Part 1

Exhibit 1
Redacted

FULLY EXECUTED

Purchase Order No: 4300636463

Original PO Effective Date: **09/27/2019**

PO Issue Date: **09/27/2019**

Valid From: 10/01/2019 To 09/30/2024

Your SAP Vendor #: 383098

Supplier Name/Address:
AON HEWITT INVESTMENT CONSULTING INC
39584 TREASURY CTR
CHICAGO IL 60694-9000 US

Supplier Phone Number: 847-295-5000

Please Deliver To:
PSERS
5 N 5th Street, Third Floor
Harrisburg PA 17101-1905 US

Please Bill To:
Save time, reduce cost, get paid faster:
Email PDF invoice to 69180@pa.gov
https://www.budget.pa.gov/Programs/Pages/e-Invoicing.aspx

Or mail paper invoice to:
Commonwealth of Pennsylvania
PO Box 69180, Harrisburg, PA 17106

Purchasing Agent
Name: Cathy Gusler
Phone: 717-720-4889
Fax: 717-783-8760

Purchase Order Description:
Investment Consulting

This Purchase Order is comprised of: The above-referenced Solicitation, the Suppliers Bid or Proposal, and any documents attached to this Purchase Order or incorporated by reference.

Suppliers must provide four mandatory elements on PO invoices: PO Number, Invoice Date, Invoice Number, and Invoice Gross Amount. Failure to comply will result in the return of the invoice. Additional optional information such as supplier name, address, remit to information and PO Line Item information will improve invoice processing.

Item	Material/Service Desc	Qty	UOM	Delivery Date	Net Price	Price Unit	Total
1	Defined Benefit/Defined Contr Component	4.000	Each	10/01/2019	160,793.50	1	643,174.00

Item Text
Vendor to provide Investment Consulting, Performance Evaluation, and other related services for all PSERS' asset classes for the period 10/1/19 thru 9/30/20.

Item	Material/Service Desc	Qty	UOM	Delivery Date	Net Price	Price Unit	Total
2	Defined Benefit/Defined Contr Component	4.000	Each	10/01/2020	167,152.50	1	668,610.00

Item Text
Vendor to provide Investment Consulting, Performance Evaluation, and other related services for all PSERS' asset classes for the period 10/1/20 thru 9/30/21.

Information:

Total Amount:
SEE LAST PAGE FOR TOTAL OF ALL ITEMS

Currency: USD

Supplier's Signature ______________________ Title ______________________

Printed Name ______________________ Date ______________

FULLY EXECUTED
Purchase Order No: 4300636463
Original PO Effective Date: **09/27/2019**
PO Issue Date: **09/27/2019**
Valid From: 10/01/2019 To 09/30/2024

Supplier Name:
AON HEWITT INVESTMENT CONSULTING INC

Item	Material/Service Desc	Qty	UOM	Delivery Date	Net Price	Price Unit	Total
3	Defined Benefit/Defined Contr Component	4.000	Each	10/01/2021	170,085.00	1	680,340.00

Item Text
Vendor to provide Investment Consulting, Performance Evaluation, and other related services for all PSERS' asset classes for the period 10/1/21 thru 9/30/22.

Item	Material/Service Desc	Qty	UOM	Delivery Date	Net Price	Price Unit	Total
4	Defined Benefit/Defined Contr Component	4.000	Each	10/01/2022	174,131.75	1	696,527.00

Item Text
Vendor to provide Investment Consulting, Performance Evaluation, and other related services for all PSERS' asset classes for the period 10/1/22 thru 9/30/23.

Item	Material/Service Desc	Qty	UOM	Delivery Date	Net Price	Price Unit	Total
5	Defined Benefit/Defined Contr Component	4.000	Each	10/01/2023	178,237.25	1	712,949.00

Item Text
Vendor to provide Investment Consulting, Performance Evaluation, and other related services for all PSERS' asset classes for the period 10/1/23 thru 9/30/24.

General Requirements for all Items:

Information:

Total Amount:
SEE LAST PAGE FOR TOTAL OF ALL ITEMS

Currency: USD

Case ID: 221102792

FULLY EXECUTED
Purchase Order No: 4300636463
Original PO Effective Date: **09/27/2019**
PO Issue Date: **09/27/2019**
Valid From: 10/01/2019 To 09/30/2024

Supplier Name:
AON HEWITT INVESTMENT CONSULTING INC

Header Text

Vendor to provide Investment Consulting, Performance Evaluation, and other related services for all PSERS' asset classes.

The following Riders are attached and incorporated by reference and made a part of this purchase order:

•Rider 1 - Purchase Order Terms & Conditions
•Rider 2 - RFP 2018-6 Investment Consulting Services Final
•Rider 3 - RFP 2018-6 Aon Proposal Document
•Rider 4 - Commonwealth Terms & Conditions
•Rider 5 - License Agreement for MGR Database
•Rider 6 - Information Security Addendum
Cost Proposal Update

In the event of a conflict between or among the provisions of the above attachments, the controlling provision will be determined by the order of precedence listed above.

No further information for this PO.

Information:	**Total Amount:** **3,401,600.00**
	Currency: USD

RIDER 1

PURCHASE ORDER
TERMS AND CONDITIONS

Pursuant to purchase order number 4300636463 ("Purchase Order"), AON HEWITT INVESTMENT CONSULTING, INC. (the "CONSULTANT") agrees to perform the services set forth therein, those set forth below, those set forth in its Proposal of February 19, 2019, which is attached to the Purchase Order as Rider 3 and incorporated therein by reference, and those set forth in the Public School Employees' Retirement Board ("Board") transacting business as the Public School Employees' Retirement System's ("PSERS") Request for Proposal ("RFP") dated January 18, 2019, which is attached to the Purchase Order as Rider 2 and incorporated therein by reference.

A. Consulting Services for the Public School Employees' Retirement Fund (the "Fund"), including all asset classes and investments:

1. The CONSULTANT will conduct a comprehensive review and analysis of investment objectives, policies, asset allocation, and portfolio structure, inclusive of defining an investable risk beta portfolio, and recommend changes, if appropriate.

2. The CONSULTANT will conduct a one-time review the adequacy of PSERS' investment professionals and resources, and recommend changes in writing, if appropriate. The timing of this project will be mutually determined by PSERS and Aon.

3. The CONSULTANT will prepare a written Asset/Liability Study annually for each calendar year and present the results to the Board in August of the following year.

4. The CONSULTANT will recommend appropriate performance and risk benchmarks for individual portfolios, each asset class, and for the total fund.

5. The CONSULTANT will review and make recommendations regarding individual portfolio risk guidelines at least annually.

6. The CONSULTANT will recommend suitable investment opportunities and practical implementation methods; research supporting such recommendations must have been completed within the prior 12 months.

7. The CONSULTANT will recommend appropriate investment strategies, tactics, procedures and practices.

8. The CONSULTANT will provide research reports on asset allocation, investment issues, and description and evaluation of alternative approaches.

