Avenue Greenwich, CT 06830</p>	<p>www.plansponsor.com Tel: 203-629-5014 Fax: 203-629-5024; 203-629-5095</p>
<p>TIME Time & Life Bldg. Rockefeller Center New York, NY 10020</p>	<p>www.time.com Tel: 800-843-8463</p>
<p>Wall Street Journal 200 Liberty Street New York, NY 10281</p>	<p>www.wsj.com Tel: 800-568-7625 Fax: 212-416-2255</p>
<p>Wisconsin State Journal 1901 Fish Hatchery Road Madison, WI 53713</p>	<p>www.wisconsinstatejournal.com Tel: 800-362-8333</p>

◆ \\swib\root\ShrExecutiveTIS\TrusteeManual_Combined\CurrentOriginals\6a. TrusteeEducationPolicyComplete_080916.docx ◆ 8/14/19 3:50 PM (Print Date) ~ 8/14/2019 3:50 PM (Saved Date) JRJ



Wisconsin Public Records Law Basics for State Employees

Prepared by Wisconsin Department of Administration



Public Records (Sunshine) Laws

“Open records and open meetings laws ... are first and foremost a powerful tool for everyday people to keep track of what their government is up to The right of the people to monitor the people's business is one of the core principles of democracy.”

-Wisconsin Supreme Court

Every record is presumed available to the public.

Denial is limited to exceptional cases.



Your Public Records Responsibilities

1. Recognize when you have a public record.
2. Understand what is **not** a public record.
3. Understand how to properly retain public records.
4. Recognize a public records request and handle the request appropriately.
5. Know where to go for help.



Public Records Responsibility 1

Recognize when you have a public record.

Why is this important?

- Public records are property of the state .
- The law requires us to keep public records and make them available to the public.



What Is a Public Record?

Anything paper or electronic with information about government business, with a few exceptions.

Public records can be paper or electronic.

Examples of electronic public records:

- Emails
- Videos
- Audio files
- Database content
- Instant messages and texts



Record Location

The location of the record does not matter!

Emails, text, instant messages, chats, or files about government business on your personal device are public records. You must keep them and turn them over upon request.

Personal device includes a computer, mobile phone, tablet, iPad, smartwatch or other connected device such as a cloud back-up, flash-drive or external hard drive.



Public Records Responsibility 2

Understand what is not a public record.



What Is Not a Public Record?

The definition of *public record* does **not** include:

- Duplicate copies of materials, used for convenience or reference. The original must be somewhere else *in your agency*. If not, the duplicate is a record and you must keep it.
- Materials that are purely personal property and have no relation to state business.
- Reference materials.
 - Phone books
 - Dictionaries
 - Vendor catalogs
- Notices or invitations that were not solicited, such as spam, junk mail, and most listserv messages.



What Is Not a Public Record?, Continued

The definition of *public record* does **not** include:

- Notes. Personal notes are not records if you use them only to refresh your memory and do not share them with others.
- Drafts or working papers without substantive comments, rough notes, or calculations. You must retain *some* drafts. Check with your legal counsel if you are unsure.



Public Records Responsibility 3

When you have a public record, understand how to properly retain it.

- If it **is** a public record, follow your agency's record retention schedule.
- Check with your agency's records officer(s) or records coordinator(s) to learn:
 - How long to keep records.
 - Where to send records when time expires.
- Before you get rid of a record, make sure there are no pending records requests, audits, or lawsuits that require you to hold on to it.



Key Points

Key points to remember:

- Don't delete emails or any other records unless you know that you don't need to keep them.
- Organize hard copy documents so you know where to find them if a member of the public requests them.
- Know how long you are required to keep your records and what to do with them when that time is up.



Key Points, Continued

- Keep all your emails in a place where someone can search them when requests come in.
- Manage your own emails. Don't rely on disaster recovery backup systems. If you run out of storage in your mailbox, ask your agency's help desk for assistance with .pst files or similar solutions.
- Text messages on your personal cell phone are public records if they pertain to government business.
- Emails in your personal email are public records if they pertain to government business.



Public Records Responsibility 4

Recognize a public records request and handle the request appropriately.

A public records request:

- Is any request for government records.
- Does not require magic words or precise format.
- Can be submitted by email, by letter, by phone, in person, or by any other method.
- May be written or verbal.
- Does not need to identify the requestor or the purpose of the request.



Public Record Request or Not?

Yes: “All emails to or from Jane Smith in August 2016 regarding the ABC construction project”

No: “Why did the state initiate the ABC construction project and when is the project expected to be complete?”



Records Custodian Responsibilities

1. Locate all records in the agency.
2. Review and remove information that is confidential under the law.
3. Provide the requester with regular status updates.
4. Respond as soon as practicable and without delay!



Public Records Responsibility 5

Know where to go for help.

Resources:

- Records custodian
- Records officer and records coordinators
- Agency legal counsel
- Agency public records notice
- Agency policies or manuals
- [The Wisconsin Department of Justice's Wisconsin Public Records Law Compliance Guide](#)



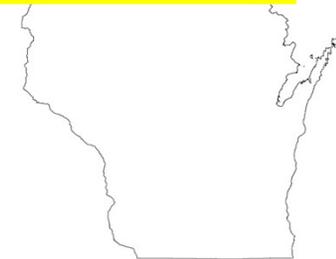
Assessment Introduction



Question 1: Multiple Answer

Which of the following meet the definition of a public record?

- a. Personal notes that you take in a meeting and do not share with anyone else
- b. Junk mail brochure inviting you to a seminar
- c. Email from your supervisor asking a question regarding a particular project you are working on together
- d. The dictionary you keep on your desk



Question 2: Multiple Choice

If you have a public record, how long do you need to keep it?

- a. Until you run out of room in your office
- b. As long as required by the applicable retention schedule
- c. Forever
- d. Six years



Question 3: Multiple Choice

How soon does your agency have to respond to a public records request?

- a. Within five days
- b. Immediately
- c. Once a staff member can get to it after completing all of her or his other responsibilities
- d. As soon as practicable and without delay



Question 4: Yes or No

Must a person who wishes to submit a public records request put the request in writing?

- a. Yes
- b. **No**



Question 5: True or False

Text messages and emails on your personal devices that discuss government business are public records.

- a. True
- b. False



Investment Performance Report

As of
June 30, 2020

Executive Summary

June 30, 2020

- The Core Trust Fund returned 11.52% gross of fees in Q2, resulting in an excess return of 104 bps in Q2. Year to date, the Core Trust Fund has returned -1.19% gross of fees, resulting in an excess return of -12 bps.
- The Core Trust Fund five year gross of fee return of +7.06% outperforms the Policy Benchmark by +30 bps on an annualized basis.
- The Core Trust Fund return outperforms the 60/40 Reference Portfolio Return by 57% (cumulative) over a 20 year time period.

Economic and Market Indicators

June 30, 2020

Economic Indicators	YTD	1 Year	5 Year	10 Year
GDP (current dollars)	-10.75	-9.01	1.14	2.59
GDP Deflator	-0.13	0.59	1.50	1.64
CPI	0.32	0.65	1.56	1.69
National Wage Rate Growth	7.11	7.97	3.62	3.01

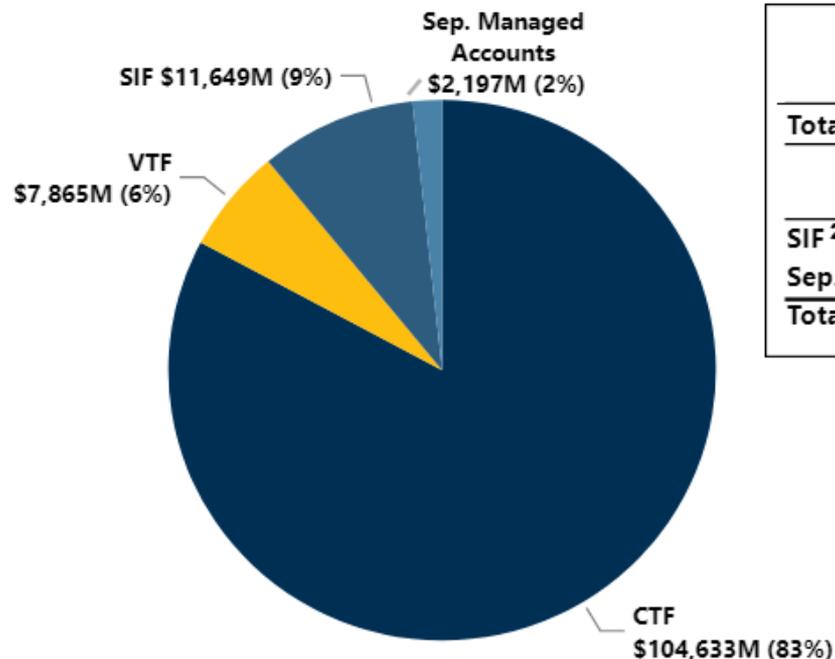
Market Indicators	YTD	1 Year	5 Year	10 Year
US Equity	-3.48	6.53	10.03	13.72
Global Equity	-5.99	2.64	7.03	9.74
International Developed Equity	-11.49	-5.42	2.01	5.44
US Government Credit	7.21	10.02	4.74	4.13
Global Sovereign Debt	4.08	4.60	3.70	2.37
Real Estate	2.50	4.88	8.46	11.19

Sources: US Equity, Russell 3000; Global Equity, MSCI ACWI Gross; International Developed Equity, MSCI World ex US Equities; US Government Credit, Barclays Capital Govt/Credit; Global Sovereign Debt, Citigroup World Govt Bonds; Real Estate, ODCE

All returns are represented in percent.

Total Assets Under Management (AUM)

June 30, 2020 (in millions)



Fund	06/30/2019 AUM ¹	06/30/2020 AUM ¹	1 Year AUM Change
Total WRS	\$111,279M	\$112,498M	\$1,219M
CTF	\$103,281M	\$104,633M	\$1,352M
VTF	\$7,998M	\$7,865M	(\$133M)
SIF²	\$8,894M	\$11,649M	\$2,755M
Sep. Managed Funds	\$2,052M	\$2,197M	\$146M
Total AUM	\$122,225M	\$126,345M	\$4,120M

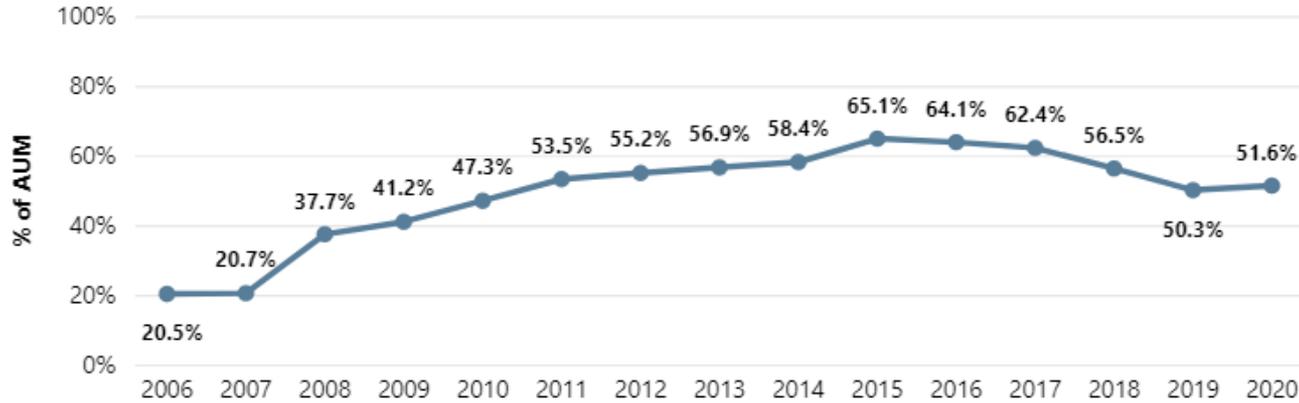
¹ AUM is the total market value of assets that an investment company or financial institution manages on behalf of investors.

² Excludes cash in SIF held on behalf of CTF, VTF, and Separately Managed Funds.

WRS Assets as of June 30, 2020

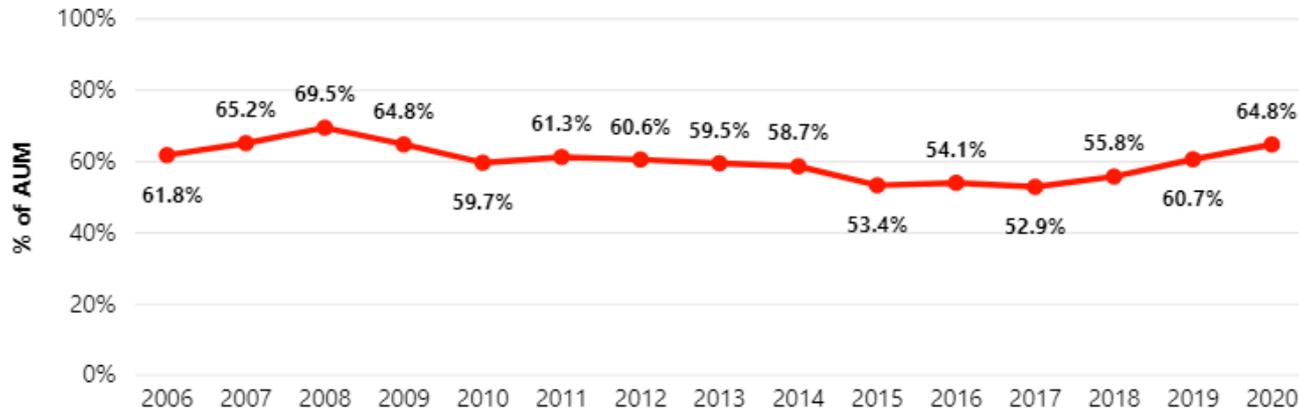
Breakdown of Internal vs. External and Active vs. Passive

Internally Managed Assets



More assets are being actively managed.

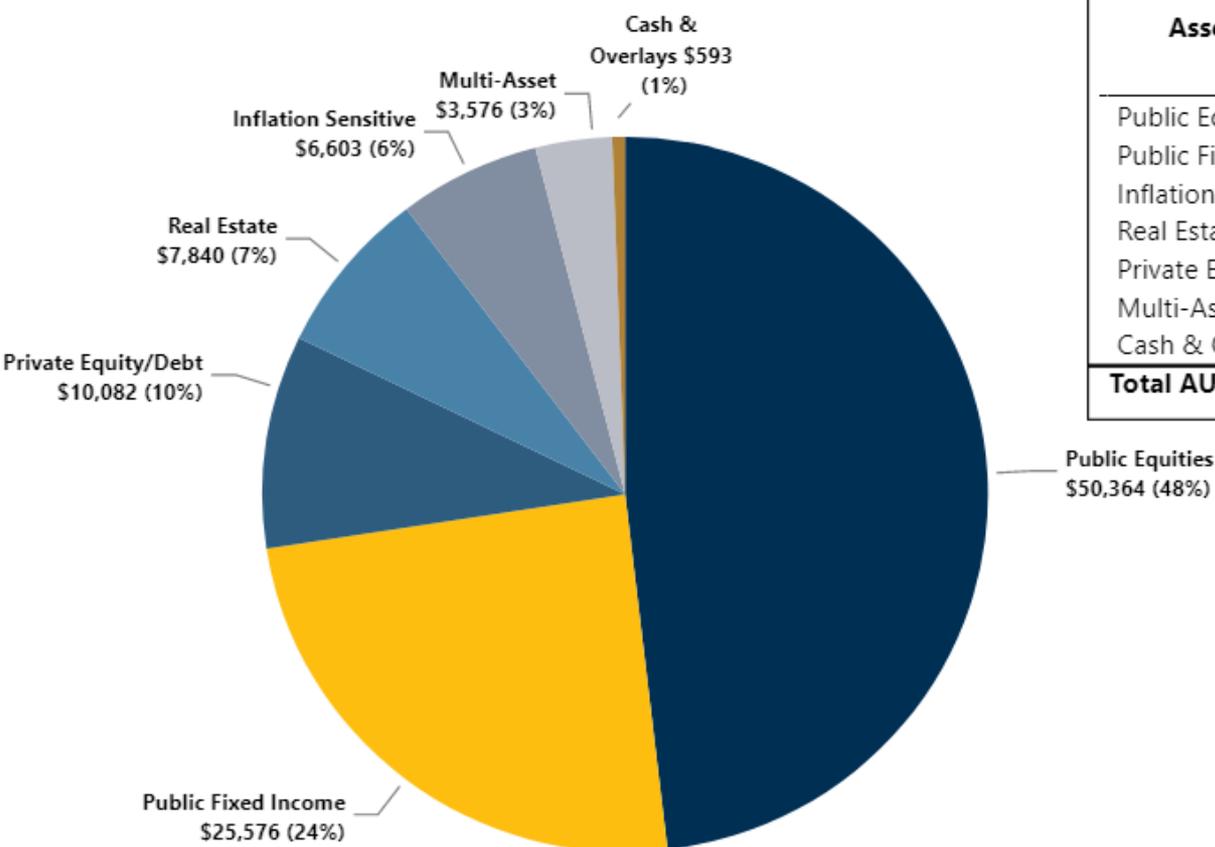
Actively Managed Assets



Core Trust Fund Assets Under Management (AUM)

Breakdown by Asset Class as of June 30, 2020 (in millions)

Asset Class	06/30/2019 AUM ¹	06/30/2020 AUM ¹	1 Yr. AUM Change
Public Equities	\$51,366	\$50,364	(\$1,002)
Public Fixed Income	\$25,577	\$25,576	(\$1)
Inflation Sensitive	\$6,559	\$6,603	\$43
Real Estate	\$7,393	\$7,840	\$447
Private Equity/Debt	\$9,291	\$10,082	\$791
Multi-Asset	\$2,685	\$3,576	\$891
Cash & Overlays	\$410	\$593	\$183
Total AUM	\$103,281	\$104,633	\$1,352



- Public Equities had earnings of \$888m and \$1,890m of outflows
- Public Fixed Income had earnings of \$2.4b offset by \$2.4b of outflows

¹ AUM is the total market value of assets that an investment company or financial institution manages on behalf of investors.

Core Trust Fund Allocation

All Values as of June 30, 2020

	Total Exposure (\$ Mil)	Total Exposure (%)	Adjusted Policy Target ⁴	Target Range
Public Equities^{1,5}	\$50,944	48.7%	48.9%	42.9% - 54.9%
Global Developed	\$43,316	41.4%	41.6%	
Emerging Market	\$3,113	3.0%	3.0%	
US Small Cap	\$3,123	3.0%	3.0%	
EAFE Small Cap	\$1,392	1.3%	1.3%	
Public Fixed Income^{1,5}	\$22,278	21.3%	25.0%	19.0% - 31.0%
Investment Grade ²	\$17,693	16.9%	21.3%	
High Yield	\$2,551	2.4%	1.9%	
Emerging Debt	\$2,034	1.9%	1.9%	
Emerging Debt	\$1,042	1.0%	0.9%	
Emerging Debt (Local)	\$992	0.9%	0.9%	
Inflation Sensitive^{1,5}	\$16,048	15.3%	15.5%	10.5% - 20.5%
Real Estate Equity^{1,5}	\$7,840	7.5%	7.5%	5.0% - 11.0%
Private Equity/Debt^{1,5}	\$10,082	9.6%	9.6%	6.0% - 12.0%
Multi-Asset^{1,5}	\$3,576	3.4%	3.4%	1.0% - 7.0%
Cash & Overlays³	\$785	0.8%	0.0%	
Total Fund	\$111,553	106.6%	110.0%	105.0% - 115.0%

¹ Public and private market values include cash.

² Contains government/credit investment grade bonds, MBS, excess treasuries, and long treasuries.

³ Cash is liquidity, global equity income, overlay related cash and amount of cash needed to fund synthetic beta related to Alpha Pool as physical investment inclusive of adjustment for interest.

⁴ Adjusted Policy Target is the fund policy target weights dynamically adjusted for actual weights and other asset allocation and rebalancing.

⁵ Asset class exposures shown may incorporate security-level exposures from exposure management activities.

Core Trust Fund & Asset Class Performance

As of June 30, 2020

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Core Trust Fund (Gross)	6/30/77	\$104,633	-1.19	5.31	7.06	8.76
Core Trust Fund Benchmark (Gross)			-1.07	5.14	6.76	8.35
			-0.12	0.17	0.30	0.41
Core Trust Fund (Net) ¹	6/30/77	\$104,561	-1.40	4.91	6.69	8.40
Core Trust Fund Benchmark (Net)			-1.18	4.91	6.56	8.11
			-0.21	0.00	0.14	0.29

ASSET CLASSES - GROSS OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Public Equities ²	12/31/92	\$50,944	-6.87	1.73	6.76	9.95
Public Equity Benchmark			-6.23	2.33	6.89	9.84
			-0.64	-0.60	-0.14	0.12
Global Developed Equity ²	02/28/17	\$43,316	-6.27	2.53		7.94
MSCI World Custom Net			-5.49	3.38		8.20
			-0.78	-0.85		-0.26
US Small Cap ²	02/28/17	\$3,123	-12.14	-4.17		3.87
Russell 2000			-12.98	-6.63		2.59
			0.84	2.46		1.28
Emerging Market Equity	02/28/17	\$3,113	-10.53	-4.08		3.38
MSCI Emerging Market Custom Net			-9.77	-3.34		4.42
			-0.77	-0.73		-1.05
Intl Small Cap	12/31/19	\$1,392	-11.03			
MSCI EAFE Small Cap Custom			-12.93			
			1.91			

¹ Net of External Manager Fees

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Asset Class Performance (Cont'd)

As of June 30, 2020

ASSET CLASSES - GROSS OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Public Fixed Income ²	12/31/92	\$26,674	5.98	9.19	4.99	4.44
Fixed Income Benchmark			6.09	8.97	4.80	4.12
			-0.11	0.22	0.20	0.32
Investment Grade Fixed Income ⁴	05/31/05	\$22,575	6.68	9.78	4.88	4.40
Barclays Capital Govt/Credit			7.54	10.13	4.72	4.12
			-0.85	-0.35	0.16	0.28
High Yield Fixed Income	01/31/01	\$2,064	-3.03	0.41	4.98	6.92
BofA Merrill Lynch Corporate High Yield Ba/B Index Since 1/1/18			-3.49	0.66	5.05	6.74
			0.46	-0.25	-0.06	0.18
Emerging Market Debt	05/31/05	\$1,042	-5.70	-2.59	5.18	6.35
JPM EMBI Global Diversified			-2.76	0.49	5.30	6.03
			-2.94	-3.08	-0.12	0.33
Emerging Market Debt - Local	07/31/17	\$992	-7.65	-3.85		-0.41
JPM GBI-EM Global Diversified			-6.89	-2.82		0.46
			-0.77	-1.03		-0.87
Inflation Sensitive ²	12/31/03	\$16,048	6.25	8.48	3.19	3.37
Inflation Sensitive Benchmark			6.01	8.28	3.07	3.03
			0.24	0.20	0.12	0.34

¹ Net of External Manager Fees

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

⁴ Contains Government/Credit Investment Grade Bonds, Excess Treasuries, and Long Treasuries

Asset Class Performance (Cont'd)

As of June 30, 2020

ASSET CLASSES - NET OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Real Estate ¹	03/31/04	\$7,825	-0.22	2.66	7.85	11.56
Real Estate Benchmark			2.03	3.93	7.43	9.95
			-2.26	-1.27	0.41	1.61
Private Equity/Debt ¹	12/31/02	\$10,037	-2.75	2.05	10.38	11.95
Private Equity Benchmark			-6.71	-2.91	7.21	9.79
			3.96	4.97	3.17	2.15
Multi-Asset ¹	03/31/03	\$3,576	-0.47	5.62	5.54	7.23
Multi-Asset Benchmark			-0.14	6.56	7.30	8.01
			-0.32	-0.94	-1.76	-0.78
Alpha Pool Overlay ¹	01/31/11	\$5,561	1.14	1.07	0.31	1.89
Alpha Pool Overlay Benchmark - No Leverage Benchmark Since 1/1/19			0.00	0.00	1.06	1.53
			1.14	1.07	-0.75	0.36

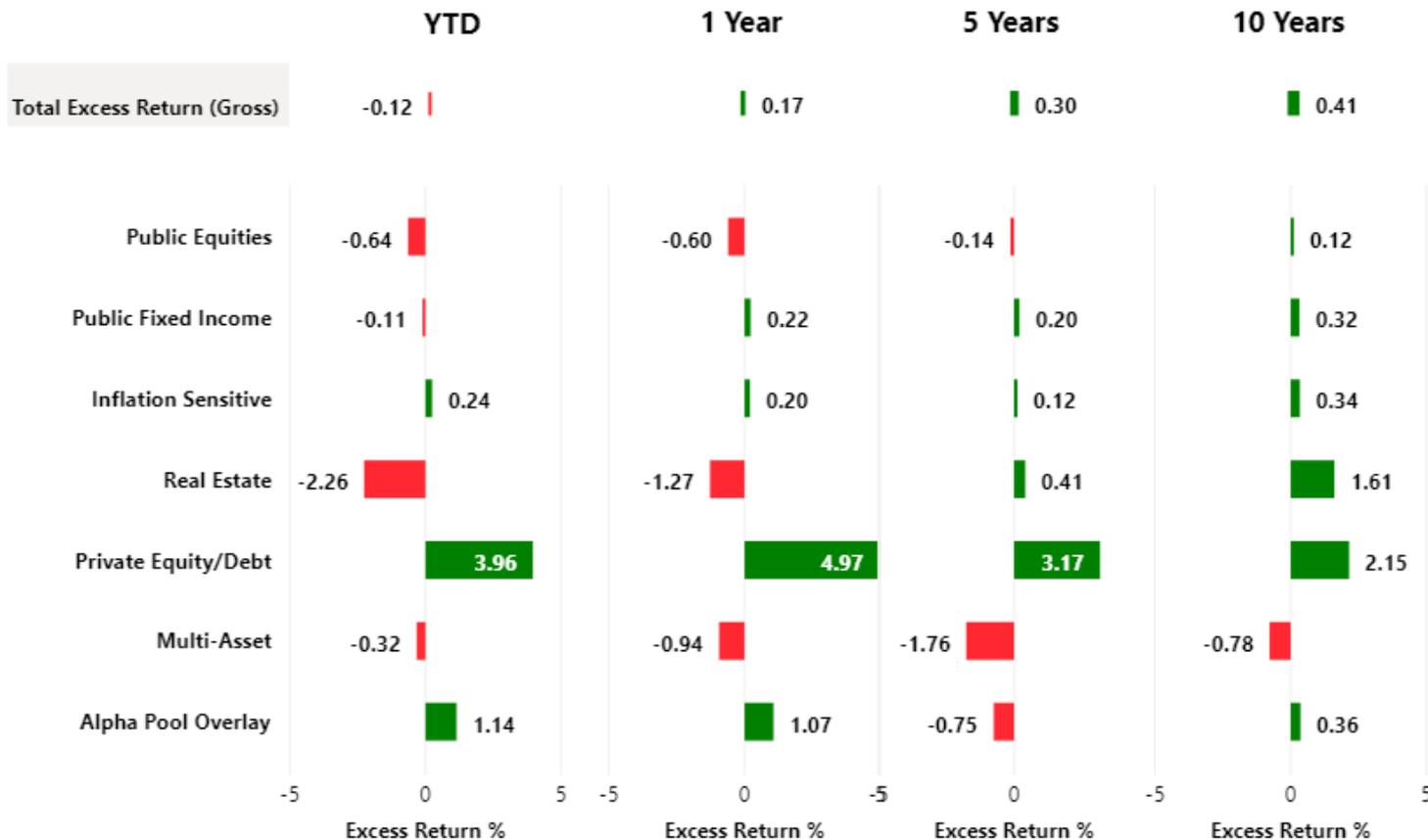
¹ Net of External Manager Fees

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Core Trust Fund Asset Class Excess Return

Performance Above Benchmark as of June 30, 2020

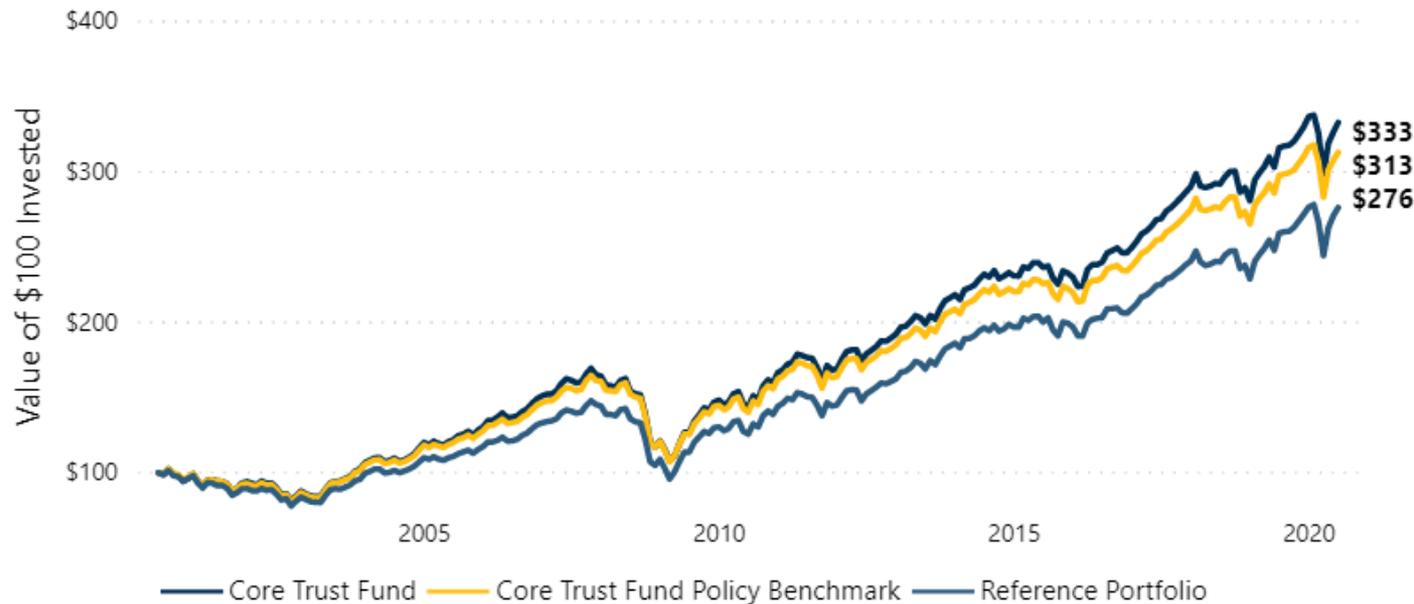


• Public Equity, Public Fixed Income, Inflation Sensitive are gross of fee. Real Estate, Private Equity/Debt, Multi-Asset, and Alpha Pool Overlay are net of external manager fee

CTF Performance vs. 60/40 Reference Portfolio*

July 2000 to June 2020

Benefit of SWIB's Asset Allocation & Active Management Over Time



- Due to SWIB's robust asset allocation and active management, CTF outperforms the 60/40 Reference Portfolio return by approximately 1.0% for the past 20 years, or approximately 57% on a cumulative basis for the time period (assuming no contributions or withdrawals)

- SWIB achieves this outperformance with less risk than the 60/40 reference portfolio

*The reference portfolio is 60% MSCI World and 40% Bloomberg Barclays Gov't/Credit (domestic)(rebalanced monthly).

Variable Trust Fund Allocation

All Values as of June 30, 2020

	Total Exposure (\$ Mil.)	Total Exposure (%)	Target	Target Range
Public Equities	\$7,845	99.7%	100.0%	
Domestic	\$5,504	70.0%	70.0%	65.0 - 75.0%
International	\$2,341	29.8%	30.0%	25.0 - 35.0%
Cash & Overlays	\$20	0.3%	0.0%	
Total Fund	\$7,865	100.0%	100.0%	

Asset class exposures are within the Target Range

Separately Managed Funds Performance

As of June 30, 2020

	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ²
State Investment Fund (SIF)	\$16,019	0.43	1.45	1.18	0.66
SIF Benchmark		0.33	1.25	1.14	0.61
		0.10	0.21	0.04	0.05
State Life Insurance Fund	\$129	9.38	13.89	6.98	6.38
No Benchmark					
Historical Society Endowment Fund	\$18	-0.89	7.66	8.94	11.47
Historical Society Endowment Benchmark		-0.63	7.72	8.87	11.40
		-0.26	-0.06	0.07	0.07
Injured Patients & Families Compensation Fund	\$1,587	5.22	9.45	5.91	5.95
Injured Patients & Families Compensation Benchmark		5.47	9.36	5.44	5.40
		-0.25	0.09	0.47	0.55
UW System Long Term Fund ¹	\$463	-1.66	3.78		5.25
UW System Benchmark		-1.89	3.43		4.91
		0.23	0.35		0.34

¹ Performance Start Date of April 1, 2018

² 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Leverage and Alpha Beta Overlay Performance

As of

June 30, 2020

CTF Leverage Performance

As of June 30, 2020

CTF Leverage Strategy (Gross of Fees)

Core Trust Fund	YTD	1 Year	5 Year	10 Year
Portfolio Return (Unleveraged)	-1.14%	4.67%	6.36%	8.31%
Return from Leverage ¹	-0.07%	0.59%	0.65%	0.42%
<u>Implementation (+) or (-)</u> ²	0.02%	0.05%	0.05%	0.03%
Portfolio Return (Leveraged)	-1.19%	5.31%	7.06%	8.76%
Benchmark Return	-1.07%	5.14%	6.76%	8.35%
Excess Return	-0.12%	0.17%	0.30%	0.41%

- Leverage gained 59 bps (1-yr) and added 65 bps (5-yr)
- Implementation: Managing relative cost of leverage +5 bps (1-yr)
- Gross absolute return (1-yr) = 5.31%; gross absolute return (5-yr) = 7.06%
- The long term benefit of leverage: SWIB has the ability to construct a more efficiently allocated portfolio.

Notes:

¹ The first increment of policy leverage was introduced into the CTF and the benchmark at the end of April 2012.

² Illustrates how the CTF's cost of financing has compared to the benchmark's cost of financing (LIBOR + 30 bps) over time.

Alpha Beta Overlay Performance

As of June 30, 2020

Alpha-Beta Overlay Strategy

Alpha Category (Net of Fees)	YTD	1 Yr	Inception ¹
Alpha Portfolio Return	1.14%	1.07%	0.58%
Estimated Cost of Financing ^{2, 3}	0.00%	0.00%	1.10%
Alpha Return (Net of Financing Costs)	1.14%	1.07%	-0.52%
Beta Category (Gross of Fees)			
CTF Benchmark Return	-1.07%	5.14%	7.44%
Alpha-Beta Return	0.08%	6.21%	6.93%

- Alpha absolute return = 1.14% (YTD)
- Beta absolute return = -1.07% (YTD)
- Alpha (active) is transported (overlaid) onto the CTF beta exposure, resulting in a return of 0.08% (YTD)
- Alpha-Beta overlay strategy has returned 6.93% since inception
- In the long term, the portable alpha program is more risk/return efficient vs. alpha assets in the policy benchmark

Notes:

¹ Inception date = 11/30/15

² For periods prior to 1/1/19, this is the estimated cost of leverage financing (Libor + Spread). From 1/1/19 forward, the actual financing costs are deducted from the return. The YTD Alpha Pool return reflects the gross return of the alpha pool less the actual financing costs.

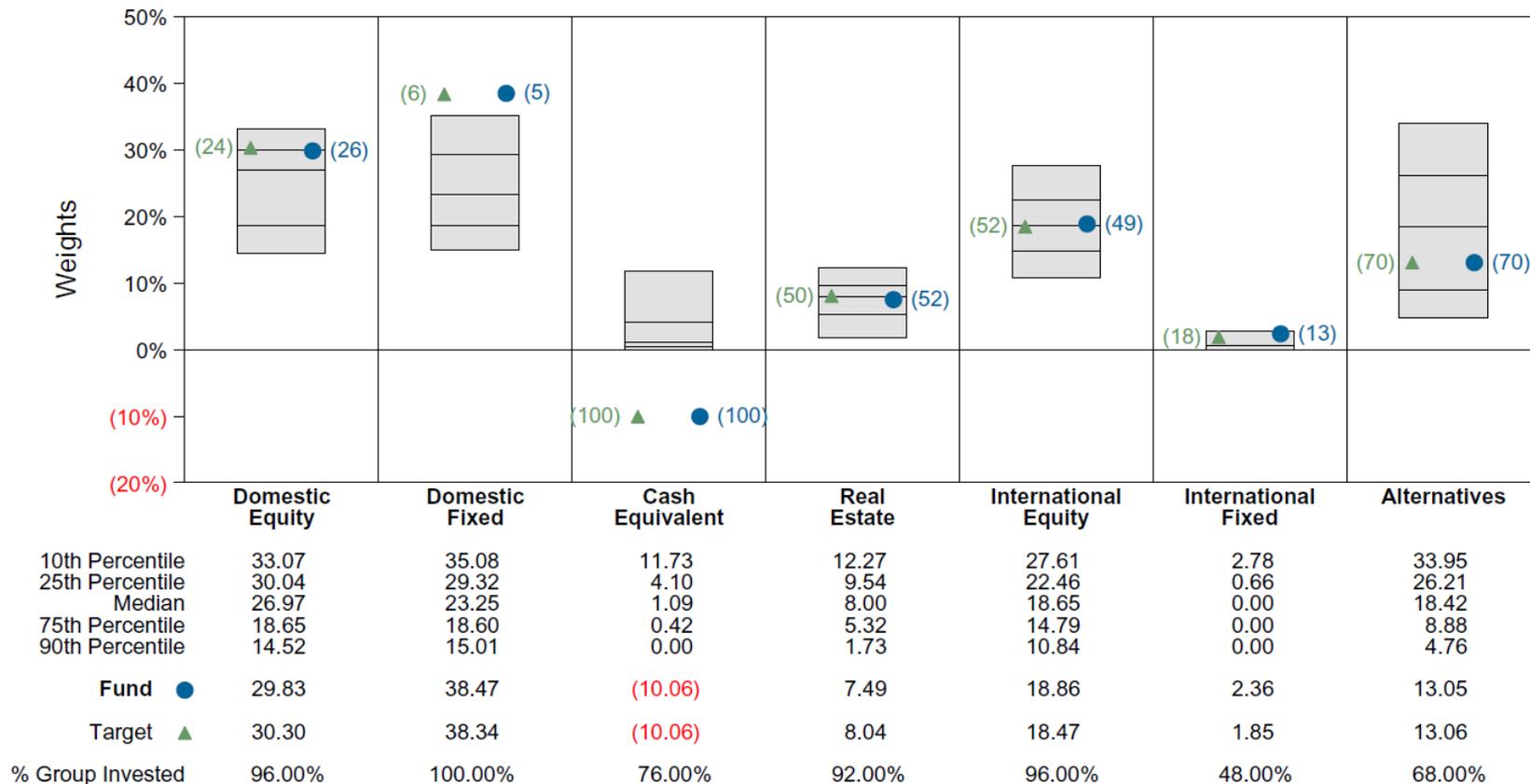
³ The CTF portfolio and benchmark betas are equal. To remove the double counting of alpha, the benchmark return is used instead of the portfolio.

Callan Quarterly Report Summary– Q2 2020

CTF Asset Allocation vs. Peer Asset Allocation

Gross of Fees as of June 30, 2020

Asset Class Weights vs Callan Public Fund Spons- V Lg DB (>10B)

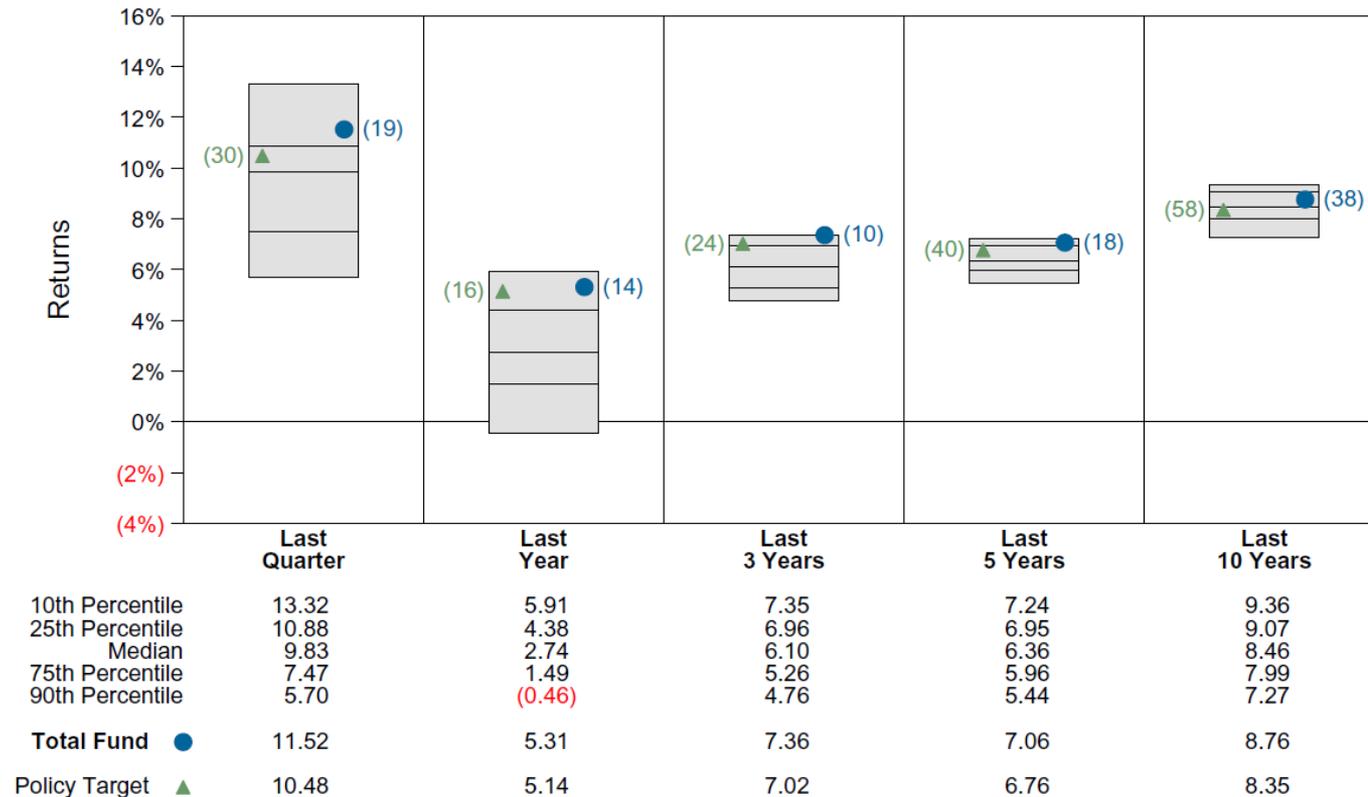


- Domestic Fixed Income is top decile, Cash & Cash Equivalent is bottom percentile (leverage).
- Peers are invested more heavily in the Alternatives asset class (Private Equity, Hedge Funds).

Total Fund Ranking – Unadjusted Ranking

Gross of Fees as of June 30, 2020

Callan Public Fund Spons- V Lg DB (>10B)

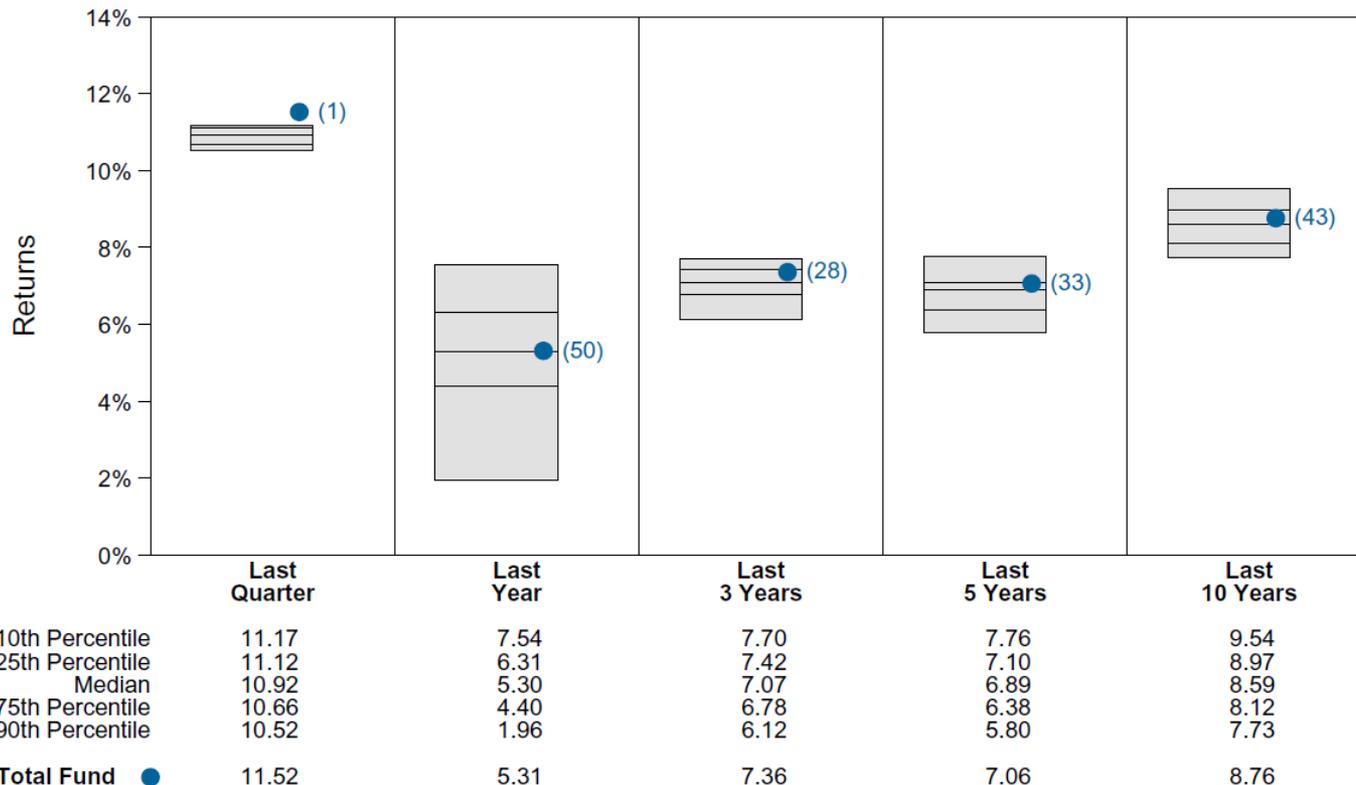


- The Total Fund unadjusted rankings are in the top quartile of peers for the Q2, 1, 3 & 5 year rankings.

Total Fund Ranking – Asset Allocation Adjusted

Gross of Fees as of June 30, 2020

Asset Allocation Adjusted Ranking



- SWIB was the premier fund compared to its peers on an asset allocation adjusted ranking in Q220.
- SWIB is meeting or outperforming the median over all time periods on an asset allocation adjusted basis.

Glossary

Term	Definitions
Active Management	A process for managing a portfolio in which investment staff makes the day-to-day decisions on what to buy and sell with the goal of generating a return on investment that is greater than the market would otherwise provide.
Alpha Pool Overlay	ACTIVE MANAGEMENT strategies that focus on alpha (Hedge Funds, Tactical Alpha) with very little beta exposure.
AUM	(Assets Under Management) - The total market value of assets that an investment company or financial institution manages on behalf of investors.
Benchmark	A standard or reference point – often an index fund – used to measure or judge the performance of investments.
BPS	(Basis Point) - A unit of measure used in the investment industry. One basis point equals 1/100th of 1% (0.01%) or 1 cent for each \$100.
CPI	(Consumer Price Index) – A measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them. Changes in the CPI are used to assess price changes associated with the cost of living.
CTF	(Core Trust Fund) - The trust fund which holds the largest part of the WRS assets. It is a fully diversified, balanced fund that includes a mixture of holdings such as stocks, bonds and real estate.
Excess Return	Investment returns from a security or a portfolio that exceeds a BENCHMARK or index with a similar level of risk. It is widely used as a measure of the value added by the portfolio or investment manger or the manager's ability to beat the market.
Exposure	Exposure is the dollar value of physical assets plus the NOTIONAL VALUE of derivatives.

Glossary

Term	Definitions
GDP	(Gross Domestic Product) - As an aggregate measure of total economic production for a country, GDP represents the market value of all goods and services produced by the economy during the period measured, including personal consumption, government purchases, private inventories, paid-in construction costs and foreign trade balances (exports are added, imports are subtracted).
Interaction	Attribution effect resulting from the combination of (or interaction between) allocation and selection effects.
Market Value	The price an asset would fetch in the marketplace.
Notional Value	The total value of a leverage position's assets. This term is commonly used in the options, futures and currency markets which employ the use of leverage, wherein a small amount of invested money can control a large portion of the market.
Passive Management	Investing in a fund that replicates a market index, such as the S&P 500, that will allow an investment performance that is no worse, or better, than the market as a whole.
Policy Benchmark	Fund level BENCHMARK approved by the Benchmark Committee. (Also referred to as "Policy Target" or "SWIB's Asset Allocation).
Policy Target	Fund level BENCHMARK approved by the Benchmark Committee. (Also referred to as "Policy Benchmark").
Portfolio Implementation	A combination of intentional style drift, allocation drift and timing effects.
Reference Portfolio	Hypothetical global portfolio comprised of 60% MSCI World Net (custom net as of 2010) and 40% Bloomberg Barclays Government Credit Index (as of October 2019 Board Workshop). Assumes no contributions or withdrawals.
Relative Return Attribution	A measure of the return of an investment portfolio relative to a theoretical passive REFERENCE PORTFOLIO or BENCHMARK.
SIF	(State Investment Fund) - A pool of cash balances of the WRS various state and local government units.
Total Exposure	The dollar value of MARKET VALUE plus the NOTIONAL VALUE of the Policy Overlays.
VTF	(Variable Trust Fund) - The smaller of the two WRS funds. It is primarily a stock fund that has a relatively greater degree of risk than the Core Trust Fund due to the volatility of the stock market.
WRS	(Wisconsin Retirement System) – The total aggregate of the Core and Variable Trust Funds.

Date: September 9, 2020

To: Board of Trustees

From: Sara Chandler, Chief Legal Counsel

Re: Private Markets and Funds Alpha Guideline Changes

Attached are revisions to the SWIB Investment Committee WRS Investment Guidelines. The revisions are concentrated in the various portfolios in the Private Markets and Funds Alpha Division (PMFA). The rationales for certain of the changes are described below.

1. Approval thresholds

The revisions include upward adjustments to most approval thresholds used to determine which investments can be approved by the Managing Director – PMFA and which require ED/CIO approval. These thresholds have not been modified for many years despite the growth in CTF assets and the assets allocated to the PMFA portfolios. As a result, the percentage of investments requiring ED/CIO approval has continued to grow. The proposed thresholds have been normalized to ensure that ED/CIO approval is only required for larger allocations. All thresholds have been set at fixed dollar amounts for ease of administration.

2. Non-US exposure

The revisions set forth specific guidelines for non-US exposure in many of the portfolios, including allowing limited exposure to emerging markets. Given the current market environment, staff expects to see increased activity in developed and emerging markets leading to attractive opportunities.

3. Investments in public securities

Guidelines have been added to the Venture Capital, Private Equity Co-investment and Current Return Co-investment portfolios to allow for investments in public company securities alongside existing GPs. Given the current market environment, staff expects PIPEs and other similar investments to provide attractive opportunities in the future. These investments are consistent with the private markets' investment mandates and SWIB's goal to grow the co-investment portfolios.

4. Removing limits on total company equity holdings

The guidelines limiting SWIB's holdings to 50% of a portfolio company's outstanding equity have been eliminated for the Venture Capital, Private Equity and Current Return portfolios. As

we seek to grow our co-investment exposure and our focus on smaller managers, this guideline has become outdated.

5. *Non-Wisconsin Private Debt Portfolio*

The geographical scope of the Non-Wisconsin Private Debt Portfolio has been expanded to include the entire United States. Given the current market environment, staff expects compelling private debt opportunities outside of the Midwest states currently included.

6. *Deleting hedge fund classification*

The classification of hedge fund investments into core, satellite and niche has been removed. The distinction among the three classifications has become less obvious and is no longer relevant to portfolio construction as the portfolio becomes more concentrated and seeks uncorrelated sources of alpha.

7. *Beta One Portfolio guidelines*

Beta One Portfolio guidelines have been added to the Investment Committee Guidelines. These guidelines have historically appeared in a standalone document that is also approved and monitored by the Investment Committee. They have been incorporated for ease of administration, and substantive changes have been highlighted.

8. *Other clean up revisions*

Other revisions have been made to conform language across portfolios, delete provisions made obsolete by statutory change and clarify definitions.

SWIB Investment Committee
WISCONSIN RETIREMENT SYSTEM
INVESTMENT GUIDELINES

Revised as of

~~February 27~~ July 28, 2020

Table of Contents

Contents

I. INTRODUCTION	3
II. LEVERAGE USE POLICY.....	3
III. DERIVATIVES USE POLICY.....	4
IV. Rebalancing Procedures.....	7
V. WRS General and Portfolio Guidelines – Internal Management	8
A. SMALL CAP PORTFOLIOS	10
B. GLOBAL EQUITY PORTFOLIOS.....	11
C. PASSIVE PORTFOLIOS	11
D. GOVERNMENT/CREDIT PORTFOLIO.....	12
E. U.S. TIPS INDEX PORTFOLIO	14
F. CURRENCY OVERLAY	14
G. EXPOSURE MANAGEMENT PORTFOLIOS	14
H. MULTI-ASSET STRATEGIES PORTFOLIOS	15
I. MORTGAGE-BACKED SECURITIES PORTFOLIO	16
J. SHORT TERM CREDIT PORTFOLIO	17
K. GENERAL GUIDELINES SPECIFIC FOR PRIVATE MARKET AND HEDGE FUND PORTFOLIOS	19
L. PRIVATE DEBT PORTFOLIO.....	20
M. VENTURE CAPITAL PORTFOLIO.....	21
N. PRIVATE EQUITY PORTFOLIO	23
O. REAL ESTATE EQUITY PORTFOLIO GUIDELINES	25
P. CURRENT RETURN PORTFOLIO.....	27
Q. HEDGE FUND PORTFOLIO.....	28
R. BETA ONE PORTFOLIO.....	31
S. PRIVATE MARKETS AND FUNDS ALPHA OVERAGE PORTFOLIOS	33
VI. EXTERNAL MANAGEMENT	3433
APPENDIX 1 - APPROVED EXCHANGES	3534
APPENDIX 2 - SOFT RISK PARAMETERS	3635
APPENDIX 3 – CTF and VTF BENCHMARKS (for 2020) ¹	4140

I. INTRODUCTION

The SWIB Board of Trustees (the “Board”) has delegated to the investment staff of SWIB standing authority to manage the assets of the Core Retirement Trust Fund (the “Core Fund”) and the Variable Retirement Trust Fund (the “Variable Fund”), which together make up the Wisconsin Retirement System (the “WRS”), pursuant to the Board’s WRS Investment Policy and to section 25.15(2) of the Wisconsin Statutes and section IB 2.02 of the Wisconsin Administrative Code. The Investment Committee was created to provide oversight of WRS¹ investments within the parameters established by the Board and pursuant to the Investment Committee’s Charter approved by the Board. To properly and prudently execute its delegated authority and oversight functions, the Investment Committee has established guiding policies, guidelines and procedures, which are set forth in this document, the Investment Committee Investment Guidelines (these “IC Guidelines”). These IC Guidelines articulate the policies and guidelines that are employed in the day-to-day management of the WRS assets by SWIB’s staff. This document will be reviewed periodically and updated as necessary by the Investment Committee to reflect changes in investment strategies and to reflect best industry practices for prudent investors. Notwithstanding the delegation of authority by the Board to the Investment Committee for the establishment, approval, and amendment of the policies, guidelines and procedures included in these IC Guidelines, the Board reserves all rights to modify and amend these IC Guidelines at any time in its discretion. Any changes to these IC Guidelines will be periodically reported to the Board. In addition to these IC Guidelines, SWIB staff may also have to comply with Compliance Division or legal requirements or review operational readiness with the Operations Division prior to the trading of the instruments and securities authorized herein.

II. LEVERAGE USE POLICY

Introduction

The funds managed by SWIB can have exposure to leverage through different structures and vehicles. Leverage is an exposure to an asset class that is not fully collateralized by cash assets or an exposure to an asset acquired that has not been fully funded. There are two types of leverage, financial leverage and economic leverage:

- Financial leverage is an exposure to an asset class that is not fully collateralized by cash, with the remaining unfunded exposure not collateralized by another asset. An example of financial leverage is buying a future on an equity index that is only partially collateralized with cash assets.
- Economic leverage is an exposure that is partially collateralized by cash and partially collateralized by an alternative asset to cash but fully collateralized. An example of economic leverage is buying a future on an equity index and partially collateralizing the

¹ The Investment Committee also has oversight of the State Investment Fund and other funds managed by SWIB as described in the Board’s SIF and Separately Managed Funds Investment Policy and Guidelines.

exposure with cash and collateralizing the remaining exposure with assets such as bonds so that the exposure is fully collateralized.

Leverage by itself does not necessarily create additional market risk or variation in market returns. Leverage may result in greater diversification and lower market risk than an unlevered portfolio.

Both financial and economic leverage, however, require liquid assets to pay down the levered obligation. This type of risk is called liquidity risk. Liquidity risk is managed by monitoring the level of liquidity required in various market scenarios and ensuring that an adequate quantity of liquid assets is available to meet commitments in times of market stress.

The total amount of financial leverage is approved by the Board through the WRS asset allocation process. The Board-approved asset allocation targets for each asset class together with the approved financial leverage is called the "Policy Portfolio." The total amount of economic leverage is limited by the Board-approved active risk target and range.

Leverage Use Philosophy

Leverage is used where it can improve investment portfolio efficiency in terms of return for risk versus alternative choices that do not use leverage. Leverage will also be used to improve portfolio diversification and reduce portfolio concentration.

Leverage Monitoring

Detailed reporting is regularly (i.e., daily, monthly and quarterly) produced by SWIB to provide feedback regarding leverage exposures for review by portfolio managers, the Managing Director of Asset and Risk Allocation (ARA), and the Executive Director/Chief Investment Officer (ED/CIO). Leverage use exposure risk metrics are reported at least quarterly to the Investment Committee. Leverage will be reviewed by the Investment Committee with an eye to diversifying counterparties, maturities and sources. Leverage will also be periodically reported by the ED/CIO to the Board. The balancing of these dimensions can vary through time as market conditions vary, especially with respect to liquidity.

III. DERIVATIVES USE POLICY

Introduction

A "derivative instrument" is an investment instrument which usually derives its value and marketability from an underlying instrument which represents direct ownership of an asset or a direct obligation of an issuer (e.g. a "spot" or cash market instrument). SWIB recognizes that derivatives provide a means through which SWIB can implement investment strategies in a more cost and time efficient manner than through the physical investment of the underlying securities. Additionally, derivatives can be used to facilitate SWIB's risk management activities including risk mitigation. Derivatives include such instruments as

futures, swaps, options and currency forwards and may be exchanged traded, traded over-the-counter (OTC) and/or cleared.

Derivatives Use Objectives

The overall strategic objective of SWIB's use of derivatives is to facilitate risk exposure management and to manage the cost of investing. Objectives for derivatives use include:

1. Constructing portfolios with risk and return characteristics that could not efficiently be created using underlying physical securities,
2. Changing systematic exposures without executing trades in the underlying physical securities,
3. Hedging or managing risks, and
4. Effecting varying active and passive investment strategies including, but not limited to: portable alpha, currency hedging, equitization, relative value trades, transition management, and rebalancings.

Derivatives Use Monitoring and Reporting

Derivatives use exposures will be monitored by portfolio managers that employ derivatives, the ED/CIO and the ARA Division. The Investment Committee will monitor derivatives use exposures and risk metrics on a quarterly basis or more frequently as needed.

Derivatives Guidelines Applicable to all WRS Internal Portfolios:

1. Exchange-traded derivatives must be traded on a recognized exchange approved by the Investment Committee, except for exchange-traded derivatives that are traded pursuant to Exchange for Related Position (EFRP) transactions, which are traded off-exchange and not subject to this requirement. Such approved exchanges are listed on *Appendix 1*. As additional exchanges are approved *Appendix 1* shall be updated without amendment to these IC Guidelines. For clarity, exchange-traded funds (ETFs), exchange-traded notes (ETNs), or exchange-traded vehicles (ETVs) shall not be deemed exchange-traded derivatives.
2. OTC derivatives may only be traded with counterparties with which SWIB has a current International Swap and Derivative Association (ISDA) agreement that includes a Credit Support Annex (CSA).

In addition:

- a) The counterparty, or its guarantor, must, on each date on which a transaction is entered into, have an actual credit rating of not less than: (1) "A2/P2" on short-term debt from S&P or Moody's; and/or (2) "Baa2/BBB" on long-term debt from S&P or Moody's.
- b) The collateral that SWIB holds under a CSA may be invested in the following:
 - i. Bank deposit accounts;

- ii. Any money market fund having a rating of at least “Aaa” by Moody’s or at least “AAAm” by S&P;
- iii. Overnight commercial paper having a rating of at least “P-1” by Moody’s and “A-1” by S&P;
- iv. Overnight repurchase agreements with U.S. government, agency or dollar cash collateral;
- v. Overnight reverse repurchase agreements with U.S. government, agency or dollar cash collateral; and
- vi. The State Investment Fund or similar short term investment funds.

For clarity, this Item 2 does not apply to ETFs, ETNs, and ETVs, or to over-the-counter derivatives entered into on behalf of SWIB, or a title-holding entity that is wholly-owned by SWIB, by either an external manager or advisor in connection with a real estate separate account.

- 3. Investments may be made in put option contracts and call option contracts on securities, futures or an index of a group of securities. Put and call options may be purchased or sold on investments that could be held in the portfolio if the options were exercised.
- 4. Currency exposure management is permitted (but not required) through the use of exchange-traded currency instruments, and through the use of spot and forward contracts in foreign currencies (including FX Swaps). Direct currency hedging is permitted to directly hedge currency exposure back to the U.S. dollar. Cross-currency exposure management to transfer out of an exposed currency and into a benchmark currency is permitted.
- 5. Guideline limits and soft parameters for each portfolio will be applied to the aggregate exposures which include both physical and synthetic securities.
- 6. New derivatives strategies will be reviewed and approved by the Investment Committee before their implementation or use.
- 7. SWIB shall not enter into new derivatives agreements with new counterparties until the ED/CIO has approved the agreement. Each managing director, head or portfolio manager in the relevant division shall submit to the ED/CIO a written summary of any proposed addition of a relationship that may require evaluation of counterparty credit risks. Such relationship may involve (a) entering into a master netting or trading agreement with a new counterparty, which acts either as a principal or as an agent on behalf of multiple principals, or (b) hiring an external manager to implement a strategy that may require the manager to evaluate and monitor counterparty credit risks on SWIB’s behalf (excluding external managers selected by Private Markets and Funds Alpha staff pursuant to their portfolio guidelines). The ED/CIO will review all proposals of such new relationships to determine that (i) the addition of the relationship is consistent with SWIB’s investment goals and strategies, (ii) the appropriate loss and drawdown limits for the credit risk associated with the

proposed counterparty relationship have been considered, and (iii) appropriate due diligence has been conducted. The managing director, head or portfolio manager in the relevant division (“Initial Division User”) shall retain responsibility for monitoring any such approved relationship. If another division expects to use the derivatives agreement for trading strategies after its initial approval, the ED/CIO, Initial Division User and the new division lead shall agree on the strategy for monitoring for the counterparty.

IV. Rebalancing Procedures

1. Mandatory rebalancing is triggered by the procedures in the Board’s WRS Investment Policy and the procedures below, as applicable. The Core Fund and Variable Fund asset mixes will be reviewed at least monthly for potential rebalancing.
2. A rebalancing task force will consist of the ED/CIO, and the Managing Directors of ARA, Global Public Markets Strategies (GPMS) and Private Markets & Funds Alpha (PMFA). The ED/CIO may call a meeting of the rebalancing task force to consider a discretionary rebalancing from time to time. In consultation with the rebalancing task force, and with a majority approval of the task force, a discretionary rebalancing may be initiated pursuant to the plan developed by the ARA Division.
3. Discretionary rebalancing may be used to bring public market asset classes partially or fully back to their strategic target weights, to reduce or use active risk, to otherwise minimize asset allocation drift, or to intentionally overweight or underweight an asset or sub-asset class.
4. In connection with any rebalancing, the ARA Division will develop and implement a plan (a “Rebalancing Plan”) to affect the rebalancing. The Rebalancing Plan will include the total amount of each asset class to be bought and sold, the intended market exposures, and the time frame of purchases and sales. The Rebalancing Plan is based on best estimates of market prices, private market valuations, and benefits cash flows for when the rebalance will take effect. To the extent that the market prices are different at the time of a rebalancing from the anticipated market prices, valuations or cash flows, the Rebalancing Plan may be subsequently adjusted for additional purchases and/or sales to true up the market exposures to the anticipated levels of the originally approved rebalancing without further approval by the rebalancing task force.
5. The ARA Division, under the supervision of the Managing Director, ARA, has the discretion to approve intra-month allocation adjustments of unallocated fund-level cash to passive portfolios and to manage asset class mis-alignments. Such adjustments may be, for example, to allocate unallocated fund-level cash arising from a distribution, to raise liquidity to fund private markets capital calls, to adjust for benchmark weight changes, or to otherwise make adjustments during the month as conditions may arise to return the asset allocation to its intended allocation targets consistent with most recently approved Rebalancing Plan. The manner in which intra-month allocation adjustments of unallocated fund-level cash are allocated or cash deficits are funded depends on the source of such unallocated cash or cash deficit

and shall follow Guideline 8 below, as applicable. Only passive portfolios may be utilized for allocations or deallocations. Once unallocated fund level cash is allocated to a passive portfolio, investment of such cash shall be made in accordance with the underlying passive portfolio's guidelines. Aggregate daily portfolio allocations or deallocations shall not exceed \$250 million unless approved by the ED/CIO.