9. The CONSULTANT will provide information on market conditions and explain their impact on the Fund's investments.

10. The CONSULTANT will provide PSERS with information on high conviction new managers at the earliest possible juncture to permit PSERS to secure capacity and negotiate terms with promising emergent managers.

11. The CONSULTANT will assist PSERS' investment professionals in conducting public market investment manager searches and facilitate the hiring of suitable institutional quality managers, including:

    a. providing opportunities and expense reimbursement for PSERS to jointly meet and evaluate new managers at industry conferences;

    b. providing a list of potential institutional quality managers appropriate for the mandate being considered;

    c. conducting interviews with potential managers at PSERS;

    d. conducting on-site due diligence meetings with potential managers prior to their selection; and

    e. providing assistance with the contract/fee negotiations.

12. The CONSULTANT will provide on-going monitoring and oversight reports for all of PSERS' public market investment managers, including:

    a. advance notice to PSERS of in-person meeting with investment managers in PSERS' portfolio;

    b. analysis of the manager's absolute and relative performance in relation to benchmarks, investment objectives, and peer groups, including analysis of ex-post risk-adjusted performance;

    c. an analysis of attribution, holdings, style, and risk;

    d. updated research on each investment manager in PSERS' portfolio updated at least once every 18 months to include a review of investment performance, process, and the manager's organization;

    e. on-site investment and operational due diligence meetings with current investment managers a minimum of every three years;

f. advice on manager retention/termination; and

g. assist in developing a formal manager review process.

13. The CONSULTANT will advise PSERS' investment professionals and the Board about new developments in investment management techniques and portfolio management strategies. Analyze how new techniques might improve the investment program and whether they should be considered for implementation.

14. The CONSULTANT will make available all firm research, including proprietary research, regardless of the firm department in which it was created. Research must be made available by electronic system.

15. The CONSULTANT will provide access and consultation with the firm's research staff.

16. The CONSULTANT will meet with the Board to report on investment matters. Generally, there are six regularly scheduled Board meetings annually. Special meetings may be scheduled as needed.

17. The CONSULTANT will report the performance results to the Board quarterly, including relative results versus pre-established benchmarks, results versus other public defined benefit pension plans, and the returns relative to the risks taken.

18. The CONSULTANT will maintain and provide access to a database of U.S. and non-U.S. investment managers, including their philosophies, processes, organizations, performance, fees, and clients.

19. The CONSULTANT will provide and maintain a secure, client-facing, web-based platform that is frequently updated and continuously available to PSERS that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools that allows PSERS' investment professionals to:

a. formulate investment policy and implement strategies;

b. monitor and evaluate asset class and total fund performance and risk;

c. develop asset allocation and rebalancing recommendations;

d. select and evaluate public market investment managers, including public market manager research and consultant ratings;

e. assess investment risks;

f. analyze and optimize manager teams; and,

g. compare the Fund performance, including ex-post risk-adjusted performance, at the asset class and total fund levels to various peer groups.

It is expected that at least 20 years of PSERS historical performance data, by investment portfolio, asset class, and at the total fund level will be included and that the database will be updated on a monthly basis.

Consultant and PSERS agree that the foregoing services shall be made available directly to PSERS through CONSULTANT's proprietary tools ("AON Tools") or indirectly through licensed third party applications ("Third Party Tools").

20. The CONSULTANT will provide (a) two, one-day, or (b) one, two-day, on-site, Fiduciary and Governance training sessions per year, which can be new member training, Board member training, PSERS' investment professionals training, or some combination thereof. PSERS reserves the right to videotape any training sessions for educational purposes.

21. Any additional Fiduciary and Governance training sessions, in any one year, beyond those provided for in Subsection 20 above will be invoiced and paid quarterly in arrears at per session cost to be mutually agreed upon by the parties in writing.

22. The CONSULTANT will advise the Board and PSERS' investment professionals on fiduciary and governance related subjects as requested by PSERS, including the following items:

a. The CONSULTANT will provide advice and insights, as may be requested by PSERS, on public pension fund industry common and best practices;

b. The CONSULTANT will assist as may be requested with the development of new Board member orientation materials and conduct orientation sessions;

c. The CONSULTANT will review and make recommendations, consistent with industry best practices, regarding clarity and documentation of the Board's governance framework, including the Investment Policy Statement ("IPS"), Board and Committee Charters, Delegations of Authority, investment implementation policies and procedures, etc.;

d. The CONSULTANT will assist as may be requested with the development of a Board authority and delegation matrix, including:

i. Clarification of what authority the Board has retained, what authority has been delegated, and to whom, and

ii. Delegations to PSERS' investment professionals from the Board and/or CIO.

e. The CONSULTANT will assist, as may be requested by PSERS, with strategic planning.

f. The CONSULTANT will develop and administer, as may be requested by PSERS, a Board annual self-evaluation process.

23. As a condition of payment of the fees, CONSULTANT shall provide PSERS with invoices specifying sufficient detail to substantiate said fees.

24. During the term of this Purchase Order, Jeanna Cullins shall be primarily responsible for the provision of Fiduciary and Governance services pursuant hereto. In the event that Jeanna Cullins ceases to be employed by the CONSULTANT or ceases to be primarily responsible for CONSULTANT's Fiduciary and Governance activities hereunder, CONSULTANT agrees to discuss in good faith a recommended successor with PSERS before assigning the successor.

25. The CONSULTANT will advise the Board and PSERS' investment professionals on risk-related subjects (e.g., risk measurement, risk mitigation).

26. The CONSULTANT will carry out other assignments that may be specified by the Board and PSERS' investment professionals, as required.

27. The CONSULTANT will conduct an operational risk gap analysis which will include an evaluation of the quality of the operational policies and procedures governing PSERS' investment professionals. The written report will include observations, comparisons to peers and recommendations in the following areas:

(a) Investment Framework (Front, Middle and Back Office)
(b) Trade/Transaction Execution Policies and Procedures
(c) Investment and Counterparty Risk Oversight
(d) Compliance and Audit Testing
(e) Data Governance, Technology and Business Continuity and Disaster Recovery Plans
(f) Key service provider selection and monitoring procedures

B. Performance Measurement, Risk, and Attribution Services for the Fund, including all asset classes and individual portfolios:

1. The CONSULTANT will prepare a monthly report containing calculated total return (before and after fees) for asset class, portfolio management styles, and individual portfolios, and compare PSERS' calculated data with benchmarks and with data for a similar population of funds by asset class and portfolio management styles for all of the public market portfolios and composites. Returns should be calculated for the following time periods: one-month, three-months, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 15-year, 20-year, 25-year, 30-year, and since inception, based on data availability.

2. The CONSULTANT will prepare a quarterly written report containing performance measurement attribution and analysis for each asset class and individual portfolios. The report should include a historical return analysis, dollar oriented analysis, return oriented (wealth relative) analysis, excess return analysis and risk/return analysis. Returns should be calculated for the following time periods: quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 15-year, 20-year, 25-year, 30-year, and since inception.