6. Exchange-traded and OTC options or other derivatives may be purchased or sold in conjunction with managing asset class exposure and rebalancing. The aggregate notional value of the options will be limited to 2% of the market value of the trust fund at the date of purchase. The term of options used for this purpose may not exceed one year.
7. Cleared derivatives traded on a swap execution facility (SEF) may only be traded on or pursuant to the rules of the SEFs of which SWIB is a member or participant.
8. In connection with any rebalancing, the following procedures will be followed with respect to the following asset classes:
 - a. The Multi-Asset Strategy Class will rebalance 50% to Public Equities and 50% to Public Fixed Income. Accordingly, in connection with any rebalancing, for any percentage increase of assets in Multi-Asset, there will be a corresponding 50% reduction to Public Equities and a corresponding 50% reduction to Public Fixed Income, and vice versa if the Multi-Asset assets decrease. The rebalancing does not have to be proportional through the sub-asset classes.
 - b. The Real Estate Asset Class will rebalance 50% to Public Equities and 50% to Public Fixed Income. Accordingly, in connection with any rebalancing, for any percentage increase in Real Estate there will be a corresponding 50% reduction to Public Equities and a corresponding 50% reduction to Public Fixed Income, and vice versa if the Real Estate assets decrease. The rebalancing does not have to be proportional through the sub-asset classes.
 - c. The Private Equity Asset Class will rebalance on a 1 for 1 basis to Public Equities. Accordingly, in connection with any rebalancing, for any percentage increase in Private Equity there will be a corresponding 1% reduction to Public Equities. The rebalancing does not have to be proportional through the sub-asset classes.

V. WRS General and Portfolio Guidelines – Internal Management

Each internal portfolio is assigned compulsory investment guidelines. Portfolio managers are generally not allowed to deviate from compulsory guidelines. If a deviation from compulsory guidelines occurs or is expected to occur, the staff member who becomes aware of it must immediately notify the head of the Compliance division, ED/CIO, and the Managing Director or Head of the asset class in which the deviation occurred. Upon receiving notice of a deviation or potential deviation, the ED/CIO and relevant Managing Director will either take action to correct the deviation or obtain a waiver approved by the ED/CIO. If the ED/CIO is not available, then the waiver may be granted by the Managing Director of any asset class (other than the asset class to which the portfolio is requesting the waiver) and the Deputy

Executive Director. All waivers will be reported to the Investment Committee and documented in the Investment Committee's meeting minutes.

All internal portfolios are also assigned "soft risk parameters." Soft risk parameters refer to desired characteristics and/or risk exposures. Portfolio managers are allowed, however, to deviate from soft parameters in pursuit of excess return or efficiency, subject to Investment Committee inquiry, discussion and concurrence of the continued exposure. Soft risk parameters for each portfolio are detailed in *Appendix 2*.

The following general compulsory guidelines ("General Guidelines") are applicable to all internally managed portfolios. Individual portfolio guidelines appear subsequently.

1. All portfolios must be managed in accordance with the fiduciary standards set forth in section 25.15(2) of the Wisconsin Statutes.
2. Credit quality rating requirements refer to an entire rating level, e.g., "A or better" includes "A-" and better ratings. The lower of split ratings is used. Investment grade securities are those rated "BBB-" or better (or the equivalent rating agency rating).
3. Fixed income securities backed by the full faith and credit of the U.S. government will be classified as U.S. government securities for purposes of these guidelines.
4. Any sovereign debt obligation in which SWIB invests must be rated "B3/B-" or above, unless otherwise approved in advance by the Investment Committee based on its guidelines for individual business case determinations.
5. Public equity investments in markets designated as "developed" or "emerging" are investments in entities that are incorporated or organized in countries included in the MSCI World Index or the MSCI Emerging Market Index, respectively. Public fixed income investments in markets designated as "emerging" are investments in the debt of countries (or of companies incorporated or organized in countries) included in the JP Morgan Emerging Markets Diversified Index. Public fixed income investments in the debt of countries (or of companies incorporated or organized in countries) not included in the JP Morgan Emerging Markets Diversified Index will be designated as "developed."
6. The Board approves the benchmarks for the Core Trust Fund and Variable Trust Fund, which are listed in *Appendix 3*. When new benchmarks are approved by the Board or modified by the Board, *Appendix 3* shall be updated without amendment to these IC Guidelines.
7. The ARA Division will monitor the risk exposures of all WRS portfolios. The Managing Director, ARA will have the authority to recommend modifications to portfolio exposures to manage risk exposures. With the ED/CIO's concurrence, the manager of a portfolio will make changes as recommended by the Managing Director, ARA. In addition to such recommendations, drawdown control procedures for all active internal WRS portfolios will be implemented and monitored by the ARA Division and adhered to by the portfolios.
8. Portfolios may utilize cash instruments or derivatives in their investment strategy. All investments used will be subjected to the risk analysis and monitoring processes

at the portfolio, asset class and fund levels. New derivative strategies and investment instruments will be reviewed with and approved by the Investment Committee prior to implementation.

9. Exposure limits and credit quality exposure limits are to be applied at the time of purchase. Unless otherwise indicated, “value” shall mean market value including un-invested cash.

A. Small Cap Portfolios

The Small Cap Portfolios are invested primarily in publicly traded equity securities that are registered with the Securities and Exchange Commission, including common stocks, preferred stocks, ETFs, American Depository Receipts (ADRs), American Depository Shares (ADSs), convertible bonds, securities issued in initial public offerings, and when-issued securities. The Small Cap Portfolios may also be invested in equity securities that are publicly traded on stock exchanges in other developed countries.

1. When aggregated with other SWIB portfolios, no more than 20% of outstanding shares of any single issuer, excluding shares held in commingled funds and ETFs, may be owned.
2. When aggregated with other SWIB portfolios, no single issuer’s equity securities may represent more than 3%, excluding shares held in commingled funds and ETFs, of the total market value of all SWIB equity portfolios.
3. When aggregated with other SWIB portfolios, securities subject to restrictions on trading pursuant to Rule 144 under the Securities Act of 1933 shall not constitute more than 1% of the market value of all SWIB equity portfolios.
4. Up to 10% of each portfolio’s market value may be invested in international and emerging markets companies through common stocks, ADRs, ADSs, or country-specific ETFs. All international and emerging markets stock transactions must be in equity securities that are publicly traded on a stock exchange in a developed country.
5. Portfolios may use exchange-traded futures contracts or ETFs to equitize cash and receivables.
6. Portfolios may sell short any securities that may be purchased under applicable guidelines and may then use the proceeds from the short sale to purchase additional approved securities. The total value of the short sales in a portfolio may not exceed 50% of a portfolio’s market value.
7. Except as provided in 4 above, securities must be issued by an entity that is incorporated in the United States; provided that investment is also permitted if the issuer is incorporated in a tax haven outside the United States if 1) the company’s headquarters are located in the U.S. or 2) the headquarters are located in Belize, Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Isle of Man, Marshall Islands, Panama, Liberia or Netherland Antilles and the primary exchange for the issuer’s securities is located in the U.S.

8. The aggregate notional value of put options sold and not covered by portfolio cash is limited to 10% of the market value of the portfolio. The aggregate notional value of call options sold and not covered by the underlying security positions is limited to 10% of the market value of the portfolio.

B. Global Equity Portfolios

The global sector portfolios are invested primarily in publicly traded equity securities, including common stocks, preferred stocks, ADRs, ADSs, ETFs, convertible bonds, securities issued in initial public offerings, and when-issued securities, in each case that are issued and traded in U.S. and non-U.S. developed markets. Collectively, the global sector portfolios are referred to herein as the “global sector aggregate portfolio.”

1. Investments in companies whose headquarters and/or primary exchange are located in emerging market countries shall not exceed 5% of the global sector aggregate portfolio’s market value.
2. The global sector aggregate portfolio may own no more than 10% of outstanding shares of a single issuer, excluding shares held in commingled funds and ETFs.
3. No single issuer’s equity securities may represent more than 4.5%, excluding shares held in commingled funds and ETFs, of the total market value of the global sector aggregate portfolio.
4. Securities subject to restrictions on trading pursuant to Rule 144 of the Securities Act of 1933 shall not constitute more than 1% of the market value of the global sector aggregate portfolio.
5. Securities offered or sold to U.S. investors pursuant to Regulation D or Rule 144A under the Securities Act of 1933 may be purchased if they are publicly traded on a stock exchange in a developed country.
6. Sector portfolios may use exchange-traded futures contracts or ETFs to equitize cash and receivables.
7. Sector portfolios may sell short any securities that may be purchased under applicable guidelines and may then use the proceeds from the short sale to purchase additional approved securities. The total value of the short sales in the global sector aggregate portfolio may not exceed 50% of the portfolio’s market value.
8. The aggregate notional value of put options sold and not covered by portfolio cash is limited to 10% of the market value of the portfolio. The aggregate notional value of call options sold and not covered by the underlying security positions is limited to 10% of the market value of the portfolio.

C. Passive Portfolios

The objective of the passive portfolios is to closely track the returns and risk of their respective benchmarks.

1. The universe for inclusion in the portfolio shall be the full respective benchmark for each portfolio. Non-benchmark securities may be held from time-to time as a result of corporate actions, purchases or sales in advance of expected changes to the benchmark. Activity or retention of non-benchmark securities will only occur after the portfolio is entitled to receive the security and if the portfolio manager deems it beneficial to performance and not significantly detrimental to tracking error.
2. Securities offered or sold to U.S. investors pursuant to Regulation D or Rule 144A under the Securities Act of 1933 may be purchased if they are publicly traded on a stock exchange in a developed country.
3. Portfolios may use physical securities or synthetic instruments, including exchange-traded futures contracts, ETFs, swaps, or other Investment Committee-reviewed derivative instruments to equitize cash and receivables, to achieve policy fund level leverage within Trustee-approved limits; for liquidity purposes; to replicate beta for the alpha-beta overlay; or for other passive investment strategies. Passive portfolios used to achieve policy fund level leverage shall be monitored by the ARA Division so that the aggregated levels of policy fund financial leverage do not exceed any Trustee-approved limits.
4. Portfolios may sell short from time to time as a result of corporate actions, benchmark changes or other similar events to more closely, more efficiently and/or more cost effectively track the returns and risk of their respective benchmarks if the portfolio manager deems it beneficial to performance and not significantly detrimental to tracking error. Short positions may not be used to intentionally take active risk. The portfolios may short any securities that may be purchased under Guidelines #1-3 and may then use the proceeds from the short sale to purchase additional approved securities.

D. Government/Credit Portfolio

The Government/Credit Portfolio is primarily invested in publicly traded and Rule 144A fixed income instruments, primarily of investment grade, including governments, government-related entities, and corporations around the world, primarily in developed markets, including the United States.

1. Effective duration of the portfolio shall remain within 30% of the assigned benchmark's duration.
2. Non-investment grade securities shall not exceed 25% of the portfolio's market value.
3. With the exception of developed market sovereign securities, issuer concentrations are restricted to 8% (investment grade) and 3% (non-investment grade), excluding holdings of ETFs, of the market value of the portfolio.
4. Securities sold to SWIB under Rule 144A under the Securities Act of 1933 may not exceed 30% of the portfolio's market value.

5. The Portfolio may invest long or short in fixed income ETFs that have been approved by Compliance and included on an approved trading list (including put or call options thereon).
6. Emerging market sovereign debt is limited to (a) securities that are rated “B-” or above and (b) debt of countries in the JP Morgan Emerging Market Bond Index Global Diversified (“JP Morgan EM Bond Index”). Emerging market corporate debt is limited to (a) securities that are rated “B-” or above and (b) issuers in the Bloomberg Barclays US Credit Index.
7. Gross emerging market (“EM”) debt shall not exceed 25% of the portfolio’s market value on a long or short basis (i.e., long % + short %). EM FX forwards will not be counted against the EM debt exposure threshold.
8. Subject to Guideline #10, gross EM currency shall not exceed 15% of the portfolio’s market value on a long or short basis (i.e., long % + short %), except that EM FX forwards intended to hedge the currency risk of an EM debt of same country may be netted (measured using the notional value of the currency forwards) and only the netted amount shall count against the 15% threshold. To calculate the threshold under this Guideline #8, EM unhedged local currency debt shall be included, and any FX exposure described in Guideline #9, that is not used to hedge EM debt shall be counted toward the EM currency limit.
9. Currency, interest rate, credit or return derivatives use is permitted for the purposes of adjusting durations, taking or modifying credit or currency positions, investing anticipated cash flows or to replicate a position taken through the purchase or sale of a permitted bond. Derivatives use is permitted through the use of (a) exchange-traded interest rate, credit and currency instruments, including futures and options, (b) spot and forward contracts in foreign currencies, (c) Over-the-counter and exchanged traded currency (“FX”) options limited to delta-adjusted notional value of +/- 5% of the market value of the portfolio, (d) interest rate, credit default and total return swaps on securities approved herein in accordance with the General Guidelines above and (e) volatility derivatives (including options) limited to 5% gross notional exposure and 2% net notional exposure of the portfolio market value. Notwithstanding Guideline #6, underlying securities in traded credit default swap indices (“CDSI”) may include (i) EM sovereign and EM corporate debt securities rated “B-” or below, (ii) EM debt of countries that are not included in the JP Morgan EM Bond Index , or (iii) EM corporate issuers that are not included in the Bloomberg Barclays US Credit Index; provided however, that at least 75% of the EM sovereign debt securities or EM corporate debt securities that underlie any such traded CDSI are included in the indices listed in Guideline #6, as applicable, and are rated at least “B-” and above. Also, underlying securities in traded CDSI may include corporate securities rated lower than “B-” or below; provided however, that at least 75% of the corporate securities underlying the traded CDSI are rated at least “B-” and above.
10. Subject to the limitation in Guideline #8, the portfolio may take a position in a single market currency of developed (non-U.S.) countries of up to +/- 10% of the market value of the portfolio. Currencies of developed (non-U.S.) and emerging markets

countries may be held through the use of forward contracts (including FX Swaps) provided that the notional value of any single EM currency shall not exceed +/- 5% of the market value of the portfolio.

11. Maximum cash in the portfolio shall not exceed 25% of the market value of the portfolio.

E. U.S. TIPS Index Portfolio

The U.S. TIPS Index Portfolio is invested in U.S. Treasury Inflation-Protected Securities (TIPS).

1. Individual securities must be U.S. TIPS which are included in the Barclays U.S. TIPS benchmark.
2. The portfolios option adjusted duration should be +/- 15% of the benchmark duration.

F. Currency Overlay

To separate the management of currency risk from the risk of asset allocation and security selection, a currency overlay may be established at the fund level for the Core Fund and/or the Variable Fund. The ED/CIO, the Managing Director, ARA, and the internal Global Bond Portfolio Manager shall set the currency overlay strategy.

1. The amount of the overlay will be expressed in relation to the size of the aggregate non-U.S. market value of the internally managed Global Sector Portfolios and the internally managed MSCI World ex U.S. Index Portfolio. This amount is referred to as the "portfolio reference value." For example, if the Global Sector Portfolios have a non-U.S. market value of \$1 billion and the MSCI World ex U.S. Index Portfolio has a market value of \$1 billion, then the portfolio reference value is \$2 billion.
2. Only the currencies in the MSCI All Country World Index (ACWI) may be used to implement the currency overlay.
3. Currencies may be bought or sold.
4. Positions in any individual non-U.S. currency may be taken equal to +/- 10% of the portfolio reference value for major currencies (Euro, UK Sterling and Japanese Yen) and +/- 5% for all other ACWI currencies. For example, if the portfolio reference value is \$2 billion, individual currency positions in major currencies could be taken of +/- \$200 million.
5. Up to 25% of the portfolio reference value may be hedged into U.S. dollars.
6. The risk of the currency overlay strategy in aggregate will be limited to 25% of the active risk target for the total trust fund, which is set by the Board.
7. Limits shall be calculated using the notional value of the currency instruments (*i.e.*, forwards and futures) and the portfolio reference value at the time of purchase.

G. Exposure Management Portfolios

Portfolios may be established at the asset class level for multi-asset, public equity and public fixed income asset classes to provide for adjustment and management of the Core Fund and Variable Fund exposures and to utilize or adjust active risk of the Core Fund and Variable Fund. In determining portfolio investments, exposures held in both internally and externally managed portfolios will be considered. These portfolios may also be used to express investment strategies and ideas where the sizing of the investment requires it to be outside of an individual internal portfolio.

Each strategy and/or investment idea expressed in the portfolios shall be approved by any three of the ED/CIO and the Managing Directors of ARA, GPMS and PFMA. Portfolio oversight will be the responsibility of the ARA Division, and the Investment Committee will monitor each investment in the portfolios. The Investment Committee shall establish procedures to monitor these portfolios. These portfolios may invest in any instrument approved for the relevant asset class portfolios described elsewhere in these guidelines. The portfolios may use derivative instruments.

Portfolios will not have a separate benchmark or risk target, but will be included within the benchmark and risk parameters for the applicable aggregated asset class. The portfolios may include, for example, investments strategies to adjust aggregate equity beta, the allocations between specific sectors or sub-asset class exposures, currency exposures, volatility exposure, or credit exposure or duration.

H. Multi-Asset Strategies Portfolios

The Multi-Asset Strategies portfolios are authorized to invest in or short any instrument and derivative, subject to the general and derivative guidelines contained in these IC Guidelines and the following restrictions:

1. The maximum amount to be allocated to Multi-Asset Strategies, expressed as a percentage of the total Core Fund, shall be approved by the Board.
2. The maximum active risk target of an individual Multi-Asset Portfolio at time of implementation will be targeted at no more than 6% of the active risk target for the total Core Fund, which is set by the Board.
3. The strategies within a Multi-Asset Portfolio may be managed either by internal investment staff or by an external manager. The SWIB individual(s) proposing a strategy will manage and monitor the strategy and ensure that all reporting requirements are satisfied.
4. Leverage and derivatives may be used to implement individual strategies and to adjust the market exposure of a Multi-Asset Portfolio, subject to the active risk target limit stated in guideline 2 above.

5. To-be-announced mortgage-backed securities (TBA MBS) may be traded only with a counterparty with which SWIB has a current Master Securities Forward Transaction Agreement (MSFTA).
 - a. The counterparty, or its guarantor, must, on each date on which a transaction is initiated, have a credit rating of not less than “Baa2/BBB” on long-term debt from S&P or Moody’s.
 - b. If the counterparty is not rated, then its parent must have such a rating and must guarantee the obligations of the counterparty.
 - c. If a counterparty or its parent is downgraded to a credit rating below “Baa2/BBB” after the initiation of a trade, then trades may be initiated with that same counterparty only to reduce the existing exposure to that downgraded counterparty.
6. The settlement of any forward TBA contract shall not be more than 90 days from the date of the trade.

Global Securities Portfolio:

1. Any physical and derivative instrument is permitted subject to the Multi-Asset Strategies Portfolios Guidelines contained in these IC Guidelines. Shorting is permitted. Up to 50% of the portfolio market exposure can be created synthetically to fund long/short ideas.
2. Positions may be purchased long and sold short, and the use of leverage will be incorporated in ex-ante risk assessments and active risk contributions.
3. The Global Securities Portfolio (GSP’s) ex-ante tracking error limit will not exceed 6% as measured by SWIB’s standard model used at any given time by SWIB’s ARA Division. If market conditions (compared to active management actions) cause the portfolio’s ex-ante tracking error to exceed this limit, then the GSP will not be deemed to be out of compliance with these guidelines and this guideline will not be deemed to be violated; except that, if the GSP’s ex-ante tracking error exceeds 6% then the portfolio may not trade or take any other action which is predicted to increase the ex-ante tracking error of the portfolio.

Alpha Portfolio:

~~This portfolio is being merged into the GSP. No additional positions will be added to the portfolio.~~

I. Mortgage-Backed Securities Portfolio

The Mortgage-Backed Securities (MBS) portfolio is primarily invested in agency-backed securities in the United States, including mortgage pools, TBA MBS and collateralized mortgage obligations (CMOs).

1. Securities not eligible for inclusion in the benchmark, but otherwise permitted in these portfolio guidelines, may not exceed 25% of the portfolio's market value. TBA MBS will not be counted toward this 25% limit.
2. Effective duration of the portfolio shall remain within one year of the assigned benchmark's duration.
3. Non-agency MBS, including GSE risk-sharing securities, may not exceed 10% of the portfolio's market value.
4. Ex-ante tracking error will not exceed 4% as measured by SWIB's standard model used at any given time by SWIB's ARA Division. If market conditions (compared to active management actions) cause the portfolio's ex-ante tracking error to exceed this limit, then the portfolio will not be deemed to be out of compliance with these guidelines and this guideline will not be deemed to be violated; except that, if the portfolio's ex-ante tracking error exceeds 4% then the portfolio may not trade or take any other action which is predicted to increase the ex-ante tracking error of the portfolio.
5. Except for TBA MBS and US Treasuries, no single issue may exceed 5% of the portfolio's market value. No single BBB-rated issue may exceed 2% of the portfolio's market value. No single issue rated below BBB may exceed 1% of the portfolio's market value. Each tranche of a securitized product is considered a separate issue. Total exposure to issues rated BBB or below may not exceed 10% of the portfolio's market value.
6. Commercial mortgage-backed securities (CMBS) and asset-backed securities (ABS) with a maturity of more than one year may not, in the aggregate, exceed 10% of the portfolio's market value.
7. CMBS and ABS with a maturity of one year or less (i) may not, in the aggregate, exceed 25% of the portfolio's market value, (ii) may not be rated below investment grade, and (iii) will have an average credit rating of "A" or better. The portfolio may also use repurchase agreements and reverse repurchase agreements for cash management.
8. Interest rate and volatility derivatives use is permitted for the purposes of duration, interest rate, yield curve and volatility management. Derivatives use is permitted through the use of (a) exchange-traded interest rate instruments, including futures and options, (b) interest rate swaps and swaptions, (c) MBS options, and (d) other volatility derivatives (including options) limited to 10% gross notional exposure and 5% net notional exposure of the portfolio's market value. The portfolio may also invest in securities issued by the US government and its agencies, including through futures.
9. TBA MBS will conform to Guidelines #5-6 under the Multi-Asset Strategies Portfolios.
10. Maximum cash (including cash equivalent securities as defined above) may not exceed 20% of the portfolio's market value.

J. Short Term Credit Portfolio

The Short-Term Credit Portfolio is an investment vehicle of cash and short-term investments of the WRS designed to achieve a return equal to USD Three Month LIBOR. Its investment objectives are: 1) Safety of principal; 2) Return Objective of 3-Month LIBOR; and 3) Liquidity.

Portfolio Allocation

(Percent of Portfolio at Par Value)

Treasuries, Agencies, and FDIC Insured Bank Deposits	0-100%
Repurchase Agreements	0-100%
Commercial Paper	0-100%
Corporate Notes	0-100%
Certificates of Deposit/Time Deposits	0-50%
Bankers' Acceptances	0-50%
Yankee/Euro Certificates of Deposit/Time Deposits (U.S. Dollars)	0-50%

Maturity Guidelines

(Maximum)

Consistent with the portfolio purpose and objectives, the portfolio weighted average maturity will not exceed one year (the weighted average maturity of floating rate securities is based on interest rate reset dates).

Repurchase Agreements	1 year
Reverse Repurchase Agreements	1 year
U.S. Treasuries and Agencies	5 years
Commercial Paper/Bankers' Acceptances	1 year
Corporate Notes – Fixed Rate	3.1 years
Corporate Notes – Floating Rate	5.1 years
Certificates of Deposit/Time Deposits	5 years
Yankee/Euro Certificates of Deposit/Time Deposits	5 years

Issuer Exposure

(Percent of Portfolio at Par Value)

The maximum exposure for each issuer/guarantor/counterparty shall be in the aggregate as follows:

U.S. Treasury Bills and U.S. Agency Discount Notes	No limit
Repurchase Agreements (Gov't/Agency Collateral)	25%
Repurchase Agreements (Other Collateral)	5%
Commercial Paper and Corporate Notes	5%

Certificates of Deposit/Time Deposits	5%
Bankers' Acceptances	5%
Yankee/Euro Certificates of Deposit/Time Deposits (U.S. Dollars)	5%
Wisconsin CD Program – individual bank (unless a higher limit from another category applies.)	\$20MM or 3% of bank assets, whichever is less
Bank Deposits	Up to the amount guaranteed by the FDIC or the amount allowable for a bank instrument, whichever is higher

CREDIT QUALITY

The minimum rating of an issuer/counterparty shall be the lowest in the event of a split rating and shall be as follows:

U.S. Treasury Bills and U.S. Agency Discount Notes	No minimum
Repurchase Agreements	BBB
Commercial Paper	A-2/P-2
Unrated Wisconsin Company Commercial Paper (maximum maturity of 90 days and percentage of the portfolio in unrated CP cannot exceed 15%)	Unrated
Corporate Notes, Bankers' Acceptances, Certificates of Deposit/ Time Deposit, Bank Deposits and Yankee/Euro Certificates of Deposit/Time Deposits (U.S. Dollars) greater than 1 year	A
Corporate Notes, Bankers' Acceptances, Certificates of Deposit/ Time Deposit, Bank Deposits and Yankee/Euro Certificates of Deposits (U.S. Dollars) less than 1 year (the percentage of the portfolio in BBB cannot exceed 15%).	BBB
Wisconsin CD Program – individual bank	Unrated

K. General Guidelines specific for Private Market and Hedge Fund Portfolios

1. The portfolio manager shall be responsible for notifying the ED/CIO ~~and including in the portfolio strategy reports to the Trustees disclosure~~ of any referrals or significant contacts ~~(other than status requests)~~ by or on behalf of SWIB Trustees regarding consideration of an investment opportunity.

2. The Private Markets & Funds Alpha (PMFA) staff shall report to the Trustees all portfolio commitments to non-public investments.

~~3. Funds or commingled investment pools authorized to invest more than 50% of their capital outside the U.S. shall be considered non-U.S. investments.~~

3. ~~4.~~ Each portfolio manager shall obtain written confirmation from legal counsel (which may be external legal counsel) that documentation has been satisfactorily completed prior to closing of any investment in his or her portfolio that involves negotiated SWIB documentation.

4. ~~5.~~ Each portfolio manager shall submit to the Managing Director – PMFA a written summary of any proposed investment. The Managing Director will review all such investments to determine that a) the investment falls within the portfolio’s investment guidelines, including limits on invested capital, b) the investment is consistent with the portfolio’s established strategy, and c) the appropriate due diligence standards are being applied. No such investment may be closed without approval of the Managing Director – PMFA or ED/CIO depending upon the nature and amount of the investment as required in the relevant portfolio guidelines. The portfolio manager shall retain responsibility for each investment decision. External managers with delegated investment discretion operate under separate authority. For purposes of this paragraph, “investments” does not include the individual properties within a Real Estate Equity Portfolio separate account tranche, but does include the tranche that holds such properties.

5. ~~6.~~ Dollar limitations for commitments to funds or other investments do not apply to incidental and customary contractual reinvestment, indemnity, reserve or similar obligations incorporated into the terms of an investment, provided such obligations are not expected ~~to amount to more than 10% of the base commitment~~ be material.

6. ~~7.~~ Private equity and venture capital investments in markets designated as “developed” or “emerging” are investments ~~in entities that are incorporated or organized~~ in countries included in the MSCI World Index or the MSCI Emerging Market Index, respectively. Real estate investments in markets designated as “developed” or “emerging” are investments in properties in countries included in the EPRA/NAREIT Developed Index and the EPRA/NAREIT Emerging Market Index, respectively.

7. Funds or commingled investments shall be considered U.S., non-U.S., “developed” or “emerging” based on their primary strategy and not on a look-through basis to the underlying investments.

8. Exposure limits and credit quality exposure limits are to be applied at the time of purchase. The term “exposure” is defined as the net asset value plus unfunded commitments.

L. Private Debt Portfolio

The overall objective of the Private Debt Portfolio (the “Private Debt Portfolio” includes both the Wisconsin Private Debt Portfolio and the Non-Wisconsin Private Debt Portfolio) is to invest funds of the Core Fund in market rate fixed income instruments consistent with SWIB’s fiduciary responsibilities that are primarily private loans negotiated by SWIB directly or as part of an investor group that includes banks or other institutional investors. The two portfolios are invested as follows:

- Wisconsin Private Debt Portfolio – This portfolio’s investments will consist of loans or fixed income securities issued by companies or entities that are headquartered in Wisconsin, have existing operations in Wisconsin, or intend to apply the proceeds to new business operations in Wisconsin which contribute to the Wisconsin economy.
- Non-Wisconsin Private Debt Portfolio – This portfolio can invest in loans or fixed income securities issued by companies or entities located in or doing business in ~~Illinois, Iowa, Minnesota, Michigan, Indiana, Ohio or Pennsylvania~~ the United States.

The Private Debt Portfolio may also include securities sold to SWIB pursuant to Rule 144A or in the public fixed income markets. Investments may be made in fixed income instruments and in instruments with both fixed income and equity features.

1. Investments may carry a rating from a national rating agency, the National Association of Insurance Commissioners (NAIC) or SWIB. Notwithstanding the provisions of the General Guidelines above, the Portfolio Manager may make investments that carry a “BBB” or better rating from a national rating agency or the NAIC, provided that if the investment carries only a SWIB rating, it shall be approved by the Managing Director – PMFA, regardless of size.
2. Investments may be made in below investment grade instruments provided that such investments do not in the aggregate constitute more than 25% of the Private Debt Portfolio’s par value. Any investment below investment grade requires approval from the Managing Director – PMFA.
3. The Private Debt Portfolio’s aggregate portfolio issuer limits shall be scaled by quality and a purchase may not cause the Private Debt Portfolio’s exposure to a borrower or issuer to exceed the following limits (at par value):

Rating	Maximum Position
U.S. Gov’t/Agency	No Limit
“AA” or higher	\$100 MILLION
“A”	\$75 MILLION
“BBB”	\$50 MILLION
“BB” or less	\$25 MILLION

4. The Private Debt Portfolio shall maintain at minimum a weighted average rating of “BBB”, where “AAA”=4, “AA”=3, “A”=2, “BBB”=1, and “BB” or less =0.
5. Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the Managing Director – PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB’s position in the investments.

M. Venture Capital Portfolio

The SWIB Venture Capital Portfolio (the “Venture Capital Portfolio” includes both the Wisconsin Venture Capital Portfolio ~~(formerly known as the Wisconsin Private Equity Portfolio)~~ and the Non-Wisconsin Venture Capital Portfolio) consists of venture capital or venture capital-related investments and invests as follows:

- The Non-Wisconsin Venture Capital Portfolio shall make venture capital investments on a global basis in limited partnership or other fund vehicles, through strategic partnerships, or as co-investments in venture-backed companies or publicly traded companies that were venture backed.
- The Wisconsin Venture Capital Portfolio shall make venture capital investments in limited partnership or other fund vehicles or strategic partnerships that are either located in Wisconsin and/or which target Wisconsin as a primary market or as co-investments in venture-backed companies or publicly traded companies that were venture backed that are located or have operations in Wisconsin.

A private equity consultant hired by SWIB will review prospective investments in limited partnerships or other fund vehicles with new managers and make individual written recommendations to SWIB staff. SWIB shall only invest in new limited partnerships or other fund vehicles with new managers that are affirmatively recommended by the Consultant. Follow-on funds, co-investments and secondary fund purchases do not require consultant review. A “follow-on fund” is an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor. From time to time, SWIB may also consider formation of fund investments where it may participate both as a general partner and as limited partner. In such cases, subject to the approval limits below, SWIB will retain a consultant to advise it on the strategy and opportunity.

Approval By:	Managing Director-PMFA	ED/CIO
New Manager		
• Venture Capital Funds	Up to \$30 <u>60</u> million or less	More than \$30 <u>60</u> million
• Venture Capital Co-Investments	Up to \$10 <u>20</u> million or less	More than \$10 <u>20</u> million

Follow on Commitments		
• Venture Capital Funds	Up to \$ 5075 million but manager exposure not to exceed 20% of the aggregate Venture Capital Portfolio value	More than \$ 5075 million
• Venture Capital Co-Investments (excluding funds of one)	Up to \$ 1025 million with exposure not to exceed 10% of the aggregate Venture Capital Portfolio value	More than \$ 1025 million with exposure not to exceed 10% of portfolio value
SWIB ownership equal to or greater than 50% of an individual fund (excluding funds of one and any fund/vehicle through which a co-investment is made)	ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%	

1. Any other guidelines notwithstanding, the Venture Capital Portfolio commitments are subject to the following approvals:

~~1. SWIB may not own more than 50% of a portfolio company's outstanding equity (through both fund ownership and co-investment).~~

2. ~~Venture capital investments may be made only through limited partnerships or other fund vehicles that invest the majority of their capital in the U.S. or other developed markets. Venture co-investments are restricted to U.S. companies only. No more than 45% of the Venture Capital Portfolio's exposure may be invested outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Venture Capital Portfolio's exposure may be invested in emerging markets. No more than 5% of the Venture Capital Portfolio's exposure may be invested in companies located in emerging markets.~~

3. No more than 2% of the Core Fund may be invested in venture capital.

4. Venture capital investments may be made through funds, strategic partnerships, or co-investments. Venture capital co-investments (excluding funds of one) must be made in one of the following ways:

(1) alongside a fund with the same sponsor or manager as a fund in which SWIB is or has been an investor ~~or~~,

(2) alongside a fund with the same sponsor or manager as a fund on which SWIB is conducting due diligence and is actively evaluating for a prospective commitment, or

(3) as approved by the ED/CIO.

5. Venture capital co-investments made within the Wisconsin Venture Capital Portfolio are limited to companies with their headquarters or primary operations in Wisconsin. ~~No more than 5% of the Venture Capital Portfolio shall be in co~~Co-investments ~~from~~in the Non-Wisconsin Venture Capital Portfolio may not make up more than 15% of the Venture Capital Portfolio's exposure.
6. Neither the aggregate exposure (including co-investments) to any fund manager or sponsor, nor the aggregate amount of investments in any company, may exceed 20% of the ~~aggregate~~Venture Capital Portfolio ~~aggregate value's~~exposure without approval of the ED/CIO.
7. No single co-investment (excluding funds of one) shall exceed 10% of the Venture Capital Portfolio's exposure.
8. The Venture Capital Portfolio may make co-investments in public company securities through private placements, including PIPEs, or other offerings. Co-investments in public company securities shall not exceed 10% of the Venture Capital Portfolio's exposure. For purposes of this guideline, public company securities received via a distribution are not counted and are expected to be sold as soon as reasonably practicable.
9. ~~6.~~Subject to the approval thresholds and the restrictions above, the Venture Capital Portfolio Manager or other staff authorized by the Managing Director – PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB's position in the investments.

N. Private Equity Portfolio

The Private Equity Portfolio consists of private equity or private equity-related investments, made on a global basis, in limited partnership or other fund vehicles, strategic partnerships, and co-investments in operating or holding companies. Investment guidelines and soft parameters shall be applied to the aggregate composition of the Private Equity Portfolio (including the Legacy, Private Equity Co-Investment, Current Return and Current Return Co-Investment Portfolios), unless otherwise stated. A private equity consultant hired by SWIB will review prospective investments in limited partnerships or other fund vehicles with new managers and make individual written recommendations to SWIB staff. SWIB shall only invest in limited partnerships or other fund vehicles with new managers that are affirmatively recommended by the Consultant. Follow-on funds, co-investments and secondary fund purchases do not require consultant review. A “follow-on fund” is an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor. Co-investments where SWIB is the lead investor may not be made.

1. Any other guidelines notwithstanding, all portfolio commitments are subject to the following approvals:

	Managing Director – PMFA	ED/CIO
--	--------------------------	--------

New Manager		
• Funds or Strategic Partnerships	\$ 100 <u>150</u> million or less	Over \$ 100 <u>150</u> million
• Co-Investments	\$ 30 <u>50</u> million or less	Over \$ 30 <u>50</u> million
Follow-on Commitments		
• Funds or Strategic Partnerships	\$ 150 <u>300</u> million or less	Over \$ 150 <u>300</u> million
• Co-Investments	\$ 50 <u>100</u> million or less	Over \$ 50 <u>100</u> million
SWIB ownership equal to or greater than 50% of an individual fund (excluding a fund/vehicle through which a co-investment is made)	ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%	

~~2. SWIB may not own more than 50% of a company's outstanding equity (through both fund ownership and co-investment).~~

2. ~~3.~~ The Private Equity Portfolio shall not include investments in venture capital funds.

3. ~~4.~~ Investments may be made through funds, strategic partnerships, or co-investments. ~~Co-investments may be made only in the U.S. or other developed markets.~~ Co-investments must be made in one of the following ways:

(1) alongside a fund with the same sponsor or manager as a fund in which SWIB is or has been an investor,

(2) alongside a fund with the same sponsor or manager as a fund on which SWIB is conducting due diligence and is actively evaluating for a prospective commitment, or

(3) as approved by the ED/CIO.

5. Neither the aggregate exposure (including co-investments) to any fund manager or sponsor, nor the aggregate amount of investments in any company, may exceed 10% of the total Private Equity Portfolio's exposure without approval of the ED/CIO.

6. No more than 45% of the Private Equity Portfolio's exposure may be outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Private Equity Portfolio may be invested in emerging markets.

7. No more than ~~33 1/3~~45% of the Private Equity Co-Investment Portfolio's exposure may be invested outside of the U.S. ~~in other developed markets~~, without the approval of the ED/CIO. No more than 20% of the Private Equity Co-Investment Portfolio's exposure may be invested in companies located in emerging markets.

8. The Private Equity Co-Investment Portfolio may make co-investments in public company securities through private placements, including PIPEs, or other offerings. Co-investments in public company securities shall not exceed 10% of the Private

Equity Co-Investment Portfolio's exposure. For purposes of this guideline, public company securities received via a distribution are not counted and are expected to be sold as soon as reasonably practicable.

9. ~~8.~~ Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the Managing Director – PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB's position in the investments.

O. Real Estate Equity Portfolio Guidelines

The Real Estate Equity Portfolio contains investments in a broad range of real estate and real estate-related assets, including equity and debt investments, either solely, or through investment vehicles and structures such as public or private Real Estate Investment Trusts (REITs), public or private real estate company securities, limited liability corporations, limited partnerships, joint ventures, separate accounts or co-investment vehicles. Investment guidelines and soft parameters for Real Estate shall be applied, on an invested basis, to the aggregate composition of the Real Estate Equity Portfolio (except that all REIT portfolios shall be included in the aggregate as Core holdings). ~~Certain investments with relatively higher expected returns, and higher risk, may be used on a more tactical basis.~~ A real estate consultant hired by SWIB will review prospective commingled fund investments with new managers ~~and/or new strategies~~ and make individual written recommendations to SWIB staff. SWIB shall only invest in commingled fund investments with new managers ~~and/or new strategies~~ that are affirmatively recommended by the Consultant. Follow-on funds and secondary fund purchases will not require consultant review. A “follow-on fund” is ~~either (a) a direct investment that is parallel to a fund in which SWIB is or has been an investor or (b)~~ an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor.

~~Each real estate investment (including the individual investments in a separate account tranche) must be processed and closed in accordance with applicable provisions of the Real Estate Procedures Manual.~~

All portfolio commitments are subject to the following approvals:

	Managing Director – PMFA	ED/CIO
Commingled Fund		
• New Fund	\$ 100 <u>150</u> million or less	Over \$ 100 <u>150</u> million
• Follow-on Fund	\$ 150 <u>300</u> million or less	Over \$ 150 <u>300</u> million

Core - Separate Account*	\$ 150 <u>300</u> million or less	Over \$ 150 <u>300</u> million
Non-Core – Separate Account*	\$ 100 <u>200</u> million or less	Over \$ 100 <u>200</u> million

*With respect to a separate account tranche, approval is required for the tranche, but not for individual investments within the tranche.

1. Aggregate exposure (including co-investments) to any commingled fund manager or sponsor may not exceed 20% of the ~~total~~ Real Estate Equity Portfolio's exposure without approval of the ED/CIO. This does not apply to real estate investments for which SWIB has sole discretion to select, retain, and terminate manager(s) and/or ~~advisors~~advisor(s) without cause.
2. Aggregate direct public REIT and real estate company stock holdings (excluding underlying commingled fund holdings and externally managed REIT Portfolios) may not exceed 15% of the ~~market value of the~~ Real Estate Equity Portfolio's exposure and portfolio investments in any one public REIT or company may not exceed 3% of the ~~market value of the~~ Real Estate Equity Portfolio's exposure. SWIB's direct ownership position in any public REIT or company may not exceed 20% of outstanding voting equity, without ~~Board~~ED/CIO approval. Any externally managed REIT portfolio(s) will be managed under separate authority, with guidelines set out in the management ~~agreements~~agreement(s) between SWIB and the selected manager(s).
1. No more than ~~40~~45% of the ~~aggregate portfolios~~Real Estate Equity Portfolio's exposure may be invested outside the U.S. without the approval of the ED/CIO. Commingled funds that are authorized to invest more than 50% of their capital in emerging markets require prior approval of the ED/CIO. No more than 20% of the Real Estate Equity Portfolio's exposure may be invested in emerging markets, and no more than 10% of the Real Estate Equity Portfolio's exposure may be invested in separate accounts invested in emerging markets.
3. Other guideline limitations notwithstanding, the portfolio manager or other staff authorized by the Managing Director – PMFA may: modify or waive terms of investments in the portfolio, including without limitation mortgages and leases on real estate in the portfolio; enter into new mortgages and leases; execute deeds and bills of sale; make expenditures for maintenance and improvements; grant easements; hire consultants, service providers, real estate advisors and property managers; and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance investment value of SWIB's position in the investments.
4. Prior to funding a direct investment (including a property within a separate account tranche) where real property is a material component, the property shall be evaluated for the presence of environmental and code compliance issues. If environmental issues that require action by governmental authorities exist, then funding shall not occur until an adequate remediation program is in place. If code

compliance issues exist, then an adequate plan to bring the property into compliance shall be in place.

5. SWIB may not initiate improvement or development of real property owned or controlled by SWIB without making provisions for compliance with applicable Federal, state and local codes and ordinances.

~~7. Staff may hire up to five real estate advisors at any time with delegated investment discretion. These advisors shall have investment discretion of up to \$100 million of capital for each discretionary investment, with guidelines set out in the management agreements between SWIB and the selected manager(s). Staff has authority to terminate selected managers and/or advisors and hire replacement managers and/or advisors.~~

P. Current Return Portfolio

The Current Return Portfolio consists of current return or certain equity-related investments, made on a global basis, in limited partnership or other fund vehicles, strategic partnerships, and co-investments in operating or holding companies. Investments may be made in fixed income instruments and in instruments with both current pay and equity features. Investment guidelines and soft parameters shall be applied to the aggregate composition of the Private Equity Portfolio (including the Legacy, Private Equity Co-Investment, Current Return and Current Return Co-Investment Portfolios), unless otherwise stated. A private equity consultant hired by SWIB will review prospective investments in limited partnerships or other fund vehicles with new managers and make individual written recommendations to SWIB staff. SWIB shall only invest in limited partnerships or other fund vehicles with new managers that are affirmatively recommended by the Consultant. Follow-on funds, co-investments and secondary fund purchases do not require consultant review. A “follow-on fund” is an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor. Co-investments where SWIB is the lead investor may not be made.

1. Any other guidelines notwithstanding, all portfolio commitments are subject to the following approvals:

	Managing Director – PMFA	ED/CIO
New Manager		
• Funds or Strategic Partnerships	\$ 100 <u>150</u> million or less	Over \$ 100 <u>150</u> million
• Co-Investments	\$ 30 <u>50</u> million or less	Over \$ 30 <u>50</u> million
Follow-on Commitments		
• Funds or Strategic Partnerships	\$ 150 <u>300</u> million or less	Over \$ 150 <u>300</u> million
• Co-Investments	\$ 50 <u>100</u> million or less	Over \$ 50 <u>100</u> million

SWIB ownership equal to or greater than 50% of an individual fund (excluding a fund/vehicle through which a co-investment is made)	ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%
--	---

~~2. SWIB may not own more than 50% of a company's outstanding equity (through both fund ownership and co-investment).~~

~~2. 3.~~ Investments may be made through funds, strategic partnerships, or co-investments. ~~Co-investments may be made only in the U.S. or other developed markets.~~ Co-investments must be made in one of the following ways:

(1) alongside a fund with the same sponsor or manager as a fund in which SWIB is or has been an investor;

(2) alongside a fund with the same sponsor or manager as a fund on which SWIB is conducting due diligence and is actively evaluating for a prospective commitment; or

(3) as approved by the ED/CIO.

~~3. 4.~~ Neither the aggregate exposure (including co-investments) to any fund manager or sponsor, nor the aggregate amount of investments in any company, may exceed 10% of the total Private Equity Portfolio's exposure without approval of the ED/CIO.

~~4. 5.~~ No more than 45% of the Current Return Portfolio's exposure may be invested outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Current Return Portfolio may be invested in emerging markets.

~~5. 6.~~ No more than ~~33 1/3~~⁴⁵% of the Current Return Co-Investment Portfolio's exposure may be invested outside of the U.S. ~~in other developed markets~~, without the approval of the ED/CIO. No more than 20% of the Current Return Co-Investment Portfolio's exposure may be invested in companies located in emerging markets.

~~6.~~ The Current Return Co-Investment Portfolio may make co-investments in public company securities through private placements or other offerings. Co-investments in public company securities shall not exceed 10% of the Current Return Co-Investment Portfolio's exposure. For purposes of this guideline, public company securities received via a distribution are not counted and are expected to be sold as soon as reasonably practicable.

7. Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the Managing Director – PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB's position in the investments.

Q. Hedge Fund Portfolio

The Hedge Fund Portfolio ("HF Portfolio") will be comprised primarily of direct investments in hedge funds and is intended to generate a low-beta, alpha-oriented return stream.

1. The HF Portfolio will be comprised of the following investment vehicles:
 - a. *Direct Investments or Fund-of-Funds*: SWIB intends for its portfolio to be comprised primarily of direct investments in hedge funds rather than fund-of-funds vehicles that use an intermediary investment advisor(s) to select and allocate to hedge funds through a commingled fund, but SWIB may make investments in fund-of-fund vehicles, as may be deemed appropriate by Funds Alpha staff and otherwise approved hereunder.
 - b. *Hedge Funds or Separately Managed Accounts (“SMAs”)*: Investments can be made in limited liability partnerships with other investors or, in some cases depending upon the manager and size of investment, in separately managed accounts. SWIB expects its investments will be in limited liability vehicles rather than SMAs, but may make use of SMAs if it is in the best interest of SWIB to do so.
 - c. *Special Opportunity Investments*: SWIB may invest a portion of its portfolio in special opportunity investments, which may include: interests in the equity or revenues of hedge fund managers, co-invest, or external manager “best ideas” opportunities. Special Opportunity Investments will be capped at 20% of the market value of the total HF Portfolio.
2. Hedge Fund Investment Strategies:
 - a. *Event-Driven* – investments up (debt or credit) and down (equity) the corporate capital structure where an expectation exists for realized profits over a short to medium time frame as a result of a known catalyst such as a merger, spinoff, or restructuring.
 - b. *Long-Short Equity* – long and short investments in publicly traded stocks.
 - c. *Tactical Trading* – global investments in indexes, commodities, interest rates, and currencies and, in each case, their derivatives as a result of relative value or directional forecasts from a systematic or discretionary approach.
 - d. *Relative Value* – ~~consists of~~ strategies that seek to take advantage of price differentials by buying and selling different yet related securities. Relative value strategies include fixed income arbitrage, insurance linked, long/short credit, quantitative strategies, structured credit, and volatility-related investments.
 - e. *Multistrategy* – ~~investment managers~~[funds](#) that invest across multiple asset classes, typically (but not always) with multiple portfolio managers. Most multistrategy funds diversify across three or more underlying strategies.

In the event a sub-strategy could fall under more than one Investment Strategy, the categorization designated by the Consultant will be utilized.

The HF Portfolio has the following target weightings and ranges to the individual hedge fund strategies, based on the Consultant’s “Lower Beta” model portfolio recommendations:

	<u>Target Allocation</u>	<u>Target Maximum</u>
Relative Value	20%	40%
Event-Driven	15%	30%
Long-Short Equity	20%	30%
Tactical Trading	20%	40%
Multistrategy	20%	40%
Special Opportunity Investments	5%	20%
	100%	

~~3. Categories within Investment Strategies: Each strategy above will be divided into three categories: Core, Satellite, and Niche investments. Core investments generally include funds that invest across a broad array of sub-strategies and securities within the strategy. Satellite investments generally include funds that focus on a narrower or particular segment of the strategy or market. Niche investments generally include funds that focus on a very narrow segment of the strategy or market or on a market dislocation, which may be small and more illiquid. Niche investments may include investments in fund of funds and emerging managers. SWIB staff will work with the HF Portfolio Consultant (“Consultant”) to designate each investment to a strategy and then categorize it as Core, Satellite or Niche within such strategy.~~

3. ~~4.~~ Roles of SWIB staff and Consultant: SWIB Funds Alpha staff and the HF Portfolio Consultant (the “Consultant”) will be responsible for conducting initial and ongoing hedge fund due diligence, selecting individual hedge funds, and determining the allocations to individual hedge funds. The Consultant, in concert with staff, will conduct ~~primary~~ investment and operational due diligence and make individual hedge fund written recommendations to SWIB staff. SWIB staff will conduct its own review and assessment of the universe of recommended managers from the Consultant and recommend hedge funds according to the approval process. SWIB shall only invest in new Hedge Funds that are affirmatively recommended by the Consultant, and SWIB shall obtain an additional recommendation from the Consultant for additional subscriptions to existing funds of \$50 million or 30% of the current investment (whichever is less). SWIB staff and the Consultant will be responsible for ongoing monitoring of SWIB’s hedge fund investments.

4. ~~5.~~ Approvals: HF Portfolio allocations are subject to the following approvals:

Investment	Managing Director-PMFA	ED/CIO
-------------------	------------------------	--------

New Funds*		
Core/Satellite	Up to \$250/300 million or up to 5% of capital, whichever is less	More than 5% (or \$250/\$300 million, whichever is less)
Special Opp/ Co-invest	Up to \$50 million	More than \$50 million
Niche	Up to \$150 million or up to 3% of capital, whichever is less	More than 3% (or \$150 million, whichever is less)
Additional Subscriptions to Existing Funds**		
• Core/Satellite	Up to \$350/400 million or Up to 7% of capital, whichever is less aggregate invested	More than 7% (or \$350/\$400 million, whichever is less)
Niche	Up to \$250 million or up to 5% of capital, whichever is less	More than 5% (or \$250 million, whichever is less)
• Special Opp/ Co-invest	Up to \$100 million aggregate invested	More than \$100 million
<u>SWIB ownership equal to or greater than 50% of an individual fund, calculated at the master fund level (excluding funds of one and a fund/vehicle through which a co-investment is made)</u>	<u>ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding funds of one and a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%</u>	
* Approval threshold is calculated based on the investment amount being allocated to the new fund		
** Approval threshold is calculated based on SWIB's aggregate hedge fund investments with the Manager		

5. ~~Definitions: For purposes of the approvals above, capital is defined as the total market value of the HF Portfolio. All measurements for approvals are subject to the latest month-end data and results at the time the portfolio manager requests approval pursuant to the above requirements, and investments shall be made by SWIB within 45 days of such approval. If the investment cannot be closed within such 45 period, the measurement of percentage of capital shall be made again and additional approvals, if any are required pursuant to the above table, shall be sought and received before the investment is made.~~

6. ~~The market value of the HF Portfolio allocated aggregate exposure to one any hedge fund manager as a percentage of the total market value or sponsor (including co-~~

investments) may not exceed 15% of the total HF Portfolio ~~may not exceed 15%'s exposure~~ without approval of the ED/CIO.

7. ~~7.~~ Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the Managing Director - PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain, or enhance the value of SWIB's position in the investments.
8. All redemptions, terminations or reductions of capital will be at the discretion of the Funds Alpha Manager and Managing Director – PMFA.

R. Beta One ~~External Managers~~Portfolio [NEW SECTION]

The ~~aggregate portfolio of~~ Beta One ~~External Managers~~Portfolio will be comprised primarily of direct investments in strategies of external managers that are intended to generate both (1) a beta or SWIB policy benchmark return and (2) an active alpha return stream above the benchmark. ~~Investments into Beta One External Managers exclude investments in private equity funds.~~ These managers are referred to as Beta One External Managers due to their dual mandate to manage both a Core ~~Trust~~ Fund asset allocation benchmark ~~(e.g. Russell 3000)~~ and a tracking error around the given benchmark. The manager is expected to deliver the total return of the benchmark (or beta of one), plus an excess return (alpha) over the benchmark. This is distinctive compared to SWIB's external hedge fund portfolio, which is designed to deliver only an excess return or alpha. This ~~section document~~ does not govern ~~SWIB's~~ passive external managers which the Asset and Risk Allocation Division oversees and monitors.

1. Investments in Beta One External Managers will be comprised of the following investment vehicles:
 - a. *Separately Managed Accounts* ("SMAs"): SWIB intends for its portfolio to be comprised primarily of direct investments in various strategies via SMAs, the assets of which would reside at SWIB's custodial bank.
 - b. *Commingled Investments or Fund Investments*: Investments can be made in commingled funds and/or limited liability partnerships with other investors or in a Fund-of-One structure where SWIB is the sole investor.
2. Investment Strategies and Broad Guidelines for Beta One External Managers:
 - a. *Equities* – strategies will be comprised of various fundamental, quantitative and other approaches intended to produce an active return above the respective benchmarks. Strategies will be invested in traditional long only portfolios, active extension formats (i.e. 130/30, 150/50) and other public equity securities approaches across various styles, geographies and market cap weights. A limited use of shorting (up to 50%) may be used in the active extension format in non-SMAs.
 - b. *Fixed Income* – strategies will be comprised of various fundamental, quantitative, and other approaches intended to produce an active return above the respective

benchmarks. Strategies will primarily be invested in traditional long only portfolios across the credit quality spectrum, varying geographies, including emerging and frontier market debt ~~(EMD)~~, high yield ~~(HY)~~ and structured securities. Derivatives may be used primarily for duration and currency management and will be set forth in the individual manager guidelines.

c. Notwithstanding any shorting permitted above and pursuant to SWIB’s policies, the investment guidelines for SMAs will prohibit the Beta One External ~~Manager~~Managers from shorting any securities and from purchasing securities in certain secondary offerings.

3. Any use of derivatives, leverage, and shorting allowed will be incorporated into the ex-ante risk assessments and active risk contributions.

4. Roles of SWIB staff and Consultant: SWIB Funds Alpha staff and any ~~Board Consultant or Staff Consultant~~ engaged by SWIB to conduct public markets managers search, ongoing due diligence, and/or external manager oversight (any such consultant a “Consultant”) will be responsible for (i) conducting initial and on-going due diligence, (ii) selecting individual strategies, (iii) determining the allocations to individual strategies (subject to the applicable approvals below), and (iv) negotiating and executing investment management agreements and investment guidelines consistent with this document. The Consultant, in concert with ~~Staff~~staff, will conduct due diligence (which may include business management, trading and operations, operational due diligence, valuation, risk management, and disclosures and investment terms) and make individual strategy written recommendations to SWIB ~~Staff~~staff. SWIB staff will conduct its own review and assessment with advice of the Consultant and recommend strategies according to the approval process. SWIB shall only invest in new Beta One External Managers that are affirmatively recommended by the Consultant. SWIB staff and the Consultant will be responsible for on-going monitoring, reporting, and assessment of SWIB’s investments in Beta One External Managers ~~and will operate pursuant to procedures adopted by the Funds Alpha staff.~~

~~5. This document supersedes and replaces SWIB’s policy titled Oversight of External Managers last modified on March 20, 2009 and the SWIB Public Markets Manager Performance and Risk Monitoring Guidelines referenced in such policy.~~

5. ~~6.~~ Approvals: Beta One External Manager allocations are subject to the following approvals:

Investment	Managing Director-PMFA	ED/CIO
<u>New Manager Relationship</u> New and Additional Capital Commitments	Up to \$ 1.3 <u>1.75</u> billion on an aggregated basis of all SWIB investments in that Manager	More than \$ 1.3 <u>1.75</u> billion on an aggregated basis of all SWIB investments in that Manager

<u>Additional Subscriptions to Existing Manager</u>	<u>Up to \$2 billion</u>	<u>More than \$2 billion</u>
<p><u>Includes all Funds Alpha investments with the Manager, regardless of vehicle, strategy or portfolio.</u></p> <p>Subject to the below, all redemptions, terminations or reductions of capital in a Beta One External Manager will be at the discretion of the Funds Alpha Manager and Managing Director -- Private Markets & Funds Alpha in consultation with the Consultant and the Head of Asset and Risk Allocation for policy benchmark exposure consideration.</p> <p>Notwithstanding the above discretion regarding redemptions, terminations or reductions, if the Asset and Risk Allocation team determines that certain risk attributes in the context of the total Core Trust Fund or the aggregate portfolio of Beta One External Managers are undesirable for the CTF or the aggregate portfolio, then the Head of the Asset and Risk Allocation team will have the authority to recommend redemptions, terminations or reductions to Beta One External Managers' exposures. With the ED/CIO's concurrence, the Funds Alpha Manager will make the changes as recommended by the Head of Asset and Risk Allocation.</p>		

- ~~6. 7. Subject to this document, portfolio managers~~Other guideline limitations notwithstanding, the Funds Alpha Manager or other staff authorized by the Managing Director – ~~Private Markets and Funds Alpha~~PMFA may modify, amend or waive terms of Beta One Manager investment management agreements and generally take any and all other actions that are necessary and reasonable to protect, maintain, or enhance the value of SWIB's position in the investments.
7. All redemptions, terminations or reductions of capital will be at the discretion of the Funds Alpha Manager and Managing Director – PMFA in consultation with the Managing Director – ARA for policy benchmark exposure consideration.
8. Notwithstanding the above discretion regarding redemptions, terminations or reductions, if ARA determines that certain risk attributes in the context of the total Core Fund or the aggregate Beta One Portfolio are undesirable for the Core Fund or the aggregate portfolio, then the Managing Director – ARA will have the authority to recommend redemptions, terminations or reductions to portfolio exposures. With the ED/CIO's concurrence, the Funds Alpha Manager will make the changes as recommended by the Managing Director – ARA.

S. Private Markets and Funds Alpha Overage Portfolios

Portfolios may be established at the asset class level for private equity, co-invest, real estate, venture capital, hedge fund, and private debt asset classes to provide for (i) excess exposure to certain investment ideas where the sizing of the investment requires it to be held, in part, outside of an individual internal portfolio or (ii) hedging transactions using public or private securities. In each case, a primary investment must be made by the relevant private markets or hedge fund portfolio with the excess exposure or hedging transaction being allocated to an overage portfolio. The relevant private markets or funds alpha portfolio manager will be responsible for portfolio oversight and monitoring of the investment, including the securities in the overage portfolio.

These portfolios may also be used to express investment strategies and ideas that do not fit clearly in any of the private markets or funds alpha portfolios but are attractive from a risk/return perspective. In such cases, no primary investment will be made in the existing private markets portfolios, and the ED/CIO will designate a portfolio manager that will be responsible for portfolio oversight and monitoring.

These portfolios may invest in (1) any instrument approved for the relevant private markets asset class portfolios described elsewhere in these guidelines, and (2) any other public or private securities or derivatives approved for trading by SWIB solely for hedging purposes. Each investment idea expressed in the portfolios shall be approved by the Managing Director – PMFA, the relevant portfolio manager, and a majority of the ED/CIO and the Managing Directors of ARA and GPMS. Any approved investment shall be reported to the Investment Committee on a monthly basis. Other governance, monitoring, compliance or reporting for the investment may also be specified in the approval. Portfolios will not have a separate benchmark or risk target, but will be included within the benchmark and risk parameters for the applicable aggregated asset class, portfolio, or Core Trust Fund, as applicable and as approved at the time of the investment. If the investment will use active risk assigned to exposure management, it will be noted in the investment approval.

VI. EXTERNAL MANAGEMENT

Portfolios may be managed internally by SWIB investment professionals or externally by money management firms. In making the decision on how the portfolios will be managed, SWIB compares the resources, expertise, and cost of internal management versus external management. If the decision is made to manage the portfolios externally, SWIB will determine whether a separate account or commingled fund best suits SWIB's needs.

External active and passive managers operate under contractual investment guidelines approved by SWIB's Investment Committee or by SWIB's investment management staff, as designated in the Investment Committee Charter. ~~Further, the Investment Committee has adopted separate governance and guidelines with respect to Beta One External Managers.~~

APPENDIX 1 - APPROVED EXCHANGES

Approved Exchanges for Derivatives Trading as of January 28, 2020*

Australian Securities Exchange
BOX Options Exchange
CBOE C2 Options Exchange
CBOE BZX Options Exchange
CBOE EDGX Options Exchange
CBOE Futures Exchange
CBOE Options Exchange
Chicago Board of Trade
Chicago Mercantile Exchange
CurveGlobal Markets (London Stock Exchange Derivatives Market)
Eurex Exchange
Euronext Amsterdam
Euronext Brussels
Euronext Lisbon
Euronext Paris MATIF
Euronext Paris MONEP
ICE Futures Europe
ICE Futures US
ICE Futures Singapore
International Securities Exchange
Montreal Exchange
Nasdaq BX
Nasdaq Futures
Nasdaq GEMX
Nasdaq MRX
Nasdaq Options Market
Nasdaq PHLX
New York Mercantile Exchange
NYSE Arca Options
NYSE American LLC
Osaka Exchange
TMX (Toronto Montreal Exchange)
Tokyo Stock Exchange

*Approved exchanges shall include any and all exchanges that may be acquired by, merged with or otherwise reorganized with or into, or any subset of, any of the above-listed exchanges subsequent to the date above provided that such exchange continues to clear through a Qualifying Central Counterparty (QCCP). This list may be updated for such organizational or name changes from time to time by Legal & Compliance without any additional action of the Investment Committee, and all additions or changes shall be deemed Approved Exchanges for purposes of the WRS Investment Committee Investment Guidelines effective as of the date of such acquisition, merger or reorganization. On a quarterly basis, Compliance shall provide notice to the Investment Committee if there have been any such changes to the list.

The Global Securities Portfolio, Alpha Portfolio and Exposure Management Portfolios are approved to trade on any of the above exchanges and any other exchange whose clearing house is a Qualifying Central Counterparty (QCCP) as defined by the Bank for International Settlement (BIS) (subject to annual reporting to the Investment Committee).

APPENDIX 2 - SOFT RISK PARAMETERS

SOFT RISK PARAMETERS – ASSET CLASS AND PORTFOLIO

PORTFOLIO ASSET CLASS CHARACTERISTIC	ASSET CLASS²	DISCUSSION TRIGGER
Asset Class Exposure	Core Fund	
	Global Equities	39.8% - 47.8%*
	EM Equities	0.0% - 7.5%*
	Small Cap	0.0% - 6.0%*
	U.S. Inv Grade	16.6 – 26.6%*
	High Yield	0.0% - 5.6%*
	EM Debt	0.0% - 6.6%*
	Variable Fund	
	U.S. Equity	65% to 75%
	Int'l Equity	25% to 35%
*Post-Corridor Treatment		
Maximum Small Cap Exposure	U.S. Equities	2.75x Benchmark
Ex Ante Tracking Error	Public Equities	.75% - 2.25%
	Public Fixed	.4% - 1.2%
	Core Fund	.6% - 1.8%
Counterparty Exposure (internal and external separate account portfolios)	WRS (Core and Variable Funds)	5 bp exposure (net of collateral, if any) to a single counterparty
Duration	Public Fixed	+/- 15% of Benchmark
Base Portfolio	Global Equities	8-12% of Aggregate Sector Portfolio
Scaled Portfolio	Global Equities	88-92% of Aggregate Sector Portfolio

ACTIVE/INDEXED EQUITIES

Minimum Number of Holdings	Small Cap Diversified	100
----------------------------	-----------------------	-----

² "Passives," as used in these Soft Risk Parameters, means portfolios 0797, 0799, 0812 and 0813.