3. The CONSULTANT will be responsible for reconciling performance with both individual portfolio managers as well as the custodian bank on a monthly basis.

4. The CONSULTANT will be responsible for the creation of additional composites with historical returns, based on data availability, for those composites as requested by PSERS.

5. The CONSULTANT will provide quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 15-year, 20-year, 25-year, and 30-year quartile ranking reports of composite returns by Fund (i.e. Total Fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes), where peer data is available.

6. The CONSULTANT will provide consecutive year quartile ranking reports of composite returns by Fund (i.e. Total Fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes) for the past five years.

7. The CONSULTANT will provide a performance attribution analysis to determine the value added by investment policy, asset allocation, and security selection.

8. The CONSULTANT will provide reasonable assistance to PSERS in uploading the CONSULTANT's performance data to PSERS' own investment system(s).

9. The CONSULTANT will prepare ex-post risk statistics and analytics for the same time periods, to the degree of depth, including benchmark comparatives, and use

the same performance data from the above. Ex-post risk statistics and analytics should be robust and inclusive of industry best practices risk information.

C. Consulting Services for the School Employees' Defined Contribution Trust (the "Trust").

1. The CONSULTANT will perform any of the following services, as may be requested:

   a. Review each plan's existing investment options.

   b. Determine if the investment options offered by each plan are optimum choices given the considerations for diversification, risk and return.

   c. Recommend additions or deletions to investment options as needed.

   d. Provide a recommended transition plan and timeline incorporating any proposed changes in investment options.

   e. Conduct a review of each plan's pricing structure including fund management fees and terms between the plans and the third party administrator ("TPA").

   f. Work with the TPA to review specific plan metrics, provide best practices and recommendations, and address issues that arise each quarter.

   g. Assist in the development of investment policies for the plan.

   h. Annually review general investment policy documents.

   i. Periodically review goals, objective and best practices with PSERS' investment committee.

   j. Recommend enhancements to PSERS' investment committee governance processes.

   k. Perform periodic fiduciary training.

   l. Monitor, review, and provide advice on legislative and regulatory issues.

   m. Monitor, review, and provide advice regarding best practices.

   n. Monitor, review, and provide advice regarding fiduciary obligations.

   o. Provide ongoing review of strengths and vulnerabilities in current practices.

p. Serve as the liaison between the record-keeper and PSERS to maximize the vendor relationship, resolve issues with the record-keeper, and ensure contractual commitments are met.

q. Lead and otherwise assist in any requisite RFP, RFQ, or RFI processes.

2. CONSULTANT acknowledges that such communications and/or requests concerning the Trust may come from either PSERS' investment professionals or members of PSERS' Executive Director's Office.

D. Terms and Conditions

1. The CONSULTANT's compensation for performing the above services shall be as set forth in the Purchase Order. The CONSULTANT acknowledges and agrees that no further fees are payable by PSERS for the services rendered under the Purchase Order.

2. The CONSULTANT shall hold the Commonwealth of Pennsylvania, the Board, PSERS, the Fund and the Trust, their beneficiaries, directors, officers, agents, and employees harmless from and indemnify the Commonwealth of Pennsylvania, the Board, PSERS, the Fund and the Trust, their beneficiaries, directors, officers, agents, and employees against any and all claims, demands, actions, or liability of any nature, including attorneys' fees and court costs, based upon or arising out of (a) any breach of this Agreement, (b) negligence, (c) fiduciary breach or (d) failure to comply with applicable law, in each case by or of the CONSULTANT, its directors, officers, employees, and agents under the Purchase Order and shall, at the request of PSERS, defend at the CONSULTANT's expense actions brought against the Commonwealth of Pennsylvania, the Board, PSERS and/or the Fund, based upon any such claims or demands, and the costs of such defense shall be borne by the CONSULTANT and shall not constitute any expense of, nor shall be paid out of, FUND, Board, PSERS or Commonwealth of Pennsylvania assets.

a. In no event will either party be liable to the other party for incidental, consequential, special or punitive damages (including loss of profits, data, business or goodwill, or government fines, penalties, taxes or filing fees), regardless of whether such liability is based on breach of contract, tort, strict liability, breach of warranty, failure of essential purpose, statutory liability or otherwise, and even if advised of the likelihood of such damages.

3. PSERS acknowledges that the AON Tools is provided under the Purchase Order solely for PSERS' use. PSERS shall not provide any other organization with access to the AON Tools, or with reports or any other information obtained through it, except that PSERS may provide any asset manager who manages the Fund's or the Trust's assets with copies of reports that relate to the assets under management by that manager. Notwithstanding the foregoing, PSERS shall be authorized to provide access to and copies of the reports and any other information obtained

through the AON Tools and the services performed under the Purchase Order to the public and any other organization as may be required under the Right to Know Law and other similar laws. PSERS agrees that PSERS will not be granted any access to the Third Party Tools, or any copies of Third Party Tools, and PSERS shall not have any rights to use the Third Party Tools; provided, however, CONSULTANT shall utilize such Third Party Tools to perform the services, including the provision of reports and analyses to PSERS that are generated from such Third Party Tools.

The Purchase Order entitles PSERS to use as many copies of the AON Tools as it shall reasonably require during the term of the Purchase Order. CONSULTANT retains all title and ownership of the AON Tools, including the original disk copy and all subsequent copies of the AON Tools, regardless of the form or media in or on which the original and other copies may exist. The Purchase Order is not a sale of the original AON Tools or any copy.

CONSULTANT retains all title and ownership of the AON Tools and accompanying documentation, including the original disk copy and all subsequent copies of the AON Tools and documentation, regardless of the form or media in or on which the original and other copies may exist. PSERS agrees upon termination of the Purchase Order to return to CONSULTANT all software and portions and copies thereof, documentation and other equipment furnished with the service.

All reports prepared under the Purchase Order for PSERS shall become the property of PSERS.

CONSULTANT shall defend, at its expense, any action brought against PSERS arising out of any claim that PSERS' use of the services provided hereunder infringes upon the intellectual property rights of any third party; provided further that CONSULTANT shall indemnify and hold PSERS harmless against any and all damages and costs awarded against PSERS by final court order or fully executed settlement agreement. CONSULTANT will not indemnify PSERS, however, if the claim of infringement results from (i) the use of other than the most recent version of CONSULTANT information made available to PSERS by CONSULTANT; (ii) PSERS' alteration of the CONSULTANT information; (iii) use of any CONSULTANT information in combination with other software not provided by CONSULTANT; or (iv) use of CONSULTANT information not provided for or in a manner other than as expressly permitted in this Purchase Order.

The AON Tools and accompanying written materials (the "Documentation") are owned by CONSULTANT and are protected by United States copyright laws and international treaty provisions. Therefore, PSERS must treat the AON Tools and Documentation like any other copyrighted material. Unauthorized copying of the AON Tools, including AON Tools that has been modified, merged, or included with other software, or the Documentation is expressly forbidden. Subject to these restrictions, PSERS may make a reasonable number of copies of the AON Tools solely for back-up purposes.