	Global Sector Aggregate Portfolio	Lesser of 100 names or 25% of index names
Ex Ante Tracking Error	Passives (Variable Fund):	
	R1000 Index	6 bp annualized
	MSCI ex US	20 bp annualized
	Passives (Core Fund):	
	MSCI US	10 bp annualized
	MSCI ex US	20 bp annualized
	Small Cap Diversified	3% - 9%
	Global Sector Aggregate Portfolio	1% - 4%
Maximum Position Size	Passives	5% notional value of futures
Issuer Concentration	Small Cap Diversified	Benchmark weight \pm 2%
	Global Sector Aggregate Portfolio	Benchmark weight \pm 2%
Maximum Total Value of Short Sales	Global Sector Aggregate Portfolio	40% of portfolio value
Maximum ETF Exposure	Passives	5% of portfolio value
	Small Cap Diversified	+/- 15% of portfolio value
	Global Sector Aggregate Portfolio	+/- 15% of portfolio value
Maximum Company Ownership	Passives	10% of outstanding
	Small Cap Diversified	10% of outstanding
	Global Sector Aggregate Portfolio	10% of outstanding
Top Ten Holdings	Small Cap Diversified	25% of portfolio
P/E Ratio	Small Cap Diversified	50%-150% of Benchmark
	Global Sector Aggregate Portfolio	50%-150% of Benchmark
Maximum Sector Exposure		

Small Cap Diversified	Benchmark weight ±10%
Global Sector Aggregate Portfolio	Benchmark weight ±5%

Maximum Notional Uncovered Sold Calls

Passives	5% of portfolio value
Small Cap Diversified	5% of portfolio value
Global Sector Aggregate Portfolios	5% of portfolio value

Maximum Notional Uncovered Sold Puts

Passives	5% of portfolio value
Small Cap Diversified	5% of portfolio value
Global Sector Aggregate Portfolio	5% of portfolio value

Maximum Cash

Passives	1% in unequitized cash
Small Cap Diversified	5%
Global Sector Aggregate Portfolio	5%

GOVERNMENT/CREDIT

Minimum Number of Issuers	Gov't/Credit	50
Maximum Corporate Industry Sector Exposure	Gov't/Credit	Greater of 10% or 3 x Benchmark
Ex Ante Tracking Error	Gov't/Credit	.34% - 1.30%
Maximum ETF Exposure	Gov't/Credit	+/- 15% contribution to portfolio duration

PRIVATE MARKETS & FUNDS ALPHA

Maximum Outside Developed Markets	Private Equity	15% of core Private Equity Portfolio (excluding co-investments) 15% of Current Return Portfolio (excluding co-investments)
Maximum Co-Investments	Private Equity	20% of core Private Equity Portfolio for Private Equity Co-Investments 20% of Current Return Portfolio for Current Return Co-Investments
Maximum Co-Investments alongside funds with the same sponsor or manager as a fund on which SWIB was conducting due diligence and actively evaluating for a prospective commitment at the time of co-investment ³	Private Equity	5% of core Private Equity Portfolio for Private Equity Co-Investments 5% of Current Return Portfolio for Current Return Co-Investments
Minimum Funds	Private Equity	80% of aggregate Private Equity Portfolio
Maximum Venture Capital Exposure	Venture Capital	Aggregate portfolio value not to exceed 25% of Private Equity and Private Debt Portfolio <u>1.7% of Core Fund</u>
Maximum Co-Investments in Venture Capital Portfolio	Venture Capital	8% of Venture Capital Portfolio (not including separate accounts) (guideline is 10%)
Maximum Development Risk (Direct Holdings Only)	Real Estate	10%
Maximum Single Property Type Exposure - Quarterly	Real Estate	50%
Minimum Core Holdings (Including REIT portfolios)	Real Estate	50%
Maximum Value Holdings	Real Estate	30%
Maximum Opportunistic Holdings	Real Estate	30%
Maximum Core Portfolio Leverage	Real Estate	50%
Maximum Core Fund/Deal Leverage (Must be non-recourse to SWIB)	Real Estate	65%

³ If SWIB subsequently commits to a limited partnership or other fund vehicle of the sponsor or manager, then such co-investment shall no longer be included for purposes of calculating this soft parameter.

Maximum Real Estate Equity Portfolio Leverage	Real Estate	60%
Ex ante volatility (tracking error) range	Hedge Fund	2.5% to 6.5%, measured with a trailing two-year risk sampling period
	Beta One	1.0% to 2.0%
Equity Delta to the S&P 500	Hedge Fund	Range of -0.3 to +0.3 with a target of zero over a market cycle. This is measured ex ante with a trailing two-year risk sampling period
	Beta One	Range of 0.85 to 1.15 with a target of 1.0
One-year annual Conditional Value at Risk (CVaR)	Hedge Fund	A targeted 95% one-year annual CVaR of greater than 7% based on trailing two-year risk sampling period

APPENDIX 3 – CTF and VTF BENCHMARKS (for 2020)¹

Core Trust Fund Benchmark²		
	Current Benchmark	
Global Public Equity	49% Fixed Blend of Four Components ³	- Current and previous benchmark asset classes are weighted by asset class strategic target weights - Current Benchmark updated 4/30/2012 to include Cash, which reflects leverage
Fixed Income	24.5% Fixed Blend of Seven Components ⁴	
Inflation Sensitive	15.5% Bloomberg Barclays US Treasury Inflation-Linked Bond Index	
Private Equity/Debt	9% Roll-Up of Seven Components ⁵	
Real Estate	8% Open End Diversified Core Equity (ODCE) Real Estate Index	
Multi Asset	4% Fixed Blend of Two Components ⁶	
Cash	(-10%) 3-Month LIBOR + 30bps	
Total	100%	
Variable Trust Fund Benchmark		
	Current Benchmark	
Domestic Equities	70% Russell 3000	
International Equities	30% MSCI All Country World Index (ACWI) ex US	
Total	100%	

Note: Roll-Up refers to the market-weighted aggregation of benchmark components or indices, based on SWIB's actual market exposures.

¹ Refer to the Historical Benchmark Adjustments for additional background.

² The major asset class weights are established through the annual asset allocation exercise; Private Equity weights float between 6% and 12% and Real Estate weights float between 5% and 11%. The Private Equity excess weights are taken from Public Equities, Real Estate excess weights are taken 50% from Public Equities and 50% from Fixed Income. Multi-Asset weights float between 1% and 7% with excess weights taken 50% from Public Equities and 50% from Fixed Income.

³ Global Public Equity Benchmark: Fixed Blend of Four Components
 83.4% MSCI World Custom Net Index
 6.1% Russell 2000 Index
 4.4% MSCI EAFE Small Cap Custom Net Index*
 6.1% MSCI EM Custom Net Index

*Effective in connection with the implementation of corresponding asset allocation changes.

⁴ Public Fixed Income Benchmark (effective 1/1/2010, excludes TIPS): Fixed Blend of Seven Components
 66.9% Bloomberg Barclays Capital Govt/Credit Index
 8.2% Bloomberg Barclays Mortgage-Backed Securities Index*
 7.9% Bloomberg Barclays US Treasuries Index
 2.0% Bloomberg Barclays US Long Treasuries Index
 7.5% BofA Merrill Lynch Corporate HY Ba/B Index
 3.75% JPM EMBI Global Diversified
 3.75% JPM GBI-EM Diversified

*Effective in connection with the implementation of corresponding asset allocation changes.

⁵ Private Equity/Debt Benchmark: Roll-Up of Seven Components
 Component One: State Street Global Exchange Private Equity Index - Buyouts
 Component Two: State Street Global Exchange Private Equity Index – Buyouts, weighted by Vintage Year
 Component Three: State Street Global Exchange Private Equity Index – Venture Capital, weighted by Vintage Year
 Component Four: Private Equity Legacy (SW050300) Actual Portfolio Returns
 Component Five: Bloomberg Barclays Capital Duration-Adjusted Baa Corporate plus 20 basis points
 Component Six: Burgiss Global Senior Debt Universe
 Component Seven: Burgiss Global Senior Debt Universe, equal weighted by Vintage Year

⁶ Multi Asset Benchmark: Fixed Blend of Two Components
 60.0% MSCI World Custom Net Index
 40.0% Bloomberg Barclays Capital Govt/Credit Index

*Beginning 1/1/2010, the tax treatment of the MSCI benchmark updated to a custom net-of-tax benchmark based on SWIB-specific tax treatment.

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, May 26, 2020

Via Teleconference

Committee Members Present: David Villa, Executive Director/Chief Investment Officer (Chair)
Edwin Denson, Managing Director–Asset & Risk Allocation (Secretary)
Derek Drummond, Funds Alpha Manager
Anne-Marie Fink, Managing Director–Private Markets & Funds Alpha
Brian Hellmer, Managing Director–Global Public Market Strategies
James Laufenberg, Managing Analyst–Real Estate
Diane Linn, Managing Analyst–Multi-Asset Strategies
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Pu Shen, Managing Analyst–Asset & Risk Allocation
Nick Stanton, Head of Multi-Asset Strategies

Sara Chandler, Chief Legal Counsel (non-voting)
Brian Heimsoth, Quantitative Manager (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Bob Conlin, Trustee
Nathan Ballard, Senior Legal Counsel
Derek Bloom, Managing Analyst–Asset & Risk Allocation
Kate Burkart-Paulson, Senior Legal Counsel
Bill Campbell, Data Management Director
Shirley Eckes, Head of Operations
Chirag Gandhi, Portfolio Manager–Global Bonds
Jameson Greenfield, Chief Financial Officer
Mike Jacobs, Agency Business Director
Vince Janecky, Internal Auditor Data Analyst
Phil Johnson, Managing Analyst–Global Extended Fixed Income Strategies
Janet Klosterman, Legal Assistant
Lisa Lange, Compliance Counsel
Shan Lo, Managing Analyst–Global Extended Fixed Income Strategies
Bill Luetzow, Assistant Compliance Counsel
Damian Maroun, Head of Trading and Execution
Matt Notzon, Performance Evaluation Analyst
Chris Preisler, Communications Specialist
Chris Prestigiacomio, Portfolio Manager–Private Debt & Venture Capital
Tom Robinson, Head of Corporate Governance
Mike Shearer, Head of Alternative Fixed Income Strategies
Jon Simon, Managing Analyst–Global Extended Fixed Income Strategies
Dawn Tuescher, Executive Administrative Assistant
Jim Vander Meer, Managing Analyst–Private Debt & Venture Capital
Ivy Zhang, Managing Analyst–Asset & Risk Allocation

Also in Attendance: Elizabeth Donovan, DWS
(Continued) David Hetzer, Meketa Investment Group
Drew Lorusso, Eaton Vance
Chris Levell, NEPC
Claudia Schloss, Verus Advisory, Inc.
David Sheng, Aksia
Jennifer Wildeman, Aksia
(Some individuals may have attended only portions of the meeting.)

OPEN SESSION

With a quorum present, David Villa, Chair of the Investment Committee, called the meeting to order at 1:32 p.m. All attendees participated in this meeting telephonically.

1. Approval of the Minutes

Mr. Villa asked if there were any comments on either the open or closed session minutes of the April 28, 2020 Investment Committee (IC) meeting. Hearing no comments, Mr. Villa stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Villa and seconded by Ms. Fink to approve both the open session and the closed session minutes of April 28, 2020, as presented. The motion passed unanimously.

2. September Investment Forum Preview

Jim Vander Meer, Managing Analyst–Private Debt & Venture Capital, provided an update on the rescheduling of the Investment Forum to September 9, 2020. He commented that most of the presenters have confirmed their availability for the new date, but that there remains uncertainty about whether a live September event would work due to the COVID-19 pandemic.

3. October Workshop Preview

Mike Jacobs, Agency Business Director, provided a brief update on the planning for the October Workshop.

4. Quarterly Performance Review (Q1 2020)

Mr. Villa announced that the performance results for Q1 2020 were not yet finalized, due to delays in receiving the private markets benchmark data, and would be discussed at the June IC meeting.

5. Currency Task Force Report

Chirag Gandhi, Portfolio Manager–Global Bonds, noted that a copy of agenda for the May 18, 2020 Currency Task Force meeting was included on page 8 in the meeting materials. He then reviewed the currency market updates included on pages 9-10 in the meeting materials, noting that the U.S. dollar rally year to date had reversed slightly in the past few weeks.

Mr. Gandhi also commented that the Currency Task Force had revisited its objectives and membership structure and that the new *SWIB Currency Task Force Objective Statement* was included on page 11 in the meeting materials for the Committee's review.

6. Research Task Force Report

Brian Hellmer, Managing Director–Global Public Market Strategies, stated that the Research Task Force is revisiting its mission and membership structure. He noted that Edwin Denson, Managing Director–Asset & Risk Allocation, would be the new chair and that a more comprehensive update would be provided at a future meeting.

7. Funds Alpha Q1 2020 Update

Derek Drummond, Funds Alpha Manager, presented the *Funds Alpha Q1 2020 Update*, included on pages 12-25 in the meeting materials. Mr. Drummond discussed the drivers of performance in the Hedge Funds and Beta One portfolios, including low equity beta and risk-on positioning in fixed income. He also noted that more than half of the Q1 2020 drawdowns have been recovered since March 31. He then commented on the current market environment, noting that **(a)** funding pressure was high for many managers but would have been worse if the federal government had not stepped in, **(b)** emerging market bond spreads had been pushed very wide, **(c)** uncertainty remains high, including with respect to re-opening and COVID-19 flare-ups, and **(d)** Q1 2020 saw significant fundraising for dislocation funds.

Mr. Drummond reported that tracking error for the Funds Alpha portfolios is at long-term targets. He then reviewed the long-term performance for both portfolios, as shown on pages 21-22 in the meeting materials, and highlighted that the Hedge Fund portfolio differs significantly from SWIB's peers and continues to have a low correlation to the Core Trust Fund (CTF).

Lastly, Mr. Drummond commented on the goals completed by the team in Q1 2020, including continued portfolio consolidation, confirmed that the portfolios remained in compliance with their guidelines, and answered questions.

8. Private Debt Q1 2020 Update

Chris Prestigiaco, Portfolio Manager–Private Debt & Venture Capital, presented the *Private Debt Portfolio Investment Committee Quarterly Report* as of March 31, 2020, included on pages 26-32 in the meeting materials. Mr. Prestigiaco described the portfolio characteristics, noting that **(a)** one new loan was added to the portfolio and two were paid off during Q1, **(b)** average coupon and yield to maturity increased while average life and average duration decreased, with average rating unchanged from the previous quarter, **(c)** the portfolio has 10% exposure to below-investment grade loans, and **(d)** the portfolio continues to be primarily invested in the Industrial Sector. He reported that the portfolio now includes 20% loans outside of Wisconsin, two loans were downgraded to below-investment grade in Q1, and one below-investment grade loan is expected to pay off in Q2 2020.

Mr. Prestigiaco reviewed the loan pipeline and portfolio returns, noting that the portfolio was ahead of the benchmark across the one-, three-, five- and ten-year periods. He reported that there were no problem credits or workouts in the portfolio, which remained in compliance with its guidelines. He briefly discussed one borrower that staff has been monitoring due to revenue and

margin compression impacting profitability that will be paying off in Q2 2020, and that staff is also staying close to one investment in the portfolio that has been severely impacted by COVID-19.

Finally, Mr. Prestigiacomio provided a market update, noting that COVID-19 has dampened the fundraising cycle, reducing the demand for private debt in 2020. He commented that private debt investors are turning more cautious with the uncertainty of the current economic and credit cycle and direct lenders are increasingly focusing on higher quality senior debt loans, and answered questions.

9. Convene in Closed Session

Motion: A motion to go into closed session pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including (a) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, (b) the review of specific proprietary investment strategies related to funds alpha, private debt, venture capital, currency exposure and exposure management, and (c) the review of credit counterparty information, was made by Mr. Villa and seconded by Mr. Ludgate.

The Chair called for a roll call vote.

Denson-Aye	Drummond-Aye	Fink-Aye	Hellmer-Aye	Laufenberg-Aye
Linn-Aye	Ludgate-Aye	Shen-Aye	Stanton-Aye	Villa-Aye

There being ten ayes and no nays, Mr. Villa declared the motion passed. The Committee then convened in closed session at 2:14 p.m. and reconvened in open session at 3:37 p.m.

10. Announcement of Committee Actions Relating to Items Taken up in Closed Session

Mr. Villa announced that, while in closed session, the Committee (a) reviewed proprietary investment information for the funds alpha, private debt, venture capital, currency exposure and exposure management strategies, (b) reviewed the total and active risk for the CTF and the Variable Trust Fund, and (c) reviewed credit counterparty information.

11. Soft Risk Parameters

Brian Heimsoth, Quantitative Manager, noted that the report *Soft Risk Parameters—Asset Class and Portfolio*, as of April 30, 2020, was included on pages 141-142 in the meeting materials for the Committee’s review. As discussed in detail in Closed Session, he noted that one new discussion trigger was added for the Fixed Income Government/Credit ex ante tracking error and that two discussion triggers had dropped off since last month for the GSP ex ante tracking error and the WRS single counterparty exposure.

12. Future Meeting Topics

Mr. Villa noted that a summary of standard IC agenda items and draft agendas for the June 23, 2020 and July 28, 2020 IC meetings were included on pages 144-149 in the meeting materials for the Committee’s review.

13. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Villa and seconded by Mr. Denson. The motion passed unanimously, and the meeting adjourned at 3:40 p.m.

Date of Committee Approval: June 23, 2020

Signed: /s/ Edwin Denson
Edwin Denson
Investment Committee Secretary

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, June 23, 2020

Via Teleconference

Committee Members Present: David Villa, Executive Director/Chief Investment Officer (Chair)
Edwin Denson, Managing Director–Asset & Risk Allocation (Secretary)
Derek Drummond, Funds Alpha Manager
Anne-Marie Fink, Managing Director–Private Markets & Funds Alpha
Brian Hellmer, Managing Director–Global Public Market Strategies
James Laufenberg, Managing Analyst–Real Estate
Diane Linn, Managing Analyst–Multi-Asset Strategies
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Pu Shen, Managing Analyst–Asset & Risk Allocation
Nick Stanton, Head of Multi-Asset Strategies

Sara Chandler, Chief Legal Counsel (non-voting)
Brian Heimsoth, Quantitative Manager (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Bob Conlin, Trustee
Hasnat Ahmad, Intern–Global Public Market Strategies
Nathan Ballard, Senior Legal Counsel
Brandon Brickner, Internal Audit Director
Kate Burkart-Paulson, Senior Legal Counsel
Bill Campbell, Data Management Director
Chris Eckerman, Portfolio Manager–Private Equity Co-Investments
Shirley Eckes, Head of Operations
Ali El-Annan, Head of Analytics, Data Science and Development
Jameson Greenfield, Chief Financial Officer
Vicki Hearing, Communications Manager
Mike Jacobs, Agency Business Director
Janet Klosterman, Legal Assistant
Phil Johnson, Managing Analyst–Global Extended Fixed Income Strategies
Lisa Lange, Compliance Counsel
Shan Lo, Managing Analyst–Global Extended Fixed Income Strategies
Damian Maroun, Head of Trading and Execution
Frank Mazzucco, Legal Counsel
Matt Notzon, Performance Evaluation Analyst
Scott Parrish, Portfolio Manager–Private Equity
Chris Preisler, Communications Specialist
Tom Robinson, Head of Corporate Governance
Joe Roth, Business Analyst
Jason Rothenberg, Portfolio Manager–Real Estate
Edouard Senechal, Managing Analyst–Asset & Risk Allocation
Mike Shearer, Head of Alternative Fixed Income Strategies
Dawn Tuescher, Executive Administrative Assistant

Also in Attendance: Jim Vander Meer, Managing Analyst–Private Debt & Venture Capital
(Continued) Ivy Zhang, Managing Analyst–Asset & Risk Allocation
Elizabeth Donovan, DWS
David Peligal, Brookfield Asset Management
Chris Levell, NEPC
Eileen Neill, Verus Advisory, Inc.
Chuck Turgeon, Eaton Vance
(Some individuals may have attended only portions of the meeting.)

OPEN SESSION

With a quorum present, David Villa, Chair of the Investment Committee, called the meeting to order at 1:31 p.m. All attendees participated in this meeting telephonically.

1. Approval of the Minutes

Mr. Villa asked if there were any comments on either the open or closed session minutes of the May 26, 2020 Investment Committee (IC) meeting. Hearing no comments, Mr. Villa stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Villa and seconded by Ms. Linn to approve both the open session and the closed session minutes of May 26, 2020, as presented. The motion passed unanimously.

2. September Investment Forum Preview

Jim Vander Meer, Managing Analyst–Private Debt & Venture Capital, provided an update on the Investment Forum now planned for September 9, 2020. He explained that current pandemic restrictions make it unrealistic to plan for hosting an in-person event for a group of this size and the planning team is now working with a conference coordinator to host a virtual event.

3. October Workshop Preview

Mike Jacobs, Agency Business Director, stated that, because the Investment Forum was postponed to September, the planning team has decided that the October Workshop will focus on SWIB's asset allocation review and, other than the Board's asset allocation consultant, NEPC, there will be no outside speakers.

4. Quarterly Performance Review (Q1 2020)

Mr. Villa noted that staff had reported much of the high-level information included in the *Performance and Attribution Update – Q1 2020*, included on pages 9-17 in the meeting materials, to the Board at a special meeting on April 22, 2020, and that if there were no questions or comments, there would be no formal presentation.

Shirley Eckes, Head of Operations, noted that more than half of Q1 2020's 94 basis points of underperformance has been recovered, based on preliminary May 31, 2020 numbers.

5. Transition Update (Q1 2020)

Joe Roth, Business Analyst, reviewed the four Q1 2020 transitions requested by the Asset & Risk Allocation team to implement policy changes approved by the Board, as shown on the *Transition Management Summary, Q1 2020*, included on page 18 in the meeting materials. Mr. Roth reported that (a) internal SWIB trading staff performed one transition and Blackrock Transition Management performed the remaining three, and (b) three transitions were completed within the established shortfall tolerance range and one outside the expected range but to the positive.

Lastly, Mr. Roth noted that a summary of Transition Statistics from 2006 to March 2020 was also included for the Committee's information.

6. Brokerage Task Force Report

Damian Maroun, Head of Trading and Execution, reviewed the roles and responsibilities of the Brokerage Task Force, included on page 19 in the meeting materials, and identified several projects in process. He commented that the Brokerage Task Force objectives to enhance transparency and improve documentation and processes will also simplify and improve oversight by the task force.

7. Research Task Force Report

Edwin Denson, Managing Director–Asset & Risk Allocation (ARA), noted that an updated *Research Task Force: Mission & Membership* summary was included on page 20 in the meeting materials. He walked the Committee through the mission, governance and task summaries and outlined the new membership structure, noting that the kick-off meeting for the new members would be in July 2020.

8. Private Equity & Co-Investment Q1 2020 Update

Scott Parrish, Portfolio Manager–Private Equity, and Chris Eckerman, Portfolio Manager–Private Equity Co-Investments, presented the *Quarterly Activity Report – Private Equity*, included on pages 21-33 in the meeting materials. Mr. Parrish reported that, as of March 31, 2020, the aggregate Private Equity portfolio (not including private debt and venture capital) had a market value of \$8.45 billion, representing 8.9% of the Core Trust Fund (CTF), up from 7.6% as of December 31, 2019. He noted that the higher percentage was a result of Q1 2020 CTF performance and the Private Equity portfolio valuations utilizing year-end numbers, and would likely decrease in upcoming quarters.

Mr. Parrish reported that distressed general partners (GPs) have been active since early March, with two of SWIB's GPs activating flex funds in late Q1 and expecting significant capital calls in the upcoming months. SWIB had approximately \$260 million in capital calls from distressed debt/restructuring funds over the past three months. He then discussed several near-term challenges to normal deal flow, including the need for improved logistics for travel, management meetings and site visits and for business performance and outlook to return to levels consistent with seller expectations. He also reviewed potential sources for new opportunities, including (1) corporate carve-outs to satisfy liquidity needs, (2) liquidity injections in the form of PIPEs and equity recaps, (3) add-on acquisitions, which are likely to be more attractive, and (4) higher equityization levels due to the lack of liquidity in the credit markets, which may result in additional co-investment opportunities.

Mr. Parrish noted that summaries of the first quarter returns for the Core Private Equity and Current Return portfolios were included on pages 24-25 in the materials for the Committee's information.

Mr. Parrish then discussed the Private Equity portfolio's **(a)** sub-asset class diversification, noting the higher allocation to small- and mid-market buyout managers and the reduced allocation to credit/distressed; and **(b)** industry diversification, noting that exposure to financials has decreased while information technology has increased. He also highlighted the active portfolio pipeline for Q2 2020 and commitments made in Q1 2020.

Lastly, Mr. Parrish noted that the portfolio remained in compliance with all investment guidelines, and then he and Mr. Eckerman answered questions.

9. Real Estate Q1 2020 Update

Anne-Marie Fink, Managing Director–Private Markets & Funds Alpha, and Mr. Villa introduced Jason Rothenberg, Portfolio Manager–Real Estate, and welcomed him as the successor to long-time portfolio manager, Steve Spiekerman.

Mr. Rothenberg presented the *Quarterly Activity Report – Real Estate*, included on pages 34-46 of the meeting materials. He discussed the current market environment, including **(a)** commercial real estate pricing trends, noting that the mall and lodging sectors have been hit hard by the COVID-19 pandemic, **(b)** market rent growth forecasts for the four major property sectors, noting that office demand and associated rent growth may fluctuate depending on the stickiness of working from home, and **(c)** the industry's dry powder estimates in closed-end private real estate funds, noting that the team is thinking selectively about distressed opportunities given the abundance of capital raised.

Mr. Rothenberg then reviewed the snapshot of the real estate portfolio, included on pages 38-39 in the meeting materials, highlighting that the market value is approaching \$8 billion. He noted that the real estate portfolio's percentage of the CTF (7.8%) is likely to decrease in the coming quarters as values adjust in response to the impact of COVID-19, but that the real estate portfolio will likely be a net funder as managers pull back on income distributions. Referring to page 39, Mr. Rothenberg commented on the relatively flat leverage levels, noting that the team is maintaining a prudent level to mitigate near-term underperformance and remain well positioned to benefit from the economic recovery. As of April 30, 2020, the portfolio's Core holdings were 75.1%, above the 50% minimum requirement.

Mr. Rothenberg then highlighted the portfolio's risk profile, property type exposure, geographic exposure and returns, included on pages 40-43 in the meeting materials. He commented that the underweight position in the office sector should serve SWIB well, and that the team has worked to increase the portfolio's industrial exposure while remaining mindful of pricing.

Mr. Rothenberg then discussed the pipeline under review, noting that the team is being cautious in deploying new investments, as well as the commitments made in the last quarter, which included follow-on investments in successful partnerships with long-time managers. Lastly, Mr. Rothenberg confirmed that the portfolio has maintained compliance with all investment guidelines.

10. Convene in Closed Session

Motion: A motion to go into closed session pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including (a) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, (b) the review of specific proprietary investment strategies and investment instruments related to private equity, co-investments, real estate, asset and risk allocation and exposure management, and (c) the review of counterparty information was made by Mr. Villa and seconded by Mr. Denson.

The Chair called for a roll call vote.

Denson-Aye	Drummond-Aye	Fink-Aye	Hellmer-Aye	Laufenberg-Aye
Linn-Aye	Ludgate-Aye	Shen-Aye	Stanton-Aye	Villa-Aye

There being ten ayes and no nays, Mr. Villa declared the motion passed. The Committee then convened in closed session at 2:15 p.m. and reconvened in open session at 3:20 p.m.

11. Announcement of Committee Actions Relating to Items Taken up in Closed Session

Mr. Villa announced that, while in closed session, the Committee reviewed (a) proprietary investment information for the private equity, co-investments, real estate, asset and risk allocation and exposure management strategies, (b) the total and active risk for the Core and Variable Trust Funds, and (c) counterparty information.

12. Soft Risk Parameters

Brian Heimsoth, Quantitative Manager, noted that the report *Soft Risk Parameters—Asset Class and Portfolio*, as of May 31, 2020, was included on pages 125-126 in the meeting materials for the Committee’s review. As discussed in detail in Closed Session, he noted that there were no new discussion triggers on this report and that the discussion trigger for Fixed Income Government/Credit ex ante tracking error had dropped off since last month.

13. Future Meeting Topics

Mr. Villa noted that a summary of standard IC agenda items and draft agendas for the July 28, 2020 and August 27, 2020 IC meetings were included on pages 127-132 in the meeting materials for the Committee’s review.

14. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Villa and seconded by Mr. Ludgate. The motion passed unanimously, and the meeting adjourned at 3:22 p.m.

Date of Committee Approval: 7/28/2020

Signed: /s/ Edwin Denson
Edwin Denson
Investment Committee Secretary

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, July 28, 2020

Via Teleconference

Committee Members Present: David Villa, Executive Director/Chief Investment Officer (Chair)
Edwin Denson, Managing Director–Asset & Risk Allocation (Secretary)
Derek Drummond, Funds Alpha Manager
Anne-Marie Fink, Managing Director–Private Markets & Funds Alpha
Brian Hellmer, Managing Director–Global Public Market Strategies
James Laufenberg, Managing Analyst–Real Estate
Diane Linn, Managing Analyst–Multi-Asset Strategies
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Pu Shen, Managing Analyst–Asset & Risk Allocation
Nick Stanton, Head of Multi-Asset Strategies

Sara Chandler, Chief Legal Counsel (non-voting)
Brian Heimsoth, Quantitative Manager (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Bob Conlin, Trustee
Hasnat Ahmad, Intern–Global Public Market Strategies
Nathan Ballard, Senior Legal Counsel
Brandon Brickner, Internal Audit Director
Kate Burkart-Paulson, Senior Legal Counsel
John Burkhartzmeyer, Trader
Bill Campbell, Data Management Director
Shirley Eckes, Head of Operations
Ali El-Annan, Head of Analytics, Data Science and Development
Chirag Gandhi, Portfolio Manager–Global Bonds
Becca Hewison, Executive Administrative Assistant
Mike Jacobs, Agency Business Director
Janet Klosterman, Legal Assistant
Phil Johnson, Managing Analyst–Global Extended Fixed Income Strategies
David Jordan, Portfolio Manager–High Yield
Lisa Lange, Compliance Counsel
Jonathan Levine, Managing Analyst–Global Extended Fixed Income Strategies
Shan Lo, Managing Analyst–Global Extended Fixed Income Strategies
Bill Luetzow, Assistant Compliance Counsel
Damian Maroun, Head of Trading and Execution
Frank Mazzucco, Legal Counsel
Joy Mukherjee, Head of Domestic Small Cap Strategy
Chad Neumann, Head of Global Sector Aggregate Strategy
Matt Notzon, Performance Evaluation Analyst
Chris Preisler, Communications Specialist
Tom Robinson, Head of Corporate Governance

Joe Roth, Business Analyst
Andrea Ruiz, Portfolio Manager–Liquidity, Inflation & Rates Management
Edouard Senechal, Managing Analyst–Asset & Risk Allocation
Mike Shearer, Head of Alternative Fixed Income Strategies
Jon Simon, Managing Analyst–Global Extended Fixed Income Strategies
Jim Vander Meer, Managing Analyst–Private Debt & Venture Capital
Ping Wong, Securities Analyst– Liquidity, Inflation & Rates Management
Ivy Zhang, Managing Analyst–Asset & Risk Allocation
Zack Cziryak, Financial Investment News
Teddy Grant, Buyouts Insider
David Hetzer, Meketa Investment Group
Samuel Karasek, HFM Global
Chris Levell, NEPC
Eileen Neill, Verus Advisory, Inc.
(Some individuals may have attended only portions of the meeting.)

OPEN SESSION

With a quorum present, David Villa, Chair of the Investment Committee, called the meeting to order at 1:30 p.m. All attendees participated in this meeting telephonically.

1. Approval of the Minutes

Mr. Villa asked if there were any comments on either the open or closed session minutes of the June 23, 2020 Investment Committee (IC) meeting. Hearing no comments, Mr. Villa stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Villa and seconded by Ms. Fink to approve both the open session and the closed session minutes of June 23, 2020, as presented. The motion passed unanimously.

2. September Investment Forum Preview

Jim Vander Meer, Managing Analyst–Private Debt & Venture Capital, provided an update on the Investment Forum planned for September 8-9, 2020. He explained that the virtual event will be split between two afternoons and that planning is going well with the virtual conference hosting company. All previously arranged speakers have confirmed availability and agreed to the new virtual format.

3. Amendments to Investment Committee WRS Investment Guidelines

Sara Chandler, Chief Legal Counsel, discussed the proposed amendments to the *SWIB Investment Committee WRS Investment Guidelines*, included on pages 11-53 in the meeting materials. Referring to her memo included on pages 9-10 in the meeting materials, she noted that the proposed revisions are concentrated in the various portfolios in the Private Markets and Funds Alpha Division (PMFA). Anne-Marie Fink, Managing Director–Private Markets & Funds Alpha, highlighted that the revisions would increase the approval thresholds that determine which investments can be approved by the PMFA Managing Director and which require ED/CIO approval, noting that the previous thresholds had not been reviewed or updated in several years and needed refreshing as the Core Trust Fund (CTF) has increased in size. She also noted that the geography of the Private Debt Portfolio was being expanded beyond the Midwest to the entire

United States, and that additional changes were being requested to increase consistency across the PMFA portfolios and eliminate outdated provisions.

Ms. Chandler then noted that the revisions to the applicable PMFA portfolios would also (a) clarify the guidelines for non-U.S. exposure for improved consistency and allow limited exposure to emerging markets, (b) allow co-investments in public company securities alongside existing general partners, (c) remove the guidelines limiting SWIB's holdings to 50% of a portfolio company's outstanding equity for the Venture Capital, Private Equity and Current Return portfolios, which she noted has restricted the opportunity set for co-investments with smaller managers, (d) remove the classification of hedge fund investments into core, satellite and niche, which has become less relevant for portfolio construction purposes as the portfolio has matured and concentrated, (e) add the current standalone Beta One Portfolio guidelines to the *SWIB Investment Committee WRS Investment Guidelines*; and (f) make other changes to conform language across portfolios, delete provisions made obsolete by statutory changes and clarify definitions. Then, Mses. Fink and Chandler facilitated the Committee's discussion and answered questions.

Motion: A motion was made by Mr. Villa and seconded by Ms. Linn to approve the proposed amendments to the *SWIB Investment Committee WRS Investment Guidelines*, as presented in the Committee's materials. The motion passed unanimously.

4. Global Public Market Strategies Q2 2020

Brian Hellmer, Managing Director–Global Public Market Strategies, presented the *Global Public Market Strategies Quarterly Update*, included on pages 54-84 in the meeting materials. Mr. Hellmer reported that assets under management at June 30, 2020 for the seven active strategies was approximately \$42 billion and that four of the seven strategies had positive excess return for the year as of June 30, despite very volatile market conditions. As of the meeting date, six of the seven strategies had positive excess return. He also highlighted (a) significant improvement during Q2 in credit strategies (Government/Credit and Short-term Credit portfolios), (b) tracking errors for most products are running above normal this year, reflecting the unusual levels of market volatility, and (c) strong year-to-date performance from the options overlay program. He referred the Committee to pages 55-56 in the meeting materials for year-to-date performance summaries and score cards for the strategies and noted that all strategies were in compliance with their guidelines.

Mr. Hellmer then commented on the equity markets' strong recovery during Q2, driven by optimism about re-opening the economy, government support programs, and progress on COVID-19 treatment and vaccines. He noted that the technology industry had done particularly well, with global technology stocks outperforming by 20% year-to-date, but that overall volatility remains high and reflects the significant level of uncertainty relating to economic recovery and the pandemic. Further, stock valuations look high when compared to most historical measures but are still attractive relative to current bond yields. The two trends that stand out are the continued outperformance of growth relative to value and U.S. stocks relative to the rest of the world.

With respect to the fixed income markets, Todd Ludgate, Head of Global Extended Fixed Income Strategies, discussed increasing inflation expectations, the recent decline of the U.S. Dollar, credit spreads continuing to rally and the trending reflation trade.

5. Convene in Closed Session

Motion: A motion to go into closed session pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including (a) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, and (b) the review of specific proprietary investment strategies and investment instruments related to global public market strategies and exposure management was made by Mr. Ludgate and seconded by Mr. Stanton.

The Chair called for a roll call vote.

Denson-Aye	Drummond-Aye	Fink-Aye	Hellmer-Aye	Laufenberg-Aye
Linn-Aye	Ludgate-Aye	Shen-Aye	Stanton-Aye	Villa-Aye

There being ten ayes and no nays, Mr. Villa declared the motion passed. The Committee then convened in closed session at 2:11 p.m. and reconvened in open session at 4:06 p.m.

6. Announcement of Committee Actions Relating to Items Taken up in Closed Session

Mr. Villa announced that, while in closed session, the Committee reviewed (a) proprietary investment information for the investment strategies and investment instruments related to global public market strategies and exposure management strategies, (b) soft risk parameters, and (c) the total and active risk for the Core and Variable Trust Funds.

7. QIR Certification

Lisa Lange, Compliance Counsel, stated that the Global Extended Fixed Income Strategies team and the Trading and Execution team have proposed having the Committee appoint Shan Lo and John Burkhartzmeyer each as a QIR for FX forwards (deliverable and non-deliverable), FX swaps (deliverable and non-deliverable), and Traditional (Vanilla) FX options (deliverable and non-deliverable) for all approved counterparties with whom SWIB has a master netting agreement for such instruments. Ms. Lange noted that the signed Internal QIR Certificates and Agreements for Messrs. Lo and Burkhartzmeyer that document each of their relevant knowledge and experience were included in the meeting materials for the Committee's review. She also explained that, if approved as QIRs, Messrs. Lo and Burkhartzmeyer will become subject to quarterly and annual certifications regarding their QIR status as a condition of their employment.

Motion: A motion was made by Mr. Villa and seconded by Mr. Stanton to approve that Shan Lo and John Burkhartzmeyer meet all of the QIR Criteria with respect FX forwards (deliverable and non-deliverable), FX swaps (deliverable and non-deliverable), and Traditional (Vanilla) FX options (deliverable and non-deliverable) for all approved counterparties with whom SWIB has a master netting agreement for such instruments from time to time and each is approved to act and is hereby appointed as a QIR with respect to such counterparties. The motion passed unanimously.

8. Soft Risk Parameters

Brian Heimsoth, Quantitative Manager, noted that the report *Soft Risk Parameters—Asset Class and Portfolio*, as of June 30, 2020, was included on pages 247-248 in the meeting materials for the Committee's review. As discussed in detail in Closed Session, he noted that there were no new discussion triggers on this report and that discussion triggers had been dropped since last month

for the CTF U.S. Investment Grade asset class allocation and the Small Cap Diversified ex ante tracking error.

9. Future Meeting Topics

Mr. Villa noted that a summary of standard IC agenda items and draft agendas for the August 27, 2020 and September 22, 2020 IC meetings were included on pages 249-254 in the meeting materials for the Committee's review.

10. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Drummond and seconded by Ms. Shen. The motion passed unanimously, and the meeting adjourned at 4:13 p.m.

Date of Committee Approval: 8/26/2020

Signed: /s/ Edwin Denson
Edwin Denson
Investment Committee Secretary

Staff Investment Committee Meeting

Wednesday, August 26, 2020

STATE OF WISCONSIN INVESTMENT BOARD

121 East Wilson Street

Madison, Wisconsin

1:00 p.m.

VIA TELECONFERENCE:

Dial-In Number: 608-267-3179

Access Code: 952806640

Est. Time
(minutes)

OPEN SESSION

- | | | |
|----|---|--|
| |  | 1. Approval of the Minutes - Open Session
A. July 28, 2020 |
| 5 | | 2. September Investment Forum Preview – Jim Vander Meer |
| 5 | | 3. October Workshop Preview – Edwin Denson and Sara Chandler |
| 5 | | 4. Quarterly Performance Review (Q2 2020) – Matt Notzon |
| 15 | | 5. Funds Alpha Q2 2020 Update – Derek Drummond |
| 15 | | 6. Private Debt Q2 2020 Update – Chris Prestigiacomio |
| |  | CLOSED SESSION* |
| |  | RECONVENE IN OPEN SESSION |
| | | 7. Announcement of Committee Actions Relating to Items Taken up in Closed Session |
| 5 | | 8. Currency Task Force Report – Chirag Gandhi |
| 5 | | 9. Credit Task Force Report – Jon Simon |

* A motion to go into closed session at this meeting is authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes (a) to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, (ii) the review of specific proprietary investment strategies and investment instruments related to funds alpha, private debt, venture capital, currency exposure and exposure management, and (iii) the review of credit counterparty information, and (b) to discuss and approve prior closed session minutes that discuss the same. The Committee may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General's Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the committee will subsequently reconvene in open session to cover remaining agenda items.

5

10. **Research Task Force Report** – Edwin Denson
11. **Soft Risk Parameters** (No presentation unless requested)
12. **Future Meeting Topics**
13. **Motion to Adjourn**



NOTES: Items may be taken in order other than listed.

The meeting site is physically accessible. Upon prior request, reasonable accommodations will be provided.

FUTURE MEETINGS

9/22/20 – September Committee Mtg.
10/27/20 – October Committee Mtg.
11/24/20 – November Committee Mtg.
12/22/20 – December Committee Mtg.

Investment Committee Members:

Executive Director/Chief Inv. Officer: David Villa (Chair)
Managing Director-Private Markets & Funds Alpha: Anne-Marie Fink
Managing Director-Asset & Risk Allocation: Edwin Denson (Secretary)
Managing Director-Global Public Market Strategies: Brian Hellmer
Head of Global Extended Fixed Income Strategies: Todd Ludgate
Head of Multi-Asset Strategies: Nick Stanton
Funds Alpha Manager: Derek Drummond
Managing Analyst-Real Estate: James Laufenberg
Managing Analyst-Multi-Asset Strategies: Diane Linn
Managing Analyst-Asset & Risk Allocation: Pu Shen

Deputy Executive Director/CAO: Rochelle Klaskin (non-voting)
Chief Legal Counsel: Sara Chandler (non-voting)
Quantitative Manager: Brian Heimsoth (non-voting)

Staff Investment Committee Meeting

Tuesday, September 22, 2020

STATE OF WISCONSIN INVESTMENT BOARD

121 East Wilson Street

Madison, Wisconsin

Presentation Room

1:00 p.m.

VIA TELECONFERENCE:

Dial-In Number: 608-267-3179

Access Code: xxxxxxxxx

**Est. Time
(minutes)**

OPEN SESSION

- | | | |
|----|---|--|
| |  | 1. Approval of the Minutes – Open Session
A. August 26, 2020 |
| 5 | | 2. Transition Update (Q2 2020) – Joe Roth |
| 10 | | 3. Corporate Governance Update – Tom Robinson |
| 10 | | 4. Fair Value Measurement Review of WRS Investments – Nick Johnson |
| 15 | | 5. Separately Managed Funds Update – Rob Thornton |
| 10 | | 6. Private Equity Q2 2020 Update – Scott Parrish and Chris Eckerman |
| 10 | | 7. Real Estate Q2 2020 Update – Jason Rothenberg |
| |  | CLOSED SESSION* |
| |  | RECONVENE IN OPEN SESSION |
| | | 8. Announcement of Committee Actions Relating to Items Taken up in Closed Session |
| 10 |  | 9. Amendments to Investment Committee WRS Investment Guidelines – Sara Chandler |

*A motion to go into closed session at this meeting is authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes (a) to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, (ii) the review of specific strategies related to asset allocation, and (iii) the review of specific proprietary investment strategies and investment instruments related to private equity, co-investments, real estate, high yield and exposure management, and (b) to discuss and approve prior closed session minutes that discuss the same. The Committee may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General's Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the committee will subsequently reconvene in open session to cover remaining agenda items.

10. **Soft Risk Parameters** (No presentation unless requested)
11. **Future Meeting Topics**
-  12. **Motion to Adjourn**

NOTES: Items may be taken in order other than listed.

The meeting site is physically accessible. Upon prior request, reasonable accommodations will be provided.

FUTURE MEETINGS

10/27/20 – October Committee Mtg.
 11/24/20 – November Committee Mtg.
 12/22/20 – December Committee Mtg.

Investment Committee Members:

Executive Director/Chief Inv. Officer: David Villa (Chair)
 Managing Director-Private Markets & Funds Alpha: Anne-Marie Fink
 Managing Director-Asset & Risk Allocation: Edwin Denson (Secretary)
 Managing Director-Global Public Market Strategies: Brian Hellmer
 Head of Global Extended Fixed Income Strategies: Todd Ludgate
 Head of Multi-Asset Strategies: Nick Stanton
 Funds Alpha Manager: Derek Drummond
 Managing Analyst-Real Estate: James Laufenberg
 Managing Analyst-Multi-Asset Strategies: Diane Linn
 Managing Analyst-Asset & Risk Allocation: Pu Shen

Deputy Executive Director/CAO: Rochelle Klaskin (non-voting)
 Chief Legal Counsel: Sara Chandler (non-voting)
 Quantitative Manager: Brian Heimsoth (non-voting)

Staff Investment Committee Meeting

Tuesday, October 27, 2020

STATE OF WISCONSIN INVESTMENT BOARD

121 East Wilson Street

Madison, Wisconsin

Presentation Room

1:30 p.m.

VIA TELECONFERENCE:

Dial-In Number: 608-267-3179

Access Code: xxxxxxxx

**Est. Time
(minutes)**

OPEN SESSION

- | | | |
|----|---|--|
| |  | 1. Approval of the Minutes – Open Session
A. September 22, 2020 |
| 5 | | 2. October Board Workshop Debrief – David Villa and Edwin Denson |
| 20 |  | 3. Annual Benchmark Presentation – Eileen Neill, Verus, and Matt Notzon |
| 20 | | 4. Global Public Market Strategies Q3 2020 – Brian Hellmer |

 **CLOSED SESSION***

 **RECONVENE IN OPEN SESSION**

- | | | |
|--|---|--|
| | | 5. Announcement of Committee Actions Relating to Items Taken up in Closed Session |
| | | 6. Soft Risk Parameters (No presentation unless requested) |
| | | 7. Future Meeting Topics |
| |  | 8. Motion to Adjourn |

NOTES: Items may be taken in order other than listed.

*A motion to go into closed session at this meeting is authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes (a) to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, and (ii) the review of specific proprietary investment strategies and investment instruments related to global public market strategies and exposure management, and (b) to discuss and approve prior closed session minutes that discuss the same. The Committee may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General's Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the committee will subsequently reconvene in open session to cover remaining agenda items.

The meeting site is physically accessible. Upon prior request, reasonable accommodations will be provided.

FUTURE MEETINGS

11/24/20 – November Committee Mtg.
12/22/20 – December Committee Mtg.

Investment Committee Members:

Executive Director/Chief Inv. Officer: David Villa (Chair)
Managing Director-Private Markets & Funds Alpha: Anne-Marie Fink
Managing Director-Asset & Risk Allocation: Edwin Denson (Secretary)
Managing Director-Global Public Market Strategies: Brian Hellmer
Head of Global Extended Fixed Income Strategies: Todd Ludgate
Head of Multi-Asset Strategies: Nick Stanton
Funds Alpha Manager: Derek Drummond
Managing Analyst-Real Estate: James Laufenberg
Managing Analyst-Multi-Asset Strategies: Diane Linn
Managing Analyst-Asset & Risk Allocation: Pu Shen

Deputy Executive Director/CAO: Rochelle Klaskin (non-voting)
Chief Legal Counsel: Sara Chandler (non-voting)
Quantitative Manager: Brian Heimsoth (non-voting)

Investment Performance Report

As of
June 30, 2020

Executive Summary

June 30, 2020

- The Core Trust Fund returned 11.52% gross of fees in Q2, resulting in an excess return of 104 bps in Q2. Year to date, the Core Trust Fund has returned -1.19% gross of fees, resulting in an excess return of -12 bps.
- The Core Trust Fund five year gross of fee return of +7.06% outperforms the Policy Benchmark by +30 bps on an annualized basis.
- The Core Trust Fund return outperforms the 60/40 Reference Portfolio Return by 57% (cumulative) over a 20 year time period.

Economic and Market Indicators

June 30, 2020

Economic Indicators	YTD	1 Year	5 Year	10 Year
GDP (current dollars)	-10.75	-9.01	1.14	2.59
GDP Deflator	-0.13	0.59	1.50	1.64
CPI	0.32	0.65	1.56	1.69
National Wage Rate Growth	7.11	7.97	3.62	3.01

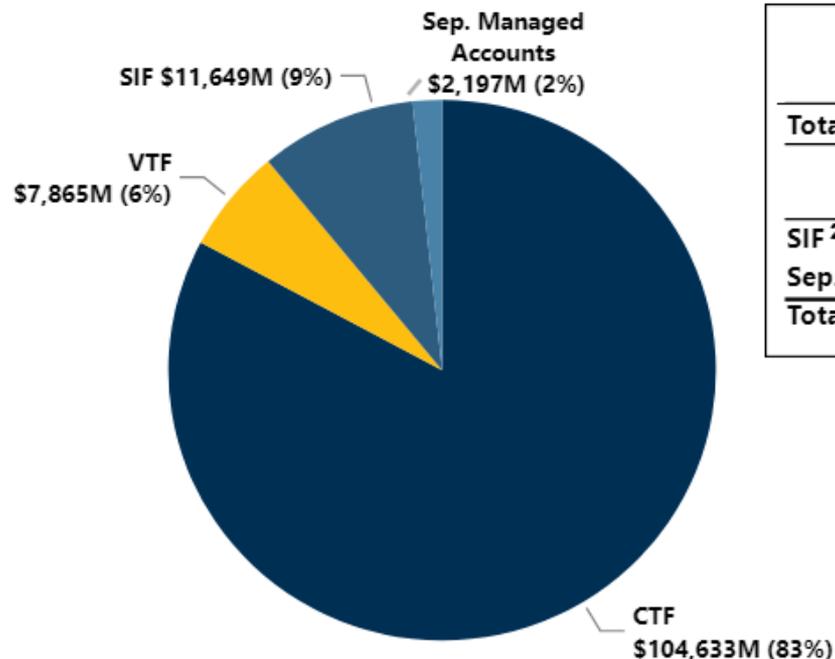
Market Indicators	YTD	1 Year	5 Year	10 Year
US Equity	-3.48	6.53	10.03	13.72
Global Equity	-5.99	2.64	7.03	9.74
International Developed Equity	-11.49	-5.42	2.01	5.44
US Government Credit	7.21	10.02	4.74	4.13
Global Sovereign Debt	4.08	4.60	3.70	2.37
Real Estate	2.50	4.88	8.46	11.19

Sources: US Equity, Russell 3000; Global Equity, MSCI ACWI Gross; International Developed Equity, MSCI World ex US Equities; US Government Credit, Barclays Capital Govt/Credit; Global Sovereign Debt, Citigroup World Govt Bonds; Real Estate, ODCE

All returns are represented in percent.

Total Assets Under Management (AUM)

June 30, 2020 (in millions)



Fund	06/30/2019 AUM ¹	06/30/2020 AUM ¹	1 Year AUM Change
Total WRS	\$111,279M	\$112,498M	\$1,219M
CTF	\$103,281M	\$104,633M	\$1,352M
VTF	\$7,998M	\$7,865M	(\$133M)
SIF²	\$8,894M	\$11,649M	\$2,755M
Sep. Managed Funds	\$2,052M	\$2,197M	\$146M
Total AUM	\$122,225M	\$126,345M	\$4,120M

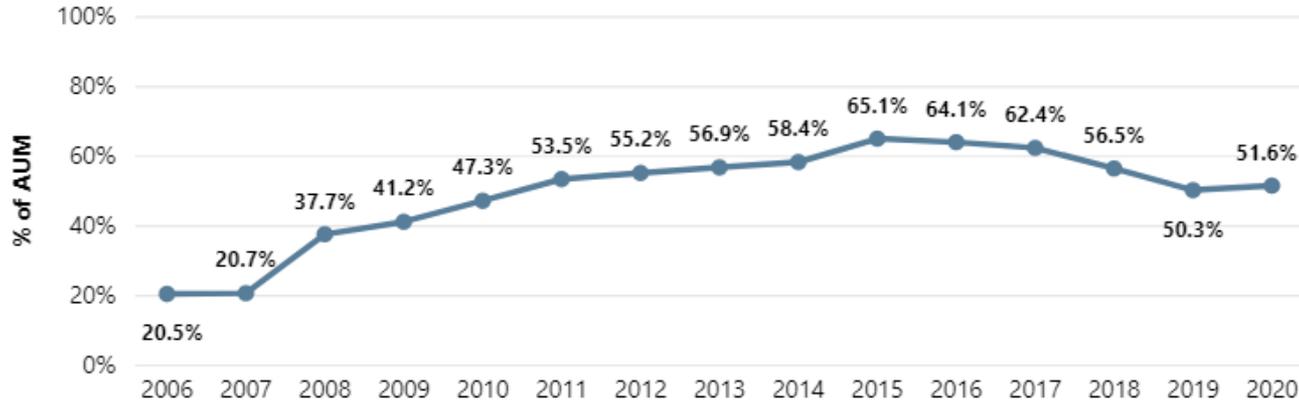
¹ AUM is the total market value of assets that an investment company or financial institution manages on behalf of investors.

² Excludes cash in SIF held on behalf of CTF, VTF, and Separately Managed Funds.

WRS Assets as of June 30, 2020

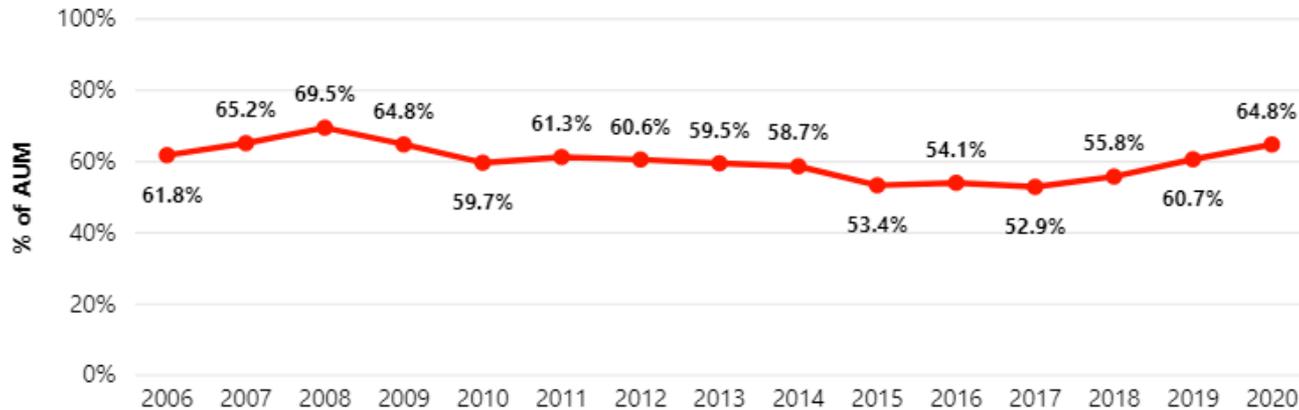
Breakdown of Internal vs. External and Active vs. Passive

Internally Managed Assets



More assets are being actively managed.

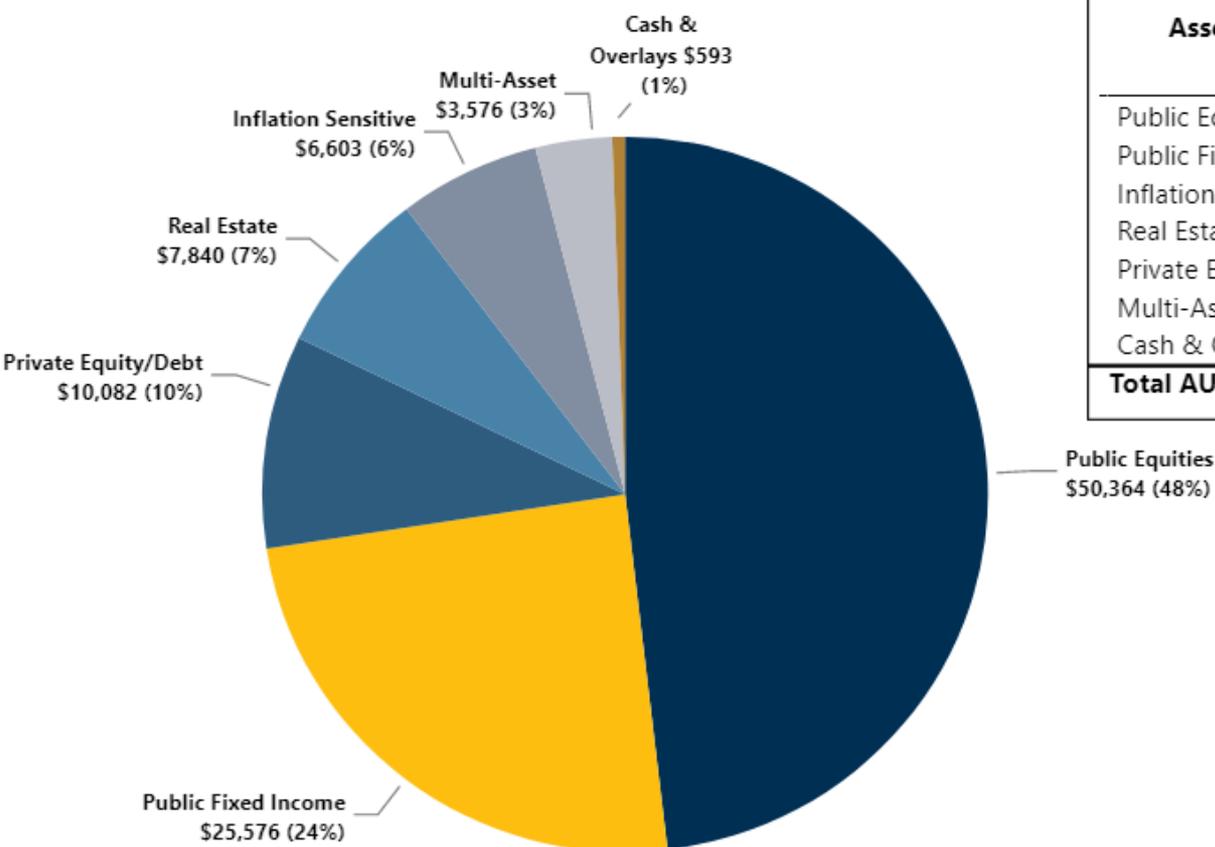
Actively Managed Assets



Core Trust Fund Assets Under Management (AUM)

Breakdown by Asset Class as of June 30, 2020 (in millions)

Asset Class	06/30/2019 AUM ¹	06/30/2020 AUM ¹	1 Yr. AUM Change
Public Equities	\$51,366	\$50,364	(\$1,002)
Public Fixed Income	\$25,577	\$25,576	(\$1)
Inflation Sensitive	\$6,559	\$6,603	\$43
Real Estate	\$7,393	\$7,840	\$447
Private Equity/Debt	\$9,291	\$10,082	\$791
Multi-Asset	\$2,685	\$3,576	\$891
Cash & Overlays	\$410	\$593	\$183
Total AUM	\$103,281	\$104,633	\$1,352



- Public Equities had earnings of \$888m and \$1,890m of outflows
- Public Fixed Income had earnings of \$2.4b offset by \$2.4b of outflows

¹ AUM is the total market value of assets that an investment company or financial institution manages on behalf of investors.

Core Trust Fund Allocation

All Values as of June 30, 2020

	Total Exposure (\$ Mil)	Total Exposure (%)	Adjusted Policy Target ⁴	Target Range
Public Equities^{1,5}	\$50,944	48.7%	48.9%	42.9% - 54.9%
Global Developed	\$43,316	41.4%	41.6%	
Emerging Market	\$3,113	3.0%	3.0%	
US Small Cap	\$3,123	3.0%	3.0%	
EAFE Small Cap	\$1,392	1.3%	1.3%	
Public Fixed Income^{1,5}	\$22,278	21.3%	25.0%	19.0% - 31.0%
Investment Grade ²	\$17,693	16.9%	21.3%	
High Yield	\$2,551	2.4%	1.9%	
Emerging Debt	\$2,034	1.9%	1.9%	
Emerging Debt	\$1,042	1.0%	0.9%	
Emerging Debt (Local)	\$992	0.9%	0.9%	
Inflation Sensitive^{1,5}	\$16,048	15.3%	15.5%	10.5% - 20.5%
Real Estate Equity^{1,5}	\$7,840	7.5%	7.5%	5.0% - 11.0%
Private Equity/Debt^{1,5}	\$10,082	9.6%	9.6%	6.0% - 12.0%
Multi-Asset^{1,5}	\$3,576	3.4%	3.4%	1.0% - 7.0%
Cash & Overlays³	\$785	0.8%	0.0%	
Total Fund	\$111,553	106.6%	110.0%	105.0% - 115.0%

¹ Public and private market values include cash.

² Contains government/credit investment grade bonds, MBS, excess treasuries, and long treasuries.

³ Cash is liquidity, global equity income, overlay related cash and amount of cash needed to fund synthetic beta related to Alpha Pool as physical investment inclusive of adjustment for interest.

⁴ Adjusted Policy Target is the fund policy target weights dynamically adjusted for actual weights and other asset allocation and rebalancing.

⁵ Asset class exposures shown may incorporate security-level exposures from exposure management activities.

Core Trust Fund & Asset Class Performance

As of June 30, 2020

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Core Trust Fund (Gross)	6/30/77	\$104,633	-1.19	5.31	7.06	8.76
Core Trust Fund Benchmark (Gross)			-1.07	5.14	6.76	8.35
			-0.12	0.17	0.30	0.41
Core Trust Fund (Net) ¹	6/30/77	\$104,561	-1.40	4.91	6.69	8.40
Core Trust Fund Benchmark (Net)			-1.18	4.91	6.56	8.11
			-0.21	0.00	0.14	0.29

ASSET CLASSES - GROSS OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Public Equities ²	12/31/92	\$50,944	-6.87	1.73	6.76	9.95
Public Equity Benchmark			-6.23	2.33	6.89	9.84
			-0.64	-0.60	-0.14	0.12
Global Developed Equity ²	02/28/17	\$43,316	-6.27	2.53		7.94
MSCI World Custom Net			-5.49	3.38		8.20
			-0.78	-0.85		-0.26
US Small Cap ²	02/28/17	\$3,123	-12.14	-4.17		3.87
Russell 2000			-12.98	-6.63		2.59
			0.84	2.46		1.28
Emerging Market Equity	02/28/17	\$3,113	-10.53	-4.08		3.38
MSCI Emerging Market Custom Net			-9.77	-3.34		4.42
			-0.77	-0.73		-1.05
Intl Small Cap	12/31/19	\$1,392	-11.03			
MSCI EAFE Small Cap Custom			-12.93			
			1.91			

¹ Net of External Manager Fees

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Asset Class Performance (Cont'd)

As of June 30, 2020

ASSET CLASSES - GROSS OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Public Fixed Income ²	12/31/92	\$26,674	5.98	9.19	4.99	4.44
Fixed Income Benchmark			6.09	8.97	4.80	4.12
			-0.11	0.22	0.20	0.32
Investment Grade Fixed Income ⁴	05/31/05	\$22,575	6.68	9.78	4.88	4.40
Barclays Capital Govt/Credit			7.54	10.13	4.72	4.12
			-0.85	-0.35	0.16	0.28
High Yield Fixed Income	01/31/01	\$2,064	-3.03	0.41	4.98	6.92
BofA Merrill Lynch Corporate High Yield Ba/B Index Since 1/1/18			-3.49	0.66	5.05	6.74
			0.46	-0.25	-0.06	0.18
Emerging Market Debt	05/31/05	\$1,042	-5.70	-2.59	5.18	6.35
JPM EMBI Global Diversified			-2.76	0.49	5.30	6.03
			-2.94	-3.08	-0.12	0.33
Emerging Market Debt - Local	07/31/17	\$992	-7.65	-3.85		-0.41
JPM GBI-EM Global Diversified			-6.89	-2.82		0.46
			-0.77	-1.03		-0.87
Inflation Sensitive ²	12/31/03	\$16,048	6.25	8.48	3.19	3.37
Inflation Sensitive Benchmark			6.01	8.28	3.07	3.03
			0.24	0.20	0.12	0.34

¹ Net of External Manager Fees

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

⁴ Contains Government/Credit Investment Grade Bonds, Excess Treasuries, and Long Treasuries

Asset Class Performance (Cont'd)

As of June 30, 2020

ASSET CLASSES - NET OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Real Estate ¹	03/31/04	\$7,825	-0.22	2.66	7.85	11.56
Real Estate Benchmark			2.03	3.93	7.43	9.95
			-2.26	-1.27	0.41	1.61
Private Equity/Debt ¹	12/31/02	\$10,037	-2.75	2.05	10.38	11.95
Private Equity Benchmark			-6.71	-2.91	7.21	9.79
			3.96	4.97	3.17	2.15
Multi-Asset ¹	03/31/03	\$3,576	-0.47	5.62	5.54	7.23
Multi-Asset Benchmark			-0.14	6.56	7.30	8.01
			-0.32	-0.94	-1.76	-0.78
Alpha Pool Overlay ¹	01/31/11	\$5,561	1.14	1.07	0.31	1.89
Alpha Pool Overlay Benchmark - No Leverage Benchmark Since 1/1/19			0.00	0.00	1.06	1.53
			1.14	1.07	-0.75	0.36