PSERS may not distribute copies of the AON Tools or Documentation to others, nor may PSERS rent or lease the AON Tools or the Documentation or transfer control of the AON Tools or Documentation to a third party without CONSULTANT's prior express written consent. In addition, PSERS may not modify, adapt, translate, reverse engineer, decompile, disassemble, or create derivative works based on the AON Tools without CONSULTANT's prior express written consent.

CONSULTANT warrants that (i) it has the right to provide PSERS with access to the AON Tools in accordance with the Purchase Order, and (ii) the AON Tools shall conform to the written documentation and shall operate in accordance with CONSULTANT's written representations to PSERS.

Neither party shall be liable to the other party for any loss, injury, delay, damages or other casualties suffered by the other due to strikes, riots, storms, fires, or acts of God or government, beyond the reasonable control of such party.

4. The CONSULTANT shall not enter into any agreement by or on behalf of PSERS that (i) is binding on PSERS or allows, either expressly or by operation of law, recourse to PSERS, and (ii) creates any actual or potential liability on the part of PSERS that exceeds the scope of authority delegated to the CONSULTANT under the Purchase Order, or (iii) waives any of PSERS' rights, defenses, causes of action, or immunities. Liabilities that are not authorized by PSERS and prohibited by this Subsection 4 include, without limitation, any obligation on the part of PSERS to indemnify a third party or to pay attorney fees, legal expenses, penalties, or liquidated damages.

5. The CONSULTANT or its parent shall maintain during the term of the Purchase Order a policy of errors and omissions insurance, with a limit of liability of at least $10,000,000, to cover the CONSULTANT, its officers, and its affiliates to the extent any affiliate performs services under the Purchase Order. Unless otherwise approved by PSERS, the maximum deductible on the errors and omissions policy shall be no greater than $1,000,000 or 10% of CONSULTANT's parent's retained earnings. The CONSULTANT shall submit a certificate of coverage evidencing the requirements set forth herein and additional documentation mutually agreed upon by PSERS and CONSULTANT, and PSERS shall cause to be issued a written determination on compliance. CONSULTANT shall thereafter maintain annual filings of current certificates of insurance with PSERS during the term of the Purchase Order and any extension thereof. PSERS may, in its discretion, require such changes with respect to insurance coverage as it deems appropriate for the protection of the PSERS' Fund by giving written notice of such changes to the CONSULTANT at least 30 days in advance of the effective date for such changes

AHIC will provide PSERS at least 30 days' prior written notice of any cancellation or material change of the errors and omissions insurance policy.

6. The CONSULTANT represents and confirms that it is duly registered and in good standing as an investment advisor under the Investment Advisers Act of 1940 or is exempt therefrom (and will maintain such registration or exemption). If registered pursuant to said Act, the CONSULTANT has furnished to PSERS Parts I and II of the CONSULTANT's current Form ADV filed with the Securities and Exchange Commission pursuant to Section 203(c) of the Investment Advisers Act of 1940.

7. The CONSULTANT confirms that over the past five years, neither it, nor any officer or principal, have been involved in any litigation or other legal proceedings, regulatory or other governmental investigation relating to CONSULTANT's investment or consulting activities, other than such that have already been disclosed to the BOARD.

8. The CONSULTANT shall notify PSERS immediately in the event that the CONSULTANT, or any officer or principal of the CONSULTANT, becomes involved in any litigation, or other legal proceedings, regulatory or other governmental investigations relating to the CONSULTANT'S investment or consulting activities, other than such that have already been disclosed to the BOARD.

9. The CONSULTANT confirms that neither it, nor any officer, director, partner, principal or employee have ever been the subject of any non-routine investigation, inquiry, or enforcement action by a governmental agency or self-regulatory body regarding fiduciary responsibilities, consulting activities, or other investment-related matters or activities, other than such that have already been disclosed to the BOARD.

10. The CONSULTANT shall notify PSERS immediately in the event that the CONSULTANT, or any officer, director, partner, principal or employee becomes the subject of any non-routine investigation, inquiry, or enforcement action by a governmental agency or self-regulatory body regarding fiduciary responsibilities, consulting activities, or other investment-related matters or activities, other than such that have already been disclosed to the BOARD.

11. The CONSULTANT shall report in writing to PSERS annually for each year of this Purchase Order any remuneration received from PSERS' external portfolio manager during the prior three (3) years.

12. The CONSULTANT shall perform its services under the Purchase Order as an independent contractor, and CONSULTANT acknowledges that it maintains Workers' Compensation Insurance and shall accept full responsibility for the payments of premiums for Workers' Compensation Insurance and Social Security,

as well as all income tax deductions and other taxes or payroll deductions required by law for itself for performing services specified by the Purchase Order.

13. The CONSULTANT shall provide immediate written notice to PSERS of any change in the CONSULTANT's status, including, without limitation, change in directors, officers, or employees who consult on PSERS' account; modification of the business organization; material change in SEC or other government or private registration, accreditation, or licensing; material deterioration of financial condition including but not limited to the filing of petition in bankruptcy; the CONSULTANT's awareness that its representations and warranties herein cease to be true; and, unless otherwise restricted by applicable law, litigation alleging the CONSULTANT's negligence or fraud.

14. The CONSULTANT covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services under the Purchase Order. CONSULTANT further covenants that, in the performance of the Purchase Order, it will not knowingly engage any other person having such interest.

15. It is agreed between the parties to the Purchase Order that the Purchase Order contemplates the rendition of expert professional services, and, therefore, neither the Purchase Order, nor any interest therein, nor any claim arising thereunder shall be transferred or assigned by either party to any other party or parties.

16. The performance of work under the Purchase Order may be terminated by the BOARD in whole or, from time to time. Any such termination shall be effected by delivery to the CONSULTANT of a written Notice of Termination specifying the extent to which performance of the work under the contract is terminated and the date on which such termination becomes effective. In the event of termination, fees for services shall be prorated and paid or repaid. Such termination shall not relieve CONSULTANT of any liability that may be incurred for its activities in connection with the Purchase Order prior to said termination. Likewise, CONSULTANT shall have the right to terminate the Purchase Order with thirty (30) days' written notice to PSERS. Also, under these circumstances, the fees for services shall be prorated and paid or repaid.

17. The CONSULTANT shall not publish or otherwise disclose, except to PSERS and except matters of public record, any information or data obtained hereunder from private individuals, organizations, or public agencies, in a publication whereby the information or data furnished by or about any particular person or establishment can be identified as relating to PSERS or its responsibilities, except with the consent of such person or establishment.

18. The CONSULTANT agrees that any specific plans, material, records, etc., developed under the Purchase Order remain the property of PSERS, and

reproduction or duplication of such materials may be done only with the approval of PSERS.

19. No member of the General Assembly of the Commonwealth of Pennsylvania or any individual employed by the Commonwealth shall be admitted to any share or part of the Purchase Order, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to the Purchase Order if made with a corporation for its general benefit.

20. The CONSULTANT shall comply with the Standard Contract Terms and Conditions attached to the Purchase Order as Rider 4 and incorporated therein by reference, which provisions may be modified from time to time with written notice to CONSULTANT.

21. CONSULTANT shall maintain such records, books, and accounts pertaining to services and payments under the Purchase Order in accordance with generally accepted accounting principles consistently applied. All such records, books, and accounts shall be maintained and preserved during the term of the Purchase Order and any extension thereof and for four years thereafter. During such period, PSERS, or any other department or representative of the Commonwealth of Pennsylvania, from time to time upon reasonable notice, shall have the right to inspect, duplicate, and audit, at PSERS' expense, such records, books, and accounts for all purposes authorized and permitted by law. CONSULTANT may preserve such records, books, and accounts in original form or on microfilm, magnetic tape, or any other generally recognized and accepted process.

22. Any notice, demand, direction, instruction, or other communication required or permitted hereunder shall be confirmed in writing and shall be sufficiently given for all purposes when sent (a) by certified or registered U.S. mail, postage prepaid, (b) by a nationally recognized courier service that maintains verification of actual delivery, (c) by facsimile, with a copy sent by first class U.S. mail (provided that if the date of dispatch is not a working day, the facsimile shall be deemed to have been received at the opening of business of the addressee on the next working day), or (d) by delivering the same in person to any party at the following addresses or such other addresses as may be designated in writing from time to time by the parties:

PSERS:	James H. Grossman, Jr, Chief Investment Officer Pennsylvania, Public School Employees' Retirement System 5 North Fifth Street Harrisburg, Pennsylvania 17101
CONSULTANT:	David Testore, Chief Administrative Officer

Aon Hewitt Investment Consulting, Inc.
10 South Riverside Plaza, Suite 1600
Chicago, IL 60606

23. PSERS reserves all immunities, defenses, rights, or actions arising out of its status as a sovereign entity or from the Eleventh Amendment to the United States Constitution. No provision of the Purchase Order shall be construed as a waiver of any such immunities, defenses, rights, or actions.

24. Execution of the Purchase Order constitutes certification by CONSULTANT that (a) the number appearing on the Purchase Order is CONSULTANT's correct taxpayer identification number, and (b) CONSULTANT is not subject to backup withholding because (i) CONSULTANT is exempt from backup withholding, (ii) CONSULTANT has not been notified by the IRS that it is subject to backup withholding as a result of a failure to report all interest or dividends, or (iii), the IRS has notified CONSULTANT that it is no longer subject to backup withholding.

25. The Purchase Order shall be governed by the laws of the Commonwealth of Pennsylvania and, for all purposes, shall be construed in accordance with said laws and the decisions of the courts of the Commonwealth of Pennsylvania therein, and shall be binding upon the successors and assigns of the parties thereto, and constitutes the entire agreement between PSERS and CONSULTANT with respect to the consulting services to be furnished as provided herein. No amendment or modification changing the scope or terms of the Purchase Order shall have any force or effect unless it is in writing and approved by both parties.

26. If any one or more of the covenants, agreements, provisions, or terms of the Purchase Order shall be held contrary to any express provision of law, or contrary to the policy of express law though not expressly prohibited, or against public policy, or shall for any reason whatsoever be held invalid, then such covenants, agreements, provisions, or terms shall be deemed severable from the remaining covenants, agreements, provisions, or terms of the Purchase Order and shall in no way affect the validity or enforceability of the remainder of the Purchase Order or the rights of the parties thereto.

27. CONSULTANT shall reimburse PSERS, or pay directly on PSERS' behalf, the reasonable travel expenses actually incurred by PSERS, if any, for each contract year (i) for travel to CONSULTANT's location for due diligence and/or to discuss performance results, economic outlook, investment strategy, organization changes and other pertinent matters and (ii) to attend investment conferences, training, seminars or similar events sponsored by CONSULTANT or any affiliate of CONSULTANT. Reimbursable or directly payable expenses shall include airfare, automobile rental, lodging, meals, CONSULTANT -sponsored meeting registration fees, and other travel-related expenses at maximum allowance rates established by the Commonwealth Management Directive 230.10 as revised, Travel and Subsistence Allowances. The reimbursable or directly payable expenses

for each of (i) or (ii), above, shall not exceed $25,000 per calendar year. PSERS shall submit a properly documented claim for reimbursement or direct payment of such travel expenses, which CONSULTANT shall pay within 30 days after receipt.

28. CONSULTANT shall perform services under the Purchase Order subject to the exercise of that degree of judgment and care under the circumstances then prevailing which persons of prudence, discretion, and intelligence who are experts in such matters, exercise in the management of like matters, not in regard to speculation but in regard to the permanent disposition of the Fund, considering the probable income to be derived therefrom as well as the probable safety of the invested capital. CONSULTANT acknowledges that it is a "fiduciary" with respect to PSERS and the Fund as that term is defined in the Employee Retirement Income Security Act of 1974 (ERISA), regardless of the applicability of ERISA to the Purchase Order.

29. TERMINATION FOR CONVENIENCE

a. PSERS shall have the right to terminate the Purchase Order for its convenience if PSERS determines termination to be in its best interest. CONSULTANT shall have the right to terminate the Purchase Order for its convenience upon 180 days' written notice to PSERS. CONSULTANT shall be paid for work satisfactorily completed prior to the effective date of the termination, but in no event shall CONSULTANT be entitled to recover loss of profits.

(remainder of page intentionally left blank)

Authorized representatives of the parties have executed this Purchase Order Terms and Conditions as of the Effective Date.

Aon Hewitt Investment Consulting, Inc.

By:____________________

Name: Michael T. Novy

Title: VP-Legal

Date: August 21, 2019

Commonwealth of Pennsylvania, Public School Employees' Retirement System

By:____________________

Name: Glen R. Grell

Title: Executive Director

Date: 8/26/2019

By:____________________

Name: James H. Grossman, Jr.

Title: Chief Investment Officer

Date: 8/26/2019

REQUEST FOR PROPOSALS FOR

INVESTMENT CONSULTING SERVICES

ISSUING OFFICE

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM (PSERS)
5 NORTH 5TH STREET
HARRISBURG, PA 17101

RFP NUMBER

PSERS RFP 2018-6

DATE OF ISSUANCE

January 18, 2019

REQUEST FOR PROPOSALS FOR

Investment Consulting Services

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CALENDAR OF EVENTS

The Commonwealth will make every effort to adhere to the following schedule:

Activity	Responsibility	Date
Deadline to submit Questions via email to Lenann Engler at **lengler@pa.gov**	Potential Offerors	1/25/2019
Pre-proposal Conference—Location.	Issuing Office/Potential Offerors	None
Answers to Potential Offeror questions posted to eMarketplace at http://www.emarketplace.state.pa.us/Search.aspx no later than this date.	Issuing Office	2/1/2019
Please monitor website for all communications regarding the RFP.	Potential Offerors	Ongoing
Sealed proposal must be received by the Issuing Office at Public School Employees' Retirement System ATTN: Cathy Gusler 5 North 5th Street Harrisburg, PA 17101	Offerors	2/19/2019
Finalist presentations at PSERS' Headquarters if necessary. Bidders should be available to present in person if requested.	Selected Offerors	3/11/2019-3/15/2019

PART I

GENERAL INFORMATION

I-1. Purpose. This request for proposals ("RFP") provides to those interested in submitting proposals for the subject procurement ("Offerors") sufficient information to enable them to prepare and submit proposals for the Public School Employees' Retirement System's ("PSERS") consideration on behalf of the Commonwealth of Pennsylvania ("Commonwealth") to satisfy a need for Investment Consulting Services ("Project"). This RFP contains instructions governing the requested proposals, including the requirements for the information and material to be included; a description of the service to be provided; requirements which Offerors must meet to be eligible for consideration; general evaluation criteria; and other requirements specific to this RFP.

I-2. Issuing Office. PSERS ("Issuing Office") has issued this RFP on behalf of the Commonwealth. The sole point of contact in the Commonwealth for this RFP shall be Lenann T. Engler, Manager of Investment Processes, PSERS, 5 North 5th Street, Harrisburg, PA 17101, **Lengler@pa.gov,** the Issuing Officer for this RFP. Please refer all inquiries to the Issuing Officer.

I-3. Overview of Project. PSERS is the administrator of a cost-sharing multiple-employer defined benefit retirement system (the "Defined Benefit Plan") established by the Commonwealth to provide pension benefits for employees of the public school system in the Commonwealth. PSERS' funding policy provides for periodic member contributions at statutory rates and periodic employer contributions at actuarially determined rates that are sufficient to accumulate assets to pay defined benefits when due. The Public School Employees' Retirement Fund ("Fund") consists of all monies of the Defined Benefit Plan. As provided by statutes, the PSERS' Board of Trustees ("Board") has exclusive control and management responsibility of the Fund and full power to invest the Fund. In exercising its fiduciary responsibility to PSERS' membership, the Board is governed by the "prudent investor" rule and has adopted an Investment Policy Statement to formally document investment objectives and responsibilities. This policy, as well as applicable state law, defines permissible investments for PSERS. The Investment Policy Statement, Objectives, and Guidelines can be obtained on the internet at http://www.psers.pa.gov/About/Investment/Pages/Guide.aspx.

The market value of PSERS' net assets in the Fund totaled approximately $56.7 billion as of June 30, 2018. Based on this valuation of its assets, PSERS is the 15th largest defined benefit public pension fund in the nation. A copy of the Fund's most recent comprehensive annual financial report can be obtained on the internet at http://www.psers.pa.gov under the Forms & Publications section. The Board needs investment consulting and performance measurement services to fulfill its fiduciary duties with respect to the PSERS' fund.

In addition, on June 12, 2017, Governor Wolf signed Act 5 of 2017 into law. This pension legislation represents a substantial change to PSERS' operations and made significant changes to PSERS benefit structure for future members. School employees who become new members of PSERS on July 1, 2019 and thereafter will choose one of three new retirement plan options for their retirement benefits. The new plan design options include two hybrid plans consisting of defined benefit and defined contribution components and a stand-alone defined contribution plan (the defined contribution components thereof, the "Defined Contribution Plan"). The School Employees' Defined Contribution Trust ("Trust") will consist of all monies of the Defined Contribution Plan. The Board will be the trustee ("Trustee") of the Trust. The current stand-alone defined benefit plan will no longer be available to new members after June 30, 2019. As Trustee of the Trust, the Board will need the services detailed in this RFP relating to the Trust.

I-4. Objectives.

A. **General**. The purpose of this RFP is to obtain the service or services of an offeror or offerors to provide investment consulting and/or performance evaluation services for all PSERS' asset classes.

B. **Specific**. Additional detail is provided in Part III of this RFP.

I-5. Type of Contract. It is proposed that if the Issuing Office enters into a contract as a result of this RFP, it will be a fixed-fee contract purchase order containing the Standard Contract Terms and Conditions as shown in **Part VI** and the terms and conditions contained in **Appendix A**. The Issuing Office, in its sole discretion, may undertake negotiations with Offerors whose proposals, in the judgment of the Issuing Office, show them to be qualified, responsible and capable of performing the Project.

I-6. Rejection of Proposals. The Issuing Office reserves the right, in its sole and complete discretion, to reject any proposal received as a result of this RFP.

I-7. Incurring Costs. The Issuing Office is not liable for any costs the Offeror incurs in preparation and submission of its proposal, in participating in the RFP process or in anticipation of award of the contract.

I-8. Pre-proposal Conference. There will be no Pre-proposal conference for this RFP. If there are any questions, please forward them to the Issuing Officer in accordance with Section I-9.

I-9. Questions & Answers. If an Offeror has any questions regarding this RFP, the Offeror must submit the questions by email **(with the subject line "RFP PSERS RFP 2018-6 Question")** to the Issuing Officer named in **Part I, Section I-2** of the RFP. If the Offeror has questions, they must be submitted via email **no later than** the date indicated on the Calendar of Events. The Offeror shall not attempt to contact the Issuing Officer by any other means. The Issuing Officer shall post the answers to the questions on eMarketplace by the date stated on the Calendar of Events**.** An Offeror who submits a question *after* the deadline date for receipt of questions indicated on the Calendar of Events assumes the risk that its proposal will not be responsive or competitive because the Commonwealth is not able to respond before the proposal receipt date or in sufficient time for the Offeror to prepare a responsive or competitive proposal. When submitted after the deadline date for receipt of questions indicated on the Calendar of Events, the Issuing Officer *may* respond to questions of an administrative nature by directing the questioning Offeror to specific provisions in the RFP. To the extent that the Issuing Office decides to respond to a non-administrative question *after* the deadline date for receipt of questions indicated on the Calendar of Events, the answer must be provided to all Offerors through an addendum.

All questions and responses as posted on eMarketplace are considered as an addendum to, and part of, this RFP in accordance with RFP **Part I, Section I-10.** Each Offeror shall be responsible to monitor eMarketplace for new or revised RFP information. The Issuing Office shall not be bound by any verbal information nor shall it be bound by any written information that is not either contained within the RFP or formally issued as an addendum by the Issuing Office. The Issuing Office does not consider questions to be a protest of the specifications or of the solicitation. The required protest process for Commonwealth procurements is as described in **Part I, Section I-26**.

I-10. Addenda to the RFP. If the Issuing Office deems it necessary to revise any part of this RFP before the proposal response date, the Issuing Office will post an addendum to eMarketplace at **http://www.emarketplace.state.pa.us/Search.aspx**. It is the Offeror's responsibility to periodically check eMarketplace for any new information or addenda to the RFP. Answers to the questions asked during the Questions & Answers period also will be posted to eMarketplace as an addendum to the RFP.

I-11. Response Date. To be considered for selection, hard copies of proposals must arrive at the Issuing Office on or before the time and date specified in the RFP Calendar of Events. The Issuing Office will **not** accept proposals via email or facsimile transmission. Offerors who send proposals by mail or other delivery service should allow sufficient delivery time to ensure timely receipt of their proposals. If, due to inclement weather, natural disaster, or any other cause, the Commonwealth office location to which proposals are to be returned is closed on the proposal response date, the deadline for submission will be automatically extended until the next Commonwealth business day on which the office is open, unless the Issuing Office otherwise notifies Offerors. The hour for submission of proposals shall remain the same. The Issuing Office will reject, unopened, any late proposals.

I-12. Proposal Requirements.

A. **Proposal Submission**: To be considered, Offerors should submit a complete response to this RFP to the Issuing Office, using the format provided in **Section I-12B**, providing **fifteen (15) paper copies [one marked "ORIGINAL"] of the Technical Submittal and one (1) paper copy of the Cost Submittal and two (2) paper copies of the Small Diverse Business and Small Business (SDB/SB) Participation Submittal and related Letter(s) of Intent.** In addition to the paper copies of the proposal, Offerors shall submit one **complete and exact** copy of the entire proposal (Technical, Cost and SDB/SB submittals, along with all requested documents) on CD-ROM or Flash drive in Microsoft Office or Microsoft Office-compatible format. The electronic copy must be a mirror image of the paper copy and any spreadsheets must be in Microsoft Excel. The Offerors may not lock or protect any cells or tabs. The CD or Flash drive should clearly identify the Offeror and include the name and version number of the virus scanning software that was used to scan the CD or Flash drive before it was submitted. The Offeror shall make no other distribution of its proposal to any other Offeror or Commonwealth official or Commonwealth consultant. Each proposal page should be numbered for ease of reference. An official authorized to bind the Offeror to its provisions must sign the proposal. If the official signs the **Proposal Cover Sheet** (**Appendix B** to this RFP) and the Proposal Cover Sheet is attached to the Offeror's proposal, the requirement will be met. For this RFP, the proposal must remain valid for **120** days or until a contract is fully executed. If the Issuing Office selects the Offeror's proposal for award, the contents of the selected Offeror's proposal will become, except to the extent the contents are changed through Best and Final Offers or negotiations, contractual obligations.

Each Offeror submitting a proposal specifically waives any right to withdraw or modify it, except that the Offeror may withdraw its proposal by written notice received at the Issuing Office's address for proposal delivery prior to the exact hour and date specified for proposal receipt. An Offeror or its authorized representative may withdraw its proposal in person prior to the exact hour and date set for proposal receipt, provided the withdrawing person provides appropriate identification and signs a receipt for the proposal. An Offeror may modify its submitted proposal prior to the exact hour and date set for proposal receipt only by submitting a new clearly identified revised sealed proposal or sealed modification which complies with the RFP requirements.

B. **Proposal Format**: Offerors must submit their proposals in the format, including heading descriptions, outlined below. To be considered, the proposal must respond to all proposal requirements. Offerors should provide any other information thought to be relevant, but not applicable to the enumerated categories, as an appendix to the Proposal. All cost data relating to this proposal and all Small Diverse Business and Small Business cost data should be kept separate from and not included in the Technical Submittal. Offerors should not reiterate technical information in the cost submittal. Each Proposal shall consist of the following **three** separately sealed submittals:

1. Technical Submittal, in response to **Part III**:

   a. Complete, sign and include **Appendix C – Domestic Workforce Utilization Certification**

   b. Complete, sign and include **Appendix D – Iran Free Procurement Certification**;

2. Cost Submittal, in response to RFP **Part IV;** and

3. Small Diverse Business and Small Business (SDB/SB) Participation Submittal, in response to RFP **Part V:**

   a. Complete and include **Appendix G - SDB/SB Participation Submittal Form;** and

   b. Complete and include **Appendix H - SDB/SB Letter of Intent.** Offeror must provide a Letter of Intent for each SDB and SB listed on the SDB/SB Participation Submittal Form

The Issuing Office reserves the right to request additional information which, in the Issuing Office's opinion, is necessary to assure that the Offeror's competence, number of qualified employees, business organization, and financial resources are adequate to perform according to the RFP.

The Issuing Office may make investigations as deemed necessary to determine the ability of the Offeror to perform the Project, and the Offeror shall furnish to the Issuing Office all requested information and data. The Issuing Office reserves the right to reject any proposal if the evidence submitted by, or investigation of, such Offeror fails to satisfy the Issuing Office that such Offeror is properly qualified to carry out the obligations of the RFP and to complete the Project as specified.

I-13. Economy of Preparation. Offerors should prepare proposals simply and economically, providing a straightforward, concise description of the Offeror's ability to meet the requirements of the RFP.

I-14. Alternate Proposals. The Issuing Office has identified the basic approach to meeting its requirements, allowing Offerors to be creative and propose their best solution to meeting these requirements. The Issuing Office will not accept alternate proposals.

I-15. Discussions for Clarification. Offerors may be required to make an oral or written clarification of their proposals to the Issuing Office to ensure thorough mutual understanding and Offeror responsiveness to the solicitation requirements. The Issuing Office will initiate requests for clarification. Clarifications may occur at any stage of the evaluation and selection process prior to contract execution.

I-16. Prime Contractor Responsibilities. The selected Offeror must perform at least 50% of the total contract value. Nevertheless, the contract will require the selected Offeror to assume responsibility for all services offered in its proposal whether it produces them itself or by subcontract. Further, the Issuing Office will consider the selected Offeror to be the sole point of contact with regard to contractual matters.

I-17. Proposal Contents.

A. Confidential Information. The Commonwealth is not requesting, and does not require, confidential proprietary information or trade secrets to be included as part of Offerors' submissions in order to evaluate proposals submitted in response to this RFP. Accordingly, except as provided herein, Offerors should not label proposal submissions as confidential or proprietary or trade secret protected. Any Offeror who determines that it must divulge such information as part of its proposal must submit the signed written statement described in subsection c. below and must additionally provide a redacted version of its proposal on CD, which removes only the confidential proprietary information and trade secrets, for required public disclosure purposes. The CD should clearly identify the Offeror, note that it is a redacted copy and include the name and version number of the virus scanning software that was used to scan the CD before it was submitted. If a written statement and redacted version of the proposal is not submitted at the time of the proposal submission, the proposal will be subject to release as submitted with only financial capability redacted.

B. Commonwealth Use. All material submitted with the proposal shall be considered the property of the Commonwealth of Pennsylvania and may be returned only at the Issuing Office's option. The Commonwealth has the right to use any or all ideas not protected by intellectual property rights that are presented in any proposal regardless of whether the proposal becomes part of a contract. Notwithstanding any Offeror copyright designations contained on proposals, the Commonwealth shall have the right to make copies and distribute proposals internally and to comply with public record or other disclosure requirements under the provisions of any Commonwealth or United States statute or regulation, or rule or order of any court of competent jurisdiction.

C. Public Disclosure. After the award of a contract pursuant to this RFP, all proposal submissions are subject to disclosure in response to a request for public records made under the Pennsylvania Right-to-Know-Law, 65 P.S. § 67.101, et seq. If a proposal submission contains confidential proprietary information or trade secrets, a signed written statement to this effect must be provided with the submission in accordance with 65 P.S. § 67.707(b) for the information to be considered exempt under 65 P.S. § 67.708(b)(11) from public records requests. Refer to **Appendix E** of the RFP for a **Trade Secret Confidential Proprietary Information Notice Form** that may be utilized as the signed written statement, if applicable. If financial capability information is submitted in response to Part III of this RFP such financial capability information is exempt from public records disclosure under 65 P.S. § 67.708(b)(26).

I-18. Best and Final Offers.

A. While not required, the Issuing Office reserves the right to conduct discussions with Offerors for the purpose of obtaining "best and final offers." To obtain best and final offers from Offerors, the Issuing Office may do one or more of the following, in any combination and order:

1. Schedule oral presentations;

2. Request revised proposals;

3. Conduct an online auction; and

4. Enter into pre-selection negotiations.

B. The following Offerors will **not** be invited by the Issuing Office to submit a Best and Final Offer:

1. Those Offerors, which the Issuing Office has determined to be not responsible or whose proposals the Issuing Office has determined to be not responsive.

2. Those Offerors, which the Issuing Office has determined in accordance with **Part II, Section II-5**, from the submitted and gathered financial and other information, do not possess the financial capability, experience or qualifications to assure good faith performance of the contract.

3. Those Offerors whose score for their technical submittal of the proposal is less than 75% of the total amount of technical points allotted to the technical criterion.

The issuing office may further limit participation in the best and final offers process to those remaining responsible offerors which the Issuing Office has, within its discretion, determined to be within the top competitive range of responsive proposals.

C. The Evaluation Criteria found in **Part II, Section II-4**, shall also be used to evaluate the Best and Final offers.

D. Price reductions offered through any online auction shall have no effect upon the Offeror's Technical Submittal.

E. Any reduction to commitments to Small Diverse Businesses and Small Businesses must be proportional to the reduction in the total price offered through any BAFO process or contract negotiations unless approved by BDISBO.

I-19. News Releases. Offerors shall not issue news releases, Internet postings, advertisements or any other public communications pertaining to this Project without prior written approval of the Issuing Office, and then only in coordination with the Issuing Office.

I-20. Restriction of Contact. From the issue date of this RFP until the Issuing Office selects a proposal for award, the Issuing Officer is the sole point of contact concerning this RFP. Any violation of this condition may be cause for the Issuing Office to reject the offending Offeror's proposal. If the Issuing Office later discovers that the Offeror has engaged in any violations of this condition, the Issuing Office may reject the offending Offeror's proposal or rescind its contract award. Offerors must agree not to distribute any part of their proposals beyond the Issuing Office. An Offeror who shares information contained in its proposal with other Commonwealth personnel and/or competing Offeror personnel may be disqualified.

I-21. Issuing Office Participation. Offerors shall provide all services, supplies, facilities, and other support necessary to complete the identified work, except as otherwise provided in this **Part I, Section I-21**.

I-22. Term of Contract. The term of the contract will commence on the Effective Date and will end five years after the Effective Date. The Issuing Office will fix the Effective Date after the contract has been fully executed by the selected Offeror and by the Commonwealth and all approvals required by Commonwealth contracting procedures have been obtained. The selected Offeror shall not start the performance of any work prior to the Effective Date of the contract and the Commonwealth shall not be liable to pay the selected Offeror for any service or work performed or expenses incurred before the Effective Date of the contract.

I-23. Offeror's Representations and Authorizations. By submitting its proposal, each Offeror understands, represents, and acknowledges that:

A. All of the Offeror's information and representations in the proposal are material and important, and the Issuing Office may rely upon the contents of the proposal in awarding the contract(s). The Commonwealth shall treat any misstatement, omission or misrepresentation as fraudulent concealment of the true facts relating to the Proposal submission, punishable pursuant to 18 Pa. C.S. §4904.

B. The Offeror has arrived at the price(s) and amounts in its proposal independently and without consultation, communication, or agreement with any other Offeror or potential offeror.

C. The Offeror has not disclosed the price(s), the amount of the proposal, nor the approximate price(s) or amount(s) of its proposal to any other firm or person who is an Offeror or potential offeror for this RFP, and the Offeror shall not disclose any of these items on or before the proposal submission deadline specified in the Calendar of Events of this RFP.

D. The Offeror has not attempted, nor will it attempt, to induce any firm or person to refrain from submitting a proposal on this contract, or to submit a proposal higher than this proposal, or to submit any intentionally high or noncompetitive proposal or other form of complementary proposal.

E. The Offeror makes its proposal in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive proposal.

F. To the best knowledge of the person signing the proposal for the Offeror, the Offeror, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last **four** years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding or proposing on any public contract, except as the Offeror has disclosed in its proposal.

G. To the best of the knowledge of the person signing the proposal for the Offeror and except as the Offeror has otherwise disclosed in its proposal, the Offeror has no outstanding, delinquent obligations to the Commonwealth including, but not limited to, any state tax liability not being contested on appeal or other obligation of the Offeror that is owed to the Commonwealth.

H. The Offeror is not currently under suspension or debarment by the Commonwealth, any other state or the federal government, and if the Offeror cannot so certify, then it shall submit along with its proposal a written explanation of why it cannot make such certification.

I. The Offeror has not made, under separate contract with the Issuing Office, any recommendations to the Issuing Office concerning the need for the services described in its proposal or the specifications for the services described in the proposal.

J. Each Offeror, by submitting its proposal, authorizes Commonwealth agencies to release to the Commonwealth information concerning the Offeror's Pennsylvania taxes, unemployment compensation and workers' compensation liabilities.

K. Until the selected Offeror receives a fully executed and approved written contract from the Issuing Office, there is no legal and valid contract, in law or in equity, and the Offeror shall not begin to perform.

L. The Offeror is not currently engaged, and will not during the duration of the contract engage, in a boycott of a person or an entity based in or doing business with a jurisdiction which the Commonwealth is not prohibited by Congressional statute from engaging in trade or commerce.

I-24. Notification of Selection.

A. Contract Negotiations. The Issuing Office will notify all Offerors in writing of the Offeror selected for contract negotiations after the Issuing Office has determined, taking into consideration all of the evaluation factors, the proposal that is the most advantageous to the Issuing Office.

B. Award. Offerors whose proposals are not selected will be notified when contract negotiations have been successfully completed and the Issuing Office has received the final negotiated contract signed by the selected Offeror