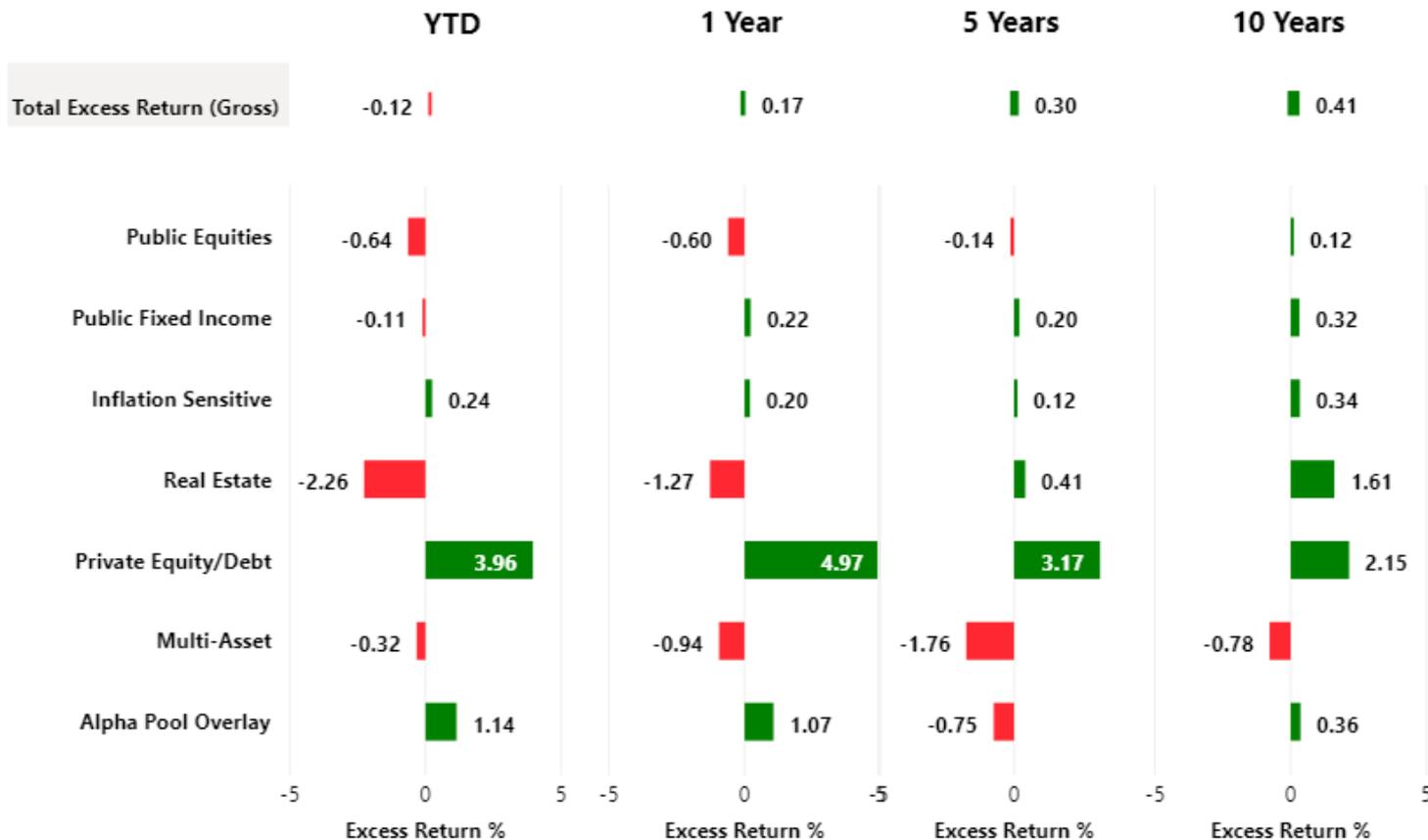
¹ Net of External Manager Fees

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Core Trust Fund Asset Class Excess Return

Performance Above Benchmark as of June 30, 2020

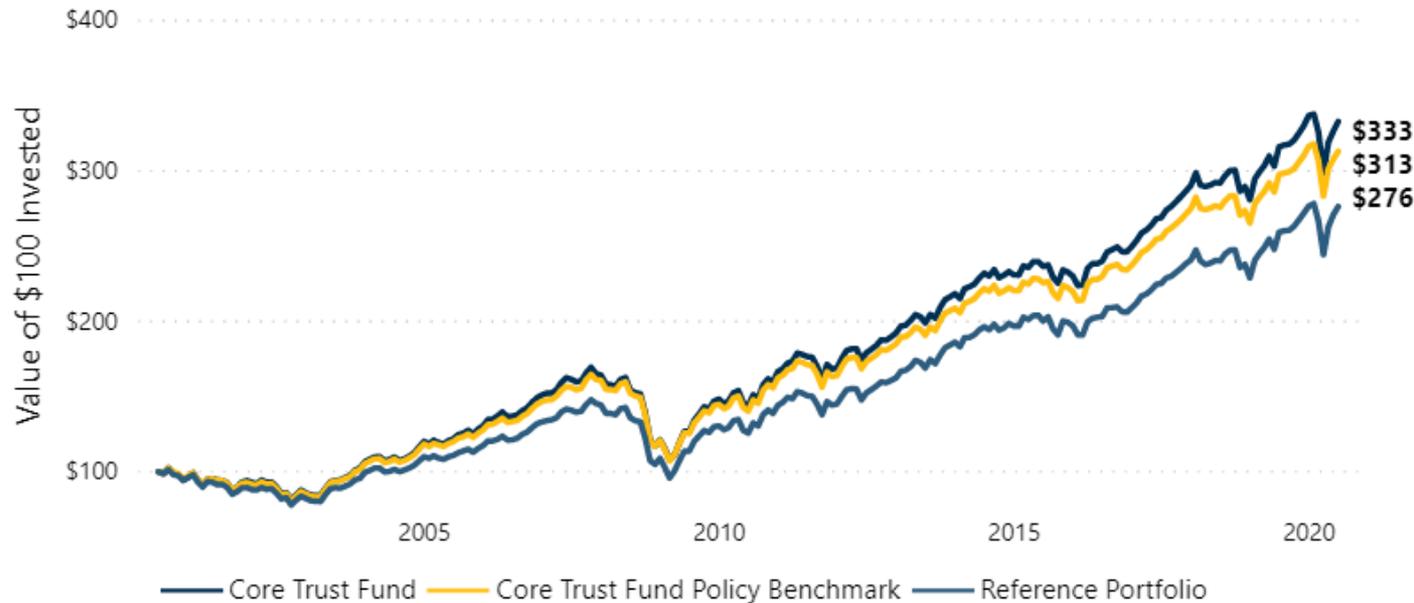


• Public Equity, Public Fixed Income, Inflation Sensitive are gross of fee. Real Estate, Private Equity/Debt, Multi-Asset, and Alpha Pool Overlay are net of external manager fee

CTF Performance vs. 60/40 Reference Portfolio*

July 2000 to June 2020

Benefit of SWIB's Asset Allocation & Active Management Over Time



- Due to SWIB's robust asset allocation and active management, CTF outperforms the 60/40 Reference Portfolio return by approximately 1.0% for the past 20 years, or approximately 57% on a cumulative basis for the time period (assuming no contributions or withdrawals)

- SWIB achieves this outperformance with less risk than the 60/40 reference portfolio

*The reference portfolio is 60% MSCI World and 40% Bloomberg Barclays Gov't/Credit (domestic)(rebalanced monthly).

Variable Trust Fund Allocation

All Values as of June 30, 2020

	Total Exposure (\$ Mil.)	Total Exposure (%)	Target	Target Range
Public Equities	\$7,845	99.7%	100.0%	
Domestic	\$5,504	70.0%	70.0%	65.0 - 75.0%
International	\$2,341	29.8%	30.0%	25.0 - 35.0%
Cash & Overlays	\$20	0.3%	0.0%	
Total Fund	\$7,865	100.0%	100.0%	

Asset class exposures are within the Target Range

Separately Managed Funds Performance

As of June 30, 2020

	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ²
State Investment Fund (SIF)	\$16,019	0.43	1.45	1.18	0.66
SIF Benchmark		0.33	1.25	1.14	0.61
		0.10	0.21	0.04	0.05
State Life Insurance Fund	\$129	9.38	13.89	6.98	6.38
No Benchmark					
Historical Society Endowment Fund	\$18	-0.89	7.66	8.94	11.47
Historical Society Endowment Benchmark		-0.63	7.72	8.87	11.40
		-0.26	-0.06	0.07	0.07
Injured Patients & Families Compensation Fund	\$1,587	5.22	9.45	5.91	5.95
Injured Patients & Families Compensation Benchmark		5.47	9.36	5.44	5.40
		-0.25	0.09	0.47	0.55
UW System Long Term Fund ¹	\$463	-1.66	3.78		5.25
UW System Benchmark		-1.89	3.43		4.91
		0.23	0.35		0.34

¹ Performance Start Date of April 1, 2018

² 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Leverage and Alpha Beta Overlay Performance

As of

June 30, 2020

CTF Leverage Performance

As of June 30, 2020

CTF Leverage Strategy (Gross of Fees)

Core Trust Fund	YTD	1 Year	5 Year	10 Year
Portfolio Return (Unleveraged)	-1.14%	4.67%	6.36%	8.31%
Return from Leverage ¹	-0.07%	0.59%	0.65%	0.42%
<u>Implementation (+) or (-)</u> ²	0.02%	0.05%	0.05%	0.03%
Portfolio Return (Leveraged)	-1.19%	5.31%	7.06%	8.76%
Benchmark Return	-1.07%	5.14%	6.76%	8.35%
Excess Return	-0.12%	0.17%	0.30%	0.41%

- Leverage gained 59 bps (1-yr) and added 65 bps (5-yr)
- Implementation: Managing relative cost of leverage +5 bps (1-yr)
- Gross absolute return (1-yr) = 5.31%; gross absolute return (5-yr) = 7.06%
- The long term benefit of leverage: SWIB has the ability to construct a more efficiently allocated portfolio.

Notes:

¹ The first increment of policy leverage was introduced into the CTF and the benchmark at the end of April 2012.

² Illustrates how the CTF's cost of financing has compared to the benchmark's cost of financing (LIBOR + 30 bps) over time.

Alpha Beta Overlay Performance

As of June 30, 2020

Alpha-Beta Overlay Strategy

Alpha Category (Net of Fees)	YTD	1 Yr	Inception ¹
Alpha Portfolio Return	1.14%	1.07%	0.58%
<u>Estimated Cost of Financing^{2, 3}</u>	<u>0.00%</u>	<u>0.00%</u>	<u>1.10%</u>
Alpha Return (Net of Financing Costs)	1.14%	1.07%	-0.52%
Beta Category (Gross of Fees)			
CTF Benchmark Return	-1.07%	5.14%	7.44%
Alpha-Beta Return	0.08%	6.21%	6.93%

- Alpha absolute return = 1.14% (YTD)
- Beta absolute return = -1.07% (YTD)
- Alpha (active) is transported (overlaid) onto the CTF beta exposure, resulting in a return of 0.08% (YTD)
- Alpha-Beta overlay strategy has returned 6.93% since inception
- In the long term, the portable alpha program is more risk/return efficient vs. alpha assets in the policy benchmark

Notes:

¹ Inception date = 11/30/15

² For periods prior to 1/1/19, this is the estimated cost of leverage financing (Libor + Spread). From 1/1/19 forward, the actual financing costs are deducted from the return. The YTD Alpha Pool return reflects the gross return of the alpha pool less the actual financing costs.

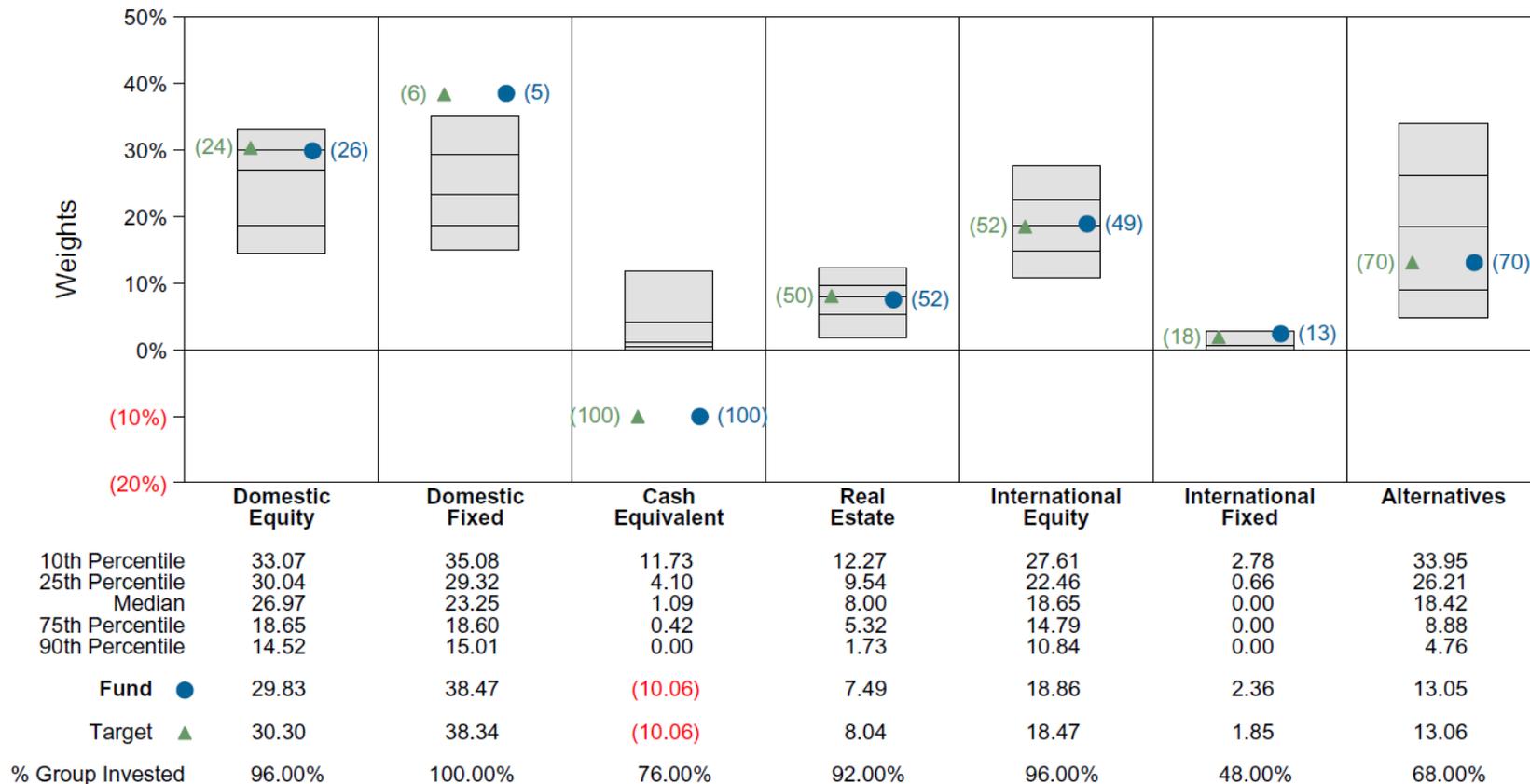
³ The CTF portfolio and benchmark betas are equal. To remove the double counting of alpha, the benchmark return is used instead of the portfolio.

Callan Quarterly Report Summary– Q2 2020

CTF Asset Allocation vs. Peer Asset Allocation

Gross of Fees as of June 30, 2020

Asset Class Weights vs Callan Public Fund Spons- V Lg DB (>10B)

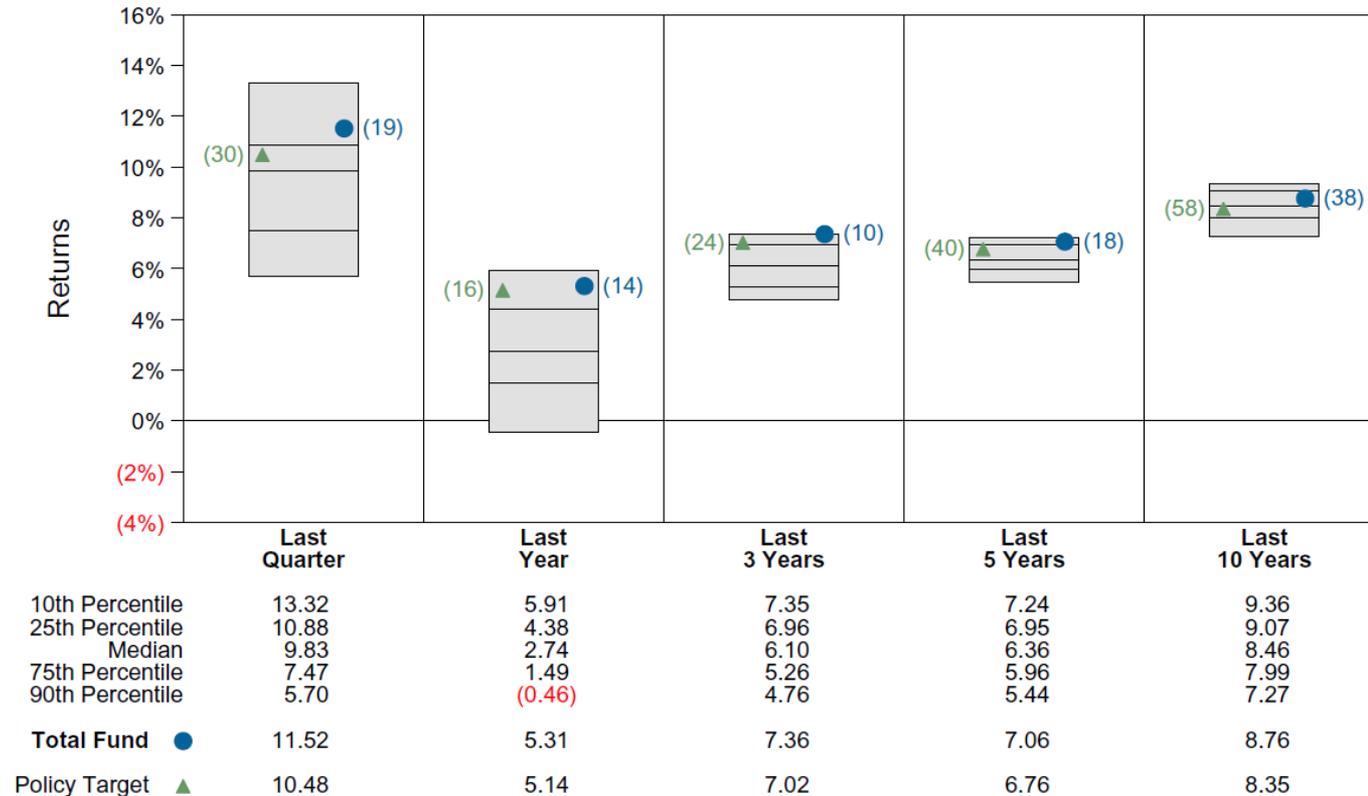


- Domestic Fixed Income is top decile, Cash & Cash Equivalent is bottom percentile (leverage).
- Peers are invested more heavily in the Alternatives asset class (Private Equity, Hedge Funds).

Total Fund Ranking – Unadjusted Ranking

Gross of Fees as of June 30, 2020

Callan Public Fund Spons- V Lg DB (>10B)

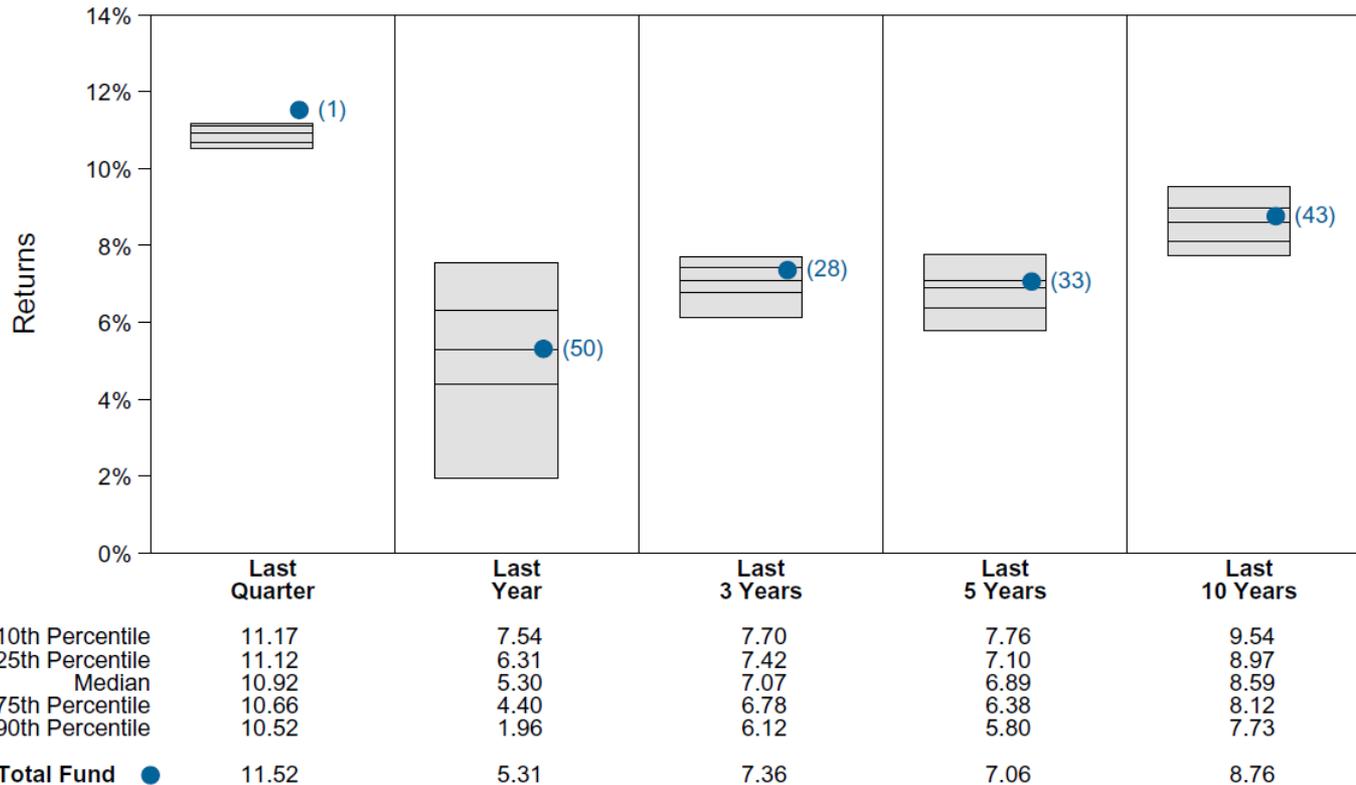


- The Total Fund unadjusted rankings are in the top quartile of peers for the Q2, 1, 3 & 5 year rankings.

Total Fund Ranking – Asset Allocation Adjusted

Gross of Fees as of June 30, 2020

Asset Allocation Adjusted Ranking



- SWIB was the premier fund compared to its peers on an asset allocation adjusted ranking in Q220.
- SWIB is meeting or outperforming the median over all time periods on an asset allocation adjusted basis.

Glossary

Term	Definitions
Active Management	A process for managing a portfolio in which investment staff makes the day-to-day decisions on what to buy and sell with the goal of generating a return on investment that is greater than the market would otherwise provide.
Alpha Pool Overlay	ACTIVE MANAGEMENT strategies that focus on alpha (Hedge Funds, Tactical Alpha) with very little beta exposure.
AUM	(Assets Under Management) - The total market value of assets that an investment company or financial institution manages on behalf of investors.
Benchmark	A standard or reference point – often an index fund – used to measure or judge the performance of investments.
BPS	(Basis Point) - A unit of measure used in the investment industry. One basis point equals 1/100th of 1% (0.01%) or 1 cent for each \$100.
CPI	(Consumer Price Index) – A measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them. Changes in the CPI are used to assess price changes associated with the cost of living.
CTF	(Core Trust Fund) - The trust fund which holds the largest part of the WRS assets. It is a fully diversified, balanced fund that includes a mixture of holdings such as stocks, bonds and real estate.
Excess Return	Investment returns from a security or a portfolio that exceeds a BENCHMARK or index with a similar level of risk. It is widely used as a measure of the value added by the portfolio or investment manger or the manager's ability to beat the market.
Exposure	Exposure is the dollar value of physical assets plus the NOTIONAL VALUE of derivatives.

Glossary

Term	Definitions
GDP	(Gross Domestic Product) - As an aggregate measure of total economic production for a country, GDP represents the market value of all goods and services produced by the economy during the period measured, including personal consumption, government purchases, private inventories, paid-in construction costs and foreign trade balances (exports are added, imports are subtracted).
Interaction	Attribution effect resulting from the combination of (or interaction between) allocation and selection effects.
Market Value	The price an asset would fetch in the marketplace.
Notional Value	The total value of a leverage position's assets. This term is commonly used in the options, futures and currency markets which employ the use of leverage, wherein a small amount of invested money can control a large portion of the market.
Passive Management	Investing in a fund that replicates a market index, such as the S&P 500, that will allow an investment performance that is no worse, or better, than the market as a whole.
Policy Benchmark	Fund level BENCHMARK approved by the Benchmark Committee. (Also referred to as "Policy Target" or "SWIB's Asset Allocation).
Policy Target	Fund level BENCHMARK approved by the Benchmark Committee. (Also referred to as "Policy Benchmark").
Portfolio Implementation	A combination of intentional style drift, allocation drift and timing effects.
Reference Portfolio	Hypothetical global portfolio comprised of 60% MSCI World Net (custom net as of 2010) and 40% Bloomberg Barclays Government Credit Index (as of October 2019 Board Workshop). Assumes no contributions or withdrawals.
Relative Return Attribution	A measure of the return of an investment portfolio relative to a theoretical passive REFERENCE PORTFOLIO or BENCHMARK.
SIF	(State Investment Fund) - A pool of cash balances of the WRS various state and local government units.
Total Exposure	The dollar value of MARKET VALUE plus the NOTIONAL VALUE of the Policy Overlays.
VTF	(Variable Trust Fund) - The smaller of the two WRS funds. It is primarily a stock fund that has a relatively greater degree of risk than the Core Trust Fund due to the volatility of the stock market.
WRS	(Wisconsin Retirement System) – The total aggregate of the Core and Variable Trust Funds.

STATE OF WISCONSIN INVESTMENT BOARD
Enterprise Risk and Compliance Committee-Open Session

Thursday, May 21, 2020

Via Teleconference

Committee Members Present: Lisa Lange, Compliance Counsel (Co-Chair)
Jameson Greenfield, Chief Financial Officer (Vice-Chair)
Sara Chandler, Chief Legal Counsel (Secretary)
David Villa, Executive Director/Chief Investment Officer
Rochelle Klaskin, Deputy Executive Director/Chief
Administrative Officer
Mike Jacobs, Agency Business Director
Edwin Denson, Managing Director–Asset & Risk Allocation
Brandon Brickner, Internal Audit Director (*non-voting*)

Others Present: Kate Burkart-Paulson, Senior Legal Counsel
Ali El-Annan, Head of Analytics, Data Science and
Development
Janet Klosterman, Legal Assistant
Dennis Langley, Business Continuity Manager

Open Session

Lisa Lange, Compliance Counsel and Co-Chair of the Enterprise Risk and Compliance Committee (ERCC), introduced and welcomed Jameson Greenfield, Chief Financial Officer and ERCC Vice-Chair. Ms. Lange declared that a quorum was present and called the meeting to order at 11:02 a.m.

1. Approval of Minutes

Ms. Lange confirmed that there were no questions or comments on the open session minutes of October 2, 2019, which were included in the meeting materials.

Motion: A motion was made by Ms. Chandler and seconded by Ms. Klaskin to approve the open session minutes of October 2, 2019, as presented. The motion passed unanimously.

2. Compliance Update

Ms. Lange noted that the *Compliance Reporting & Updates* for Q3 2019, Q4 2019 and Q1 2020 were included in the meeting materials on pages 6-9, 10-13 and 14-17, respectively.

A. Q3 2019

Ms. Lange highlighted that the number of personal trade requests in Q3 2019 was consistent with the previous quarter. She reported that during Q3, two reportable personal trading violations occurred. One of the violations related to the different treatment of exchange traded

notes (ETNs) and exchange traded funds (ETFs). Ms. Lange noted that ETNs and ETFs are no longer treated differently following the February 2020 changes to the SWIB Personal Trade Approvals Policy and that both are now exempt securities (subject to trading limits and the restricted list) moving forward. The other violation involved redemption by an employee of a long-held private fund interest without pre-clearance. Ms. Lange also noted that there were no investment guideline violations and one guideline waiver issued during the quarter for the Private Equity Portfolio, which related to the 50% company equity concentration limit. Finally, she provided the aggregate statistics related to late submissions of compliance affirmations.

B. Q4 2019

Ms. Lange highlighted that the number of personal trade requests in Q4 2019 was slightly higher than the previous quarter. She reported that during Q4, there was one reportable personal trading violation, which also related to the different treatment previously applicable to ETNs and ETFs. There were no investment guideline violations and two guideline waivers issued related to the prudent investor report from the private equity and venture capital consultant. In both cases, all due diligence was performed internally rather than in conjunction with the consultant, since the consultant would not have been able to complete its work in time. In each case, SWIB staff confirmed that the investments were consistent with the prudent investor standard. Finally, she provided the aggregate statistics related to late submissions of compliance affirmations.

C. Q1 2020

Ms. Lange highlighted that the number of personal trade requests in Q1 2020 was higher than the previous quarter, noting that it was not yet clear whether the increase in trade requests was due to the high market volatility or the changes to the SWIB Personal Trade Approvals Policy implemented in February 2020 which now count approvals rather than requests for the quarterly limit. She noted that a lower percentage of trades were approved due to increased SWIB trading volume during the quarter.

Ms. Lange reported that during Q1 there were three reportable personal trading violations, after which the Compliance team issued a SWIB Trib article reminding staff of the policy requirements. All three violations included failures to obtain pre-clearance by new employees. Ms. Lange then outlined the enhanced process for training new employees, which now includes a follow-up check-in approximately four to five months after a new employee joins SWIB. She also noted that the Compliance team had recently provided training on personal trading for all staff in connection with the February 2020 policy changes. The Committee then discussed the impact of the policy and changes and other potential improvements to the personal trade approval process that might reduce future violations.

Ms. Lange reported that there were no investment guideline violations in Q1 2020. One guideline waiver was issued where the private equity consultant performed its investment and operational due diligence and concluded that the investment was a suitable and attractive opportunity. However, the consultant's investment report did not include specific approval language referencing the prudent investor standard, which is no longer required by the guidelines. Finally, Ms. Lange provided the aggregate statistics related to late submissions of compliance affirmations.

3. Business Continuity Update

Dennis Langley, Business Continuity Manager, presented the *Business Continuity Risk* update, included on pages 18-25 in the meeting materials. He began with a brief review of how Business Continuity Risk is identified. He then reviewed SWIB's results under the Wisconsin Department of Administration, Continuity of Government's Business Continuity Maturity Model, included on page 20 in the meeting materials. He noted that, as of December 31, 2019, SWIB had an overall score of 5.1, out of 6.0, and discussed how the model is structured and how SWIB scored in the various categories.

Mr. Langley reviewed SWIB's pandemic risk plan and ongoing mitigation efforts arising out of the COVID-19 pandemic. He then reviewed risks relating to SWIB's third-party vendor business continuity maturity and led the Committee's discussion of potential mitigation recommendations. The Committee also discussed the existing Incident Command Team structure and improvements that could be made to enhance SWIB's preparedness culture. Mr. Langley concluded by noting that, through these enhancements, the business continuity program would continue to mature.

4. Future Meeting Topics

It was noted that the Committee can expect updates at future meetings on information security.

5. Adjournment

Motion: A motion to adjourn was made by Ms. Chandler and seconded by Mr. Jacobs. The motion passed unanimously, and the ERCC meeting was adjourned at 11:43 a.m.

Date of Committee Approval: _____

Signed: _____

Sara Chandler, Secretary
Enterprise Risk and Compliance Committee

New and Amended Contracts Approved April - June 2020

New Contracts:

Charles River System Inc

Charles River System Inc is the sole source vendor to provide support to upgrade to the most current database version. SWIB's current instance will not be supported after October 2020. The consulting and upgrade support costs a total of \$224,250.

Oliver James and Associates

An Oliver James and Associates resource was retained to provide consulting related to the Charles River trading platform. The resource will be engaged for six months at a cost of \$169,920.

PRI Technology

PRI Technology was the selected vendor to provide placement services for the recruiting team. The cost for the placement is \$32,000.

Redline Associates, Inc.

Redline Associates, Inc. was the selected vendor to provide placement services for the recruiting team. The cost for the two placements is \$95,000.

WorldBridge Partners Inc.

WorldBridge Partners Inc. was the selected vendor to provide placement services for the recruiting team. The cost for the four placements is \$125,750.

Amended Contracts/Extensions:

Cutter Associates

- One contract worker extended through 09/30/2020 at a cost of \$168,750.

Grandview Analytics

- One contract worker extended through 09/30/2020 at a cost of \$180,000.

Keystone Consulting

- One contract worker extended through 08/28/2020 at a cost of \$182,600.

Sharp Decisions, Inc.

- Two contract workers extended through 09/30/2020 at a cost of \$359,000.

Note: the dollar amounts listed above for contract workers represent the estimated total contract costs and may not reflect actual costs incurred. For example, estimated and actual costs may differ due to variances in actual hours worked by the contractor, travel expenses, etc.

August 14, 2020

Senator Alberta Darling, Co-Chair
 Joint Committee on Finance
 P.O. Box 7882
 Madison WI 53707-7882

Representative John Nygren, Co-Chair
 Joint Committee on Finance
 P.O. Box 8953
 Madison WI 53708-8953

Senator Robert Cowles, Co-Chair
 Joint Legislative Audit Committee
 P.O. Box 7882
 Madison WI 53707-7882

Representative Samantha Kerkman, Co-Chair
 Joint Legislative Audit Committee
 P.O. Box 8952
 Madison WI 53708-8952

Secretary Joel Brennan
 Department of Administration
 101 East Wilson Street
 P.O. Box 7864
 Madison, WI 53707-7864

Dear Senator Darling, Senator Cowles, Representative Nygren, Representative Kerkman, and Secretary Brennan:

State statutes require the State of Wisconsin Investment Board (SWIB) to report all expenses charged to the trust funds under management during the prior quarter as well as the number of full-time equivalent positions created or abolished during the quarter¹. The information contained in this report is for the quarter ending June 30, 2020.

Total Cost of Management – 2nd Quarter 2020

SWIB Cost of Management Summary	3rd Quarter 2019 Cost	4th Quarter 2019 Cost	1st Quarter 2020 Cost	2nd Quarter 2020 Cost	One-year Ending 6/30/2020	% of Total Cost
Internal Operating Costs						
Agency Operating Expenses	\$ 9,064,132	\$ 9,413,515	\$ 11,532,252	\$ 28,318,149	\$ 58,328,048	11.6%
Custodial, Investment Operations & Banking Fees	1,523,536	1,567,121	1,659,192	1,624,806	6,374,655	1.3%
Legal Fees	411,955	845,239	79,653	602,480	1,939,327	0.4%
Investment Research & Consulting Fees	8,180,737	9,378,626	8,034,732	7,161,646	32,755,741	6.5%
Total Internal Operating Costs	\$ 19,180,360	\$ 21,204,501	\$ 21,305,829	\$ 37,707,081	\$ 99,397,771	19.8%
External Management Fees						
Real Estate Advisory/Asset Management	\$ 13,118,881	\$ 11,604,346	\$ 23,441,247	\$ 17,900,845	\$ 66,065,319	13.1%
Private Equity Management	40,390,972	37,309,760	42,876,509	40,715,035	161,292,276	32.0%
Public Market Separate Accounts	8,090,740	5,751,839	8,102,113	9,541,690	31,486,382	6.2%
Public Market Commingled Accounts	31,649,108	36,560,546	24,465,935	50,510,696	143,186,285	28.4%
Total External Management Fees	\$ 93,249,701	\$ 91,226,491	\$ 98,885,804	\$ 118,668,266	\$ 402,030,262	79.7%
Securities Lending Agent Fees	\$ 544,279	\$ 520,958	\$ 769,532	\$ 872,966	\$ 2,707,735	0.5%
Total Cost of Management	\$ 112,974,340	\$ 112,951,950	\$ 120,961,165	\$ 157,248,313	\$ 504,135,768	
Average Assets Under Management (in billions)	\$ 122.8	\$ 128.8	\$ 114.0	\$ 126.3	\$ 123.0	
Cost in Basis Points (all trust funds)					41.0	

¹Wisconsin Statutes Section 25.17 (13m): All investment-related expenses for the WRS Trust Funds, State Investment Fund, State Life Insurance Fund, Historical Society Endowment Fund, Injured Patients and Families Compensation Fund and UW Trust Fund. Investment transaction expenses, such as trading commissions and interest expense, are included in gross investment returns, and therefore not included in this report.

SWIB's total costs, including both internal operating and external management costs, are charged to the trust funds under management. Over the one-year period ending June 30, 2020, SWIB's total cost of management approximated 41 basis points (0.41%), or 41 cents for every \$100 managed. It is important to consider this cost in the context of value-added investment returns. For example, over the five years ending 12/31/2019, SWIB earned \$560.4 million for the Wisconsin Retirement System over investment benchmarks after consideration of these costs.

To reduce external asset management costs and increase net investment returns, SWIB continues to build internal resources to manage assets internally when it makes sense to do so. For example, as shown in the table below, the cost of external asset management is multiples higher than internal management for the same asset classes.

Internal vs External Investment Management

Portfolio	Cost of External Over Internal Management
Active Management	
Global Large Cap Equity	4.0x
US Small Cap Equity	3.8x
US Fixed Income	1.9x
Global Fixed Income	4.6x
Passive Management	
US Large Cap Equity	1.3x
International (EAFE) Equity	2.8x
Fixed Income - Inflation Indexed	2.8x

External management costs are 1.3 – 4.6 times the cost to manage these portfolios internally. Source: CEM Benchmarking, Inc.

For the year ending June 30, 2020, external investment management fees, including securities lending agent fees, represented 80.2% of SWIB's total costs of management and 44.7% of assets under management, while SWIB's internal operating expenses represented 19.8% of costs and 55.3% of assets (see Attachment A). During the second quarter of 2020, no new positions were approved by the Board of Trustees.

Assets Under Management & FTE		
	3/31/2020	6/30/2020
Internal Management	53.0%	55.3%
External Management	47.0%	44.7%
SWIB Positions – FTE	236	236
Total SWIB Positions	236	236

Attachments B and C provide details of services and related quarterly costs.

Internal operating costs include salary and fringe benefits for internal staff, technology, research and market data services, asset custody fees, legal services, and investment consulting. External management fees make up the largest component of the trust funds' costs. This category includes fees paid to asset managers for securities lending services, public market, private market, and real estate asset management.

As new investment strategies are implemented and markets continue to change, SWIB will continue to evaluate the most efficient means to manage the trust fund assets. We hope this report provides a comprehensive representation of the costs SWIB incurs to manage the assets of the trust funds including the Wisconsin Retirement System. Please contact me if you have any questions or comments about this report.

Sincerely,



David Villa
Executive Director/CIO

Attachments

cc: Members, Joint Committee on Finance
Members, Joint Committee on Audit
Robert Lang, Legislative Fiscal Bureau
Joe Chrisman, Legislative Audit Bureau

Total Assets Under Management

Wisconsin Retirement System (WRS)	9/30/2019		12/31/2019		3/31/2020		6/30/2020	
	Amount (in millions)	% of WRS Assets						
Internally Managed	\$ 57,145	51.3%	\$ 58,597	50.3%	\$ 49,704	49.0%	\$ 58,015	51.6%
Externally Managed Dedicated Accounts	26,290	23.6%	34,514	29.6%	29,624	29.2%	31,466	28.0%
Externally Managed Commingled Accounts	28,049	25.2%	23,351	20.1%	22,072	21.8%	22,944	20.4%
1. Passive Index Funds	8,126	7.3%	2,498	2.1%	1,922	1.9%	2,325	2.1%
2. Enhanced Index Commingled Funds	-	0.0%	-	0.0%	-	0.0%	-	0.0%
3. Limited Partnerships	14,247	12.8%	14,717	12.6%	15,308	15.1%	14,812	13.2%
4. Actively Managed Commingled Accounts	5,676	5.1%	6,137	5.3%	4,842	4.8%	5,806	5.2%
TOTAL WRS Assets	\$ 111,485	100.0%	\$ 116,463	100.0%	\$ 101,401	100.0%	\$ 112,425	100.0%

State Investment Fund - Internally Managed	\$ 9,313		\$ 10,217		\$ 10,531		\$ 11,649	
Separately Managed Funds - Internally Managed	121		120		123		129	
Separately Managed Funds - Externally Managed	\$ 1,962		\$ 2,004		\$ 1,920		\$ 2,068	

Total Assets Under Management	\$ 122,881		\$ 128,803		\$ 113,975		\$ 126,272	
Total Internal Management	\$ 66,580	54.2%	\$ 68,934	53.5%	\$ 60,359	53.0%	\$ 69,794	55.3%
Total External Management	\$ 56,301	45.8%	\$ 59,869	46.5%	\$ 53,617	47.0%	\$ 56,478	44.7%

STATE OF WISCONSIN INVESTMENT BOARD
Expenses for All Funds Under Management
Quarter Ending June 30, 2020

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
<u>Internal Operating Expenses</u>		
Staff Compensation	Staff Compensation	\$ 22,861,040
Fringe Benefits	Fringe Benefits	3,993,146
Equipment, Supplies & Services	General Supplies & Services	1,463,963
Total Internal Operating Expenses ***		\$ 28,318,149
<u>Custodial, Investment Operations and Banking Fees</u>		
Bankers Bank	Custodial and Banking Fees	\$ 5,000
BNY Mellon Asset Servicing - Custody	Master Custody Services	525,587
BNY Mellon Asset Servicing - Investment Operations	Investment Operating Services	1,094,186
US Bank	Banking Fees	33
Total Custodial, Investment Operations and Banking Fees		\$ 1,624,806
<u>Legal Fees</u>		
Chapman & Cutler LLP	Legal Work for Investment Strategies	\$ 31,200
Cox Castle & Nicholson LLP	Legal Work for Investment Strategies	50,194
DLA Piper LLP (US)	Legal Work for Investment Strategies	99,174
Faeare Drinker Biddle & Reath LLP	Legal Work for Investment Strategies	11,948
Godfrey & Kahn SC	Legal Work for Investment Strategies	19,056
Latham & Watkins LLP	Legal Work for Investment Strategies	50,000
Mayer Brown LLP	Legal Work for Investment Strategies	6,531
Purrington Moody Weill LLP	Legal Work for Investment Strategies	104,905
Quarles & Brady	Legal Work for Investment Strategies	93,855
Reinhart Boerner Van Deuren SC	Legal Work for Investment Strategies	1,133
Shearman & Sterling LLP	Legal Work for Investment Strategies	127,284
Sidley Austin (Domestic)	Legal Work for Investment Strategies	7,200
Total Legal Fees		\$ 602,480
<u>Investment Counsel</u>		
Adeptyx Consulting	Investment Consulting Services	\$ 293,952
Advent Software Inc	Research Management System	44,341
Aksia LLC	Hedge Fund Investment Consulting	193,750
BCA Research Inc	Global & Domestic Fixed Income Strategy Research	28,250
Bloomberg Finance LP	Market, Company, Industry & Benchmark Information	1,152,861
Bright Young Ideas LLC	Investment Consulting Services	8,640
Callan Associates Inc	Investment Consulting & Performance Benchmarking	6,250
CFRA Research	Investment Research Services	22,000
Charles River System Inc	Portfolio Management Trading Software & Services	341,169
Citisoft Inc	Investment Consulting Services	184,874
CoStar Portfolio Strategy	Real Estate Consulting & Research Services	9,579
CreditSights	Credit Assessments	(35,000)
Cutter Associates	Investment Organization and Systems Consulting	79,583
Deutsche Bank	Tax Registration Fees	41,800
Dow Jones News Service	Company and Industry News Services	813
DTCC ITP LLC	Trade Settlement Service	9,298
EFront Financial Solutions Inc	Private Markets Portfolio Management Services	302,102
Elevation LLC	Research and Data Services	15,000
Ernst & Young LLP	Tax Compliance Services & Investment Consulting	44,360
Euromonitor International	Research and Data Services	16,108
FactSet Research Systems Inc	Financial & Economic Database	854,522
FTSE Fixed Income LLC	Real Time Index Data	35,370
FTSE International Inc	Real Time Index Data	8,675
Gcon4 Group	Integration Software	3,330
Gradient Analytics, LLC	Investment Research	7,500
Grandview Analytics LLC	Investment Information Technology Consulting Services	100,394
Green Street Advisor	Real Estate Analytics	(5,250)
Haver Analytics	Global Macroeconomic Research	18,200
Ice Data LP	Fixed Income Indices	6,875
Institutional Shareholder Services Inc	Proxy Voting Analysis	30,899
Keystone Consulting Inc	Investment Information Technology Consulting Services	207,330
LionPoint Group	Investment Consulting Services	1,000
Markit NA	Investment Data Management Software	167,017
Matrix IDM, LLC	Investment Consulting	109,500
Meketa Investment Group	Public Markets External Manager Consultant	63,087
Melius Research LLC	Research and Data Service	25,000

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
Moody's Analytics	Economic, Currency & Bond Analysis	17,150
MSCI ESG Research Inc	Corporate Governance Research	42,000
MSCI Inc - Risk Metrics Solutions	Research and Data Services	258,360
NEPC LLC	Investment Consulting Services	150,000
Novus Partners Inc	Profit & Loss Analytics System	47,025
Nuware Technology Corp	Investment Information Technology Consulting Services	161,408
NYSE Market Inc	New York Stock Exchange Data	6,642
Oliver James	Investment Consulting	10,912
Oppenheimer & Co Inc	Investment Research	54
Options Price Reporting Authority	Quote System for Options Market	1,922
Pacific Pension & Investment Institute	Access to Investment Research	12,000
Pac-invest	Research and Data Services	11,025
PRI Technology	Investment Consulting	32,000
RedLine Associates, Inc	Recruitment Consulting	112,500
Refinitiv	Research Pricing (Autex, Baseline, FirstCall)	11,647
Russell Investment Group	Index Data	17,428
S&P Global Market Intelligence	Investment Research and Data	144,173
Sagient Research	Investment Research	13,770
Seaport Global Securities LLC	Research and Data Services	2,400
Sharp Decisions Inc	Investment Information Technology Consulting Services	408,567
Sidoti & Company LLC	Investment Research	9,000
SPACInsider	Research and Data Services	1,925
StepStone Group	Private Equity Consulting Services	576,644
StepStone Group Real Estate	Real Estate Consulting Services	56,438
SystemsAccountants	Investment Information Technology Consulting Services	51,200
TD Securities (USA) LLC	Investment Research	6,100
Telsey Advisory Group	Consumer Sector Research	125,000
The Financial Times Limited	Investment Research	6,412
The Finlay Group	Investment Consulting Services	21,834
The Harry Walker Agency	Investment Consulting	15,000
Toronto Stock Exchange	Market Data	13,287
Trade Alert LLC	Market Data	900
TradeWeb	On-Line Fixed Income Trading Services	9,136
TradingView	Research and Data Services	647
Unit4 Business Software Inc	Financial & Administration Services System	53,930
Urban Land Institute	Investment Consulting Services	1,270
Verus Advisory Inc	Benchmarking Consulting Services	84,000
Virtu ITG Analytics LLC	Trading Transaction Cost Analysis	7,500
Visible Alpha LLC	Research and Data Services	51,765
Wall Street Journal	Investment Research & Information	39
Wedbush	Investment Research	28,000
Wolters Kluwer Law & Business	GDP Forecasting Services	10,469
Wolverine Execution Services LLC	Options Trading Platform	1,238
WorldBridge Partners Inc	Recruitment Consulting	175,750
Total Investment Counsel		\$ 7,161,646
<u>Real Estate Management Fees</u>		
Alcion Ventures	Real Estate Management Fees	\$ 126,863
AmCap Inc	Real Estate Management Fees	325,109
Beacon Capital Partners	Real Estate Management Fees	161,490
Black Chamber Partners	Real Estate Management Fees	797,655
Blackrock	Real Estate Management Fees	2,227
Blackstone Real Estate Advisors	Real Estate Management Fees	3,664,684
Blue Moon Capital Partners	Real Estate Management Fees	409,403
Blue Vista Capital Management	Real Estate Management Fees	185,930
Bristol Group	Real Estate Management Fees	379,904
Buchanan Street Capital Partners	Real Estate Management Fees	201,058
Callahan Capital Partners	Real Estate Management Fees	168,478
Carson Companies	Real Estate Management Fees	17,227
Casa Partners	Real Estate Management Fees	115,813
CBRE	Real Estate Management Fees	103,348
C-III Capital Partners	Real Estate Management Fees	6,973
Cornerstone Real Estate Advisers	Real Estate Management Fees	181,292
Crossings at Danada	Real Estate Management Fees	188,941
Essex Property Trust	Real Estate Management Fees	1,468,025
Four Seasons	Real Estate Management Fees	198,971
FPA Multifamily Core Plus	Real Estate Management Fees	287,166
Harbor Beach Capital, LLC	Real Estate Management Fees	218,218
Hawkeye Partners	Real Estate Management Fees	143,521
Heitman	Real Estate Management Fees	575,006
Henderson Global Investors	Real Estate Management Fees	342,473
High Street Realty Company LLC	Real Estate Management Fees	953,891

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
Hudson Advisors	Real Estate Management Fees	61,903
J.P. Morgan Asset Management	Real Estate Management Fees	208,301
Lone Star	Real Estate Management Fees	720,264
Lowe Enterprises Investors	Real Estate Management Fees	13,148
MetWest International	Real Estate Management Fees	432,502
Morgan Stanley	Real Estate Management Fees	42,825
Normandy Real Estate Partners	Real Estate Management Fees	194,375
Nuveen Institutional	Real Estate Management Fees	73,973
O'Connor Capital Partners	Real Estate Management Fees	513,811
Penwood	Real Estate Management Fees	376,016
Prologis	Real Estate Management Fees	263,544
Prudential Global Investment Management (PGIM)	Real Estate Management Fees	821,219
Realterm Global Asset Management	Real Estate Management Fees	509,261
Rockpoint Group	Real Estate Management Fees	24,849
RREEF	Real Estate Management Fees	343,372
Security Capital	Real Estate Management Fees	521,760
Teachers Insurance and Annuity Association of America	Real Estate Management Fees	298,155
Torchlight Investors	Real Estate Management Fees	311,688
UBS Realty Investors	Real Estate Management Fees	217,681
Wesco	Real Estate Management Fees	398,304
Westbrook Partners	Real Estate Management Fees	330,228
Total Real Estate Management*		\$ 17,900,845
Private Equity		
Abor Group	Private Equity Management Fees	\$ 300,000
Advent International	Private Equity Management Fees	984,506
Alchemy Partners	Private Equity Management Fees	91,182
Altaris Capital Partners	Private Equity Management Fees	356,483
American Securities	Private Equity Management Fees	658,343
Apollo Management	Private Equity Management Fees	204,281
Arbor Investments	Private Equity Management Fees	87,417
Ares Management	Private Equity Management Fees	446,211
Ascribe Capital LLC	Private Equity Management Fees	(105,871)
Atlas Holdings	Private Equity Management Fees	424,183
Benefit Street Partners	Private Equity Management Fees	222,719
Berkshire Property Advisors	Private Equity Management Fees	262,860
Blackstone Real Estate Advisors	Private Equity Management Fees	404,505
Bookend Capital Partners	Private Equity Management Fees	250,000
Bridgepoint Capital	Private Equity Management Fees	598,486
Caltius Mezzanine	Private Equity Management Fees	205,016
CapVest Private Equity	Private Equity Management Fees	124,202
Centerbridge Partners	Private Equity Management Fees	582,661
Charlesbank Capital Partners	Private Equity Management Fees	550,110
Chequers Capital	Private Equity Management Fees	351,412
Clearlake Capital Group	Private Equity Management Fees	763,507
Clearview Capital LLC	Private Equity Management Fees	404,806
Coller Capital	Private Equity Management Fees	186,575
Cortec Group	Private Equity Management Fees	357,705
Cressey & Company	Private Equity Management Fees	500,000
CVC Capital Partners	Private Equity Management Fees	159,208
ECM Equity Capital Management GmbH	Private Equity Management Fees	82,062
EnCap Investments	Private Equity Management Fees	381,326
EQT Partners	Private Equity Management Fees	367,055
Excellere Capital Management	Private Equity Management Fees	628,810
Flexpoint Ford	Private Equity Management Fees	28,348
FountainVest Partners	Private Equity Management Fees	344,409
German Equity Partners	Private Equity Management Fees	236,419
Gilde	Private Equity Management Fees	380,721
Glendon Capital Management	Private Equity Management Fees	355,331
Gores Group	Private Equity Management Fees	52,385
Graphite Capital Management	Private Equity Management Fees	8,072
GSO Capital Partners	Private Equity Management Fees	100,202
GTCR	Private Equity Management Fees	1,023,662
Harvest Partners	Private Equity Management Fees	767,160
Hellman & Friedman Investors	Private Equity Management Fees	835,022
HgCapital	Private Equity Management Fees	305,607
Hudson Advisors	Private Equity Management Fees	25,858
Inflexion Private Equity Partners LLP	Private Equity Management Fees	470,359
Insight Equity	Private Equity Management Fees	46,893
InvestIndustrial	Private Equity Management Fees	341,667
JMI Equity	Private Equity Management Fees	618,236
KLH Capital	Private Equity Management Fees	136,370

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
Kohlberg Kravis Roberts & Co	Private Equity Management Fees	254,258
KPS Capital Partners	Private Equity Management Fees	375,000
Lake Pacific Partners	Private Equity Management Fees	621,509
Leonard Green & Partners	Private Equity Management Fees	466,879
Lightbay Capital	Private Equity Management Fees	250,000
Lindsay, Goldberg & Bessemer	Private Equity Management Fees	(69,598)
LivingBridge GP Company Limited	Private Equity Management Fees	494,240
Merit Capital Partners	Private Equity Management Fees	463,460
Montefiore Investment	Private Equity Management Fees	162,574
Morgan Stanley	Private Equity Management Fees	107,799
New Capital Partners	Private Equity Management Fees	125,000
Oaktree Capital Management	Private Equity Management Fees	211,852
Old Lane	Private Equity Management Fees	3,275
ParkerGale Capital	Private Equity Management Fees	157,500
Patria Investimentos	Private Equity Management Fees	191,275
Peninsula Capital Partners LLC	Private Equity Management Fees	338,980
Platte River Equity	Private Equity Management Fees	182,502
Private Equity Solutions	Private Equity Management Fees	95,652
Providence Equity Partners, Inc.	Private Equity Management Fees	1,794,176
Quantum Energy Partners	Private Equity Management Fees	218,750
Resource Capital Funds	Private Equity Management Fees	118,904
Ridgemont Partners	Private Equity Management Fees	644,894
Riverstone Holdings	Private Equity Management Fees	482,072
SAIF Partners	Private Equity Management Fees	115,438
Segulah	Private Equity Management Fees	3,131
Sentinel Real Estate Corporation	Private Equity Management Fees	375,000
Shamrock Capital Advisors	Private Equity Management Fees	492,672
Sheridan Production Partners	Private Equity Management Fees	125,000
StepStone Group	Private Equity Management Fees	70,933
Sterling Group	Private Equity Management Fees	572,879
Stone Point Capital LLC	Private Equity Management Fees	709,320
The Jordan Company LP	Private Equity Management Fees	562,467
Thomas Bravo Fund	Private Equity Management Fees	281,250
Tower Arch Capital	Private Equity Management Fees	100,000
TowerBrook Investors	Private Equity Management Fees	337,387
TPG Capital	Private Equity Management Fees	1,725,550
Triton	Private Equity Management Fees	293,419
TSG Capital Partners	Private Equity Management Fees	750,000
TSG Consumer Partners LLC	Private Equity Management Fees	1,004,622
Turn/River Capital	Private Equity Management Fees	312,500
Udata Partners	Private Equity Management Fees	468,764
Varsity Healthcare Partners	Private Equity Management Fees	332,876
Venture Capital****	Private Equity Management Fees	3,544,621
Vinci Partners	Private Equity Management Fees	101,452
Vista Equity Partners	Private Equity Management Fees	1,173,416
Warburg Pincus	Private Equity Management Fees	833,547
Warwick Partners	Private Equity Management Fees	249,323
Waterland Private Equity	Private Equity Management Fees	526,658
Wayzata Investment Partners	Private Equity Management Fees	52,292
Wind Point Partners	Private Equity Management Fees	842,993
WP Global Partners Inc	Private Equity Management Fees	39,049
Yellow Wood Capital Partners	Private Equity Management Fees	121,042
Total Private Equity Management**		\$ 40,715,035

Commingled Account Public Market Management Fees

Arrowgrass Capital	Public Market Management Fees	\$ 10,211
Avenue Capital Group	Public Market Management Fees	229,846
BFAM Asian Opportunities Fund	Public Market Management Fees	577,018
Blackrock	Public Market Management Fees	328,699
Blue Mountain Capital Management	Public Market Management Fees	34
Bridgewater Associates	Public Market Management Fees	369,541
Capula Investment Management	Public Market Management Fees	2,482,011
Davidson Kempner Capital Management	Public Market Management Fees	1,011,808
DE Shaw & Co	Public Market Management Fees	13,100,656
Dorsal Capital Partners	Public Market Management Fees	3,399,097
Dyal Capital Partners	Public Market Management Fees	523,562
Elliott Management Corporation	Public Market Management Fees	642,848
Exoduspoint Capital Management	Public Market Management Fees	3,984,555
Graham Capital Management	Public Market Management Fees	741,597
Graticule Asset Management Asia	Public Market Management Fees	840,203
Holocene Advisors Fund LP	Public Market Management Fees	1,996,958
Hudson Structured Capital Management	Public Market Management Fees	594,720

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
King Street Capital Management	Public Market Management Fees	431,608
LibreMax Capital, LLC	Public Market Management Fees	591,430
Marshall Wace	Public Market Management Fees	6,900,029
Nephilia Capital Ltd	Public Market Management Fees	386,623
Pharo	Public Market Management Fees	4,540,001
PIMCO	Public Market Management Fees	1,200,874
PSquared Asset Management	Public Market Management Fees	2,580,889
Silver Point Capital, L.P.	Public Market Management Fees	88,011
Standish Mellon	Cash Management	165,386
TCW	Public Market Management Fees	453,639
Two Sigma	Public Market Management Fees	1,649,090
Voleon Capital Management	Public Market Management Fees	689,752
Total Commingled Account Public Market Management Fees		\$ 50,510,696
 <u>Separate Account Public Market Management Fees</u>		
Acadian Asset Management	Public Market Management Fees	\$ 1,102,692
Alliance Bernstein	Public Market Management Fees	1,250,468
Blackrock	Public Market Management Fees	1,413,471
Dodge and Cox	Public Market Management Fees	545,969
Fidelity Investments	Public Market Management Fees	1,132,812
Longview Partners	Public Market Management Fees	263,253
Loomis Sayles & Co	Public Market Management Fees	727,736
Parametric	Public Market Management Fees	528,544
Prudential Global Investment Management (PGIM)	Public Market Management Fees	117,946
Wellington Trust Company	Public Market Management Fees	2,458,799
Total Separate Account Public Market Management Fees		\$ 9,541,690
 <u>Securities Lending Agent Fees</u>		
BNY Mellon Asset Servicing	Securities Lending Agent Fees	\$ 872,966
Total Securities Lending Agent Fees		\$ 872,966
 Total Quarterly Charges to Funds		
		<u>\$ 157,248,313</u>

*Fees paid to fund managers are established as percentage of the capital committed. As assets in a fund are sold, the management fees paid are typically reimbursed from the profits of the fund.

**Expenses for private equity management fees are estimated and adjusted annually based upon committed capital or assets under management, determined by management contract terms. Total committed capital includes management fees. All capital contributions to the limited partnership must first be returned to the limited partners before any incentive fees are paid to the general partner.

***All costs reported are on an accrual basis except for internal operating costs which are on a cash basis of accounting. Negative expense amounts are due to accrual adjustments and/or other miscellaneous adjustments.

****Pursuant to Wisconsin Statute Section 25.184 Venture Capital investments are recorded in aggregate.

Explanations of Expenses

Internal Operating Expenses

Internal operating expenses consist primarily of staff compensation and fringe benefits. SWIB employs a staff of professional investment and support staff to manage the trust fund assets. Other internal operating expenses consist of office equipment, supplies, business travel, information technology equipment and services, and general services.

Custodial & Banking Fees

Wisconsin Certificate of Deposit Program: Under a contract with SWIB, Bankers' Bank administers the program under which the State Investment Fund (SIF) purchases certificates of deposit from Wisconsin-based banks and thrifts. Most administrative costs are paid by the participating banks. SWIB's expenses help underwrite other administrative costs, such as insurance that SWIB requires to be purchased.

BNY Mellon: Provides master custodial and administrative services (safekeeping of assets, income collection, valuations and accounting) for public and private domestic and foreign securities in the Wisconsin Retirement System (WRS), the SIF, and the other separately managed trust funds. In addition, SWIB receives performance measurement and analytical services through its contract with BNY Mellon, which serves as the official book of record for SWIB's accounting and performance measurement functions. BNY Mellon provides data and analytical tools used by SWIB for compliance and risk management. These include global collateral management, data management, and hosting services. Fees for these services are established by contract.

US Bank: The State of Wisconsin contracted with US Bank to be the state's working bank. The fees paid to US Bank by the SIF reflect bank service charges that are not directly applicable to the fund participants. These fees are distributed to the fund participants through the monthly SIF earnings process.

Legal Fees, Services, and Expenses

Under authority delegated by the Attorney General, pursuant to s. 25.18 (1) (a) Statutes, SWIB may employ legal counsel for any matters arising out of the scope of its investment authority. This includes legal services relating to bankruptcies, class actions, private markets transactions, fiduciary advice, securities law, investment litigation, and other similar matters. The Attorney General annually reviews and approves a list of law firms to provide investment legal services for SWIB.

Investment Counsel

Current law gives SWIB the authority to employ investment counsel in any matters arising out of the scope of its investment authority. Investment research and services provided include global market, industry, economic and company information, financial and performance analytics, news information, pricing and exchange data, credit ratings, financial modeling, economic forecasting, trading services, and a variety of Board consultations. These services enable SWIB to perform due diligence on current and future holdings and assist in monitoring investments.

Private Equity & Real Estate Investment Management Services

SWIB hires private equity and real estate advisors to assist with sourcing analysis, due diligence, and management of investments. SWIB also invests in funds, typically limited partnerships. Each fund either has a general partner or, for real estate, engages a fund manager with delegated authority to make real estate investments for the fund. Fees paid to fund managers are typically established as a percentage of the capital committed or assets under management. As assets in a fund are sold, the management fees paid are typically reimbursed from the profits of the fund.

Separate Account Public Market Management Fees

External asset managers have been delegated authority within guidelines established by SWIB to determine investment strategy and purchase securities in SWIB's name under a separate and distinct account. Fees are typically assessed as a percentage of the market value of assets under management and in some cases, fees are based on investment performance. Standish Mellon invests cash in international and global portfolios that has yet to be invested in stocks or bonds. Due to settlement times around the globe, these funds cannot be effectively managed in the State Investment Fund. The fees are negotiated as part of the custodial contract.

Commingled Account Public Market Management Fees

SWIB has investments in several externally managed funds which seek to replicate the returns of a particular public market index or seek to enhance the return from a particular public market index through the use of quantitative models or other strategies. SWIB's investments are commingled with other investors' and the underlying securities are owned in the name of the fund manager. Fees are typically based on a percentage of assets under management and may include other factors, such as performance. Hedge funds are included in this category as the invested assets are also commingled. Costs incurred from hedge fund investments consist of base fees and performance fees.

Securities Lending Agent Fees

Securities lending programs generally earn income through the reinvestment of cash collateral posted by borrowers and through the collection of fees for loans where non-cash collateral is posted. SWIB's securities lending income is shared with the agent to pay the costs associated with the administration of the program. The securities lending agent fees are no longer netted with income and are reported as securities lending agent fee expenses starting on July 1, 2019.

Private Equity Commitments*

April 2020 – June 2020

<i>Investment</i>	<i>Commitment (millions)</i>
Align Capital Partners Fund II (additional)	\$25.0
Ares Corporate Opportunities Fund VI	\$100.0
Brownstone Equity Partners I	\$28.3
CVC Capital Partners VIII	€250.0
EQT IX	€100.0
Francisco Partners VI	\$70.0
Francisco Partners Agility II	\$25.0
Great Range Capital Fund II	\$35.0
GSO Capital Opportunities Fund IV	\$200.0
Livingbridge 7	£40.0
Merit Capital Fund VII	\$75.0
Sixth Street Specialty Lending Europe II	\$50.0
Sterling Group Partners V	\$75.0
Telescope Partners II	\$25.0
Thoma Bravo Fund XIV	\$100.0

*Includes Current Return Portfolio

PE Co-Investment Commitments*

April 2020 – June 2020

<i>Investment</i>	<i>Commitment (millions)</i>
Industrials Co-Investment	\$17.2

*Includes Current Return Co-Investment Portfolio

Private Debt Investments/Commitments

April 2020 to June 2020 (Second Quarter)

<i>Investment</i>	<i>Investment/Commitment</i>
Life Sciences Loan	\$6,000,000
Total	\$6,000,000

Real Estate Commitments

April 2020 – June 2020

<i>Investment</i>	<i>Commitment (millions)</i>
Wilson HCF Wisconsin Co-Invest Holdings II, LLC	\$200
Carson SWIB Industrial II, LP	\$135
FPA Core Plus Fund V, LP	\$100
Torchlight Debt Fund VII, LP	\$100
Total	\$535

Funds Alpha Commitments*

April 1 2020 – June 30 2020

<i>Investment</i>	<i>Commitment (millions)</i>
Prudential	\$70M
TCW	\$70M
ExodusPoint	\$75M
Davidson Kempner	\$45M
PSquared	\$30M
D.E. Shaw Composite	\$75M
HSCM Jet	\$12M
PIMCO DiSCO II	\$150M
Two Sigma World Core	\$50M
Two Sigma Absolute Return	\$25M
Total	\$602M

**Includes Hedge Funds and Beta One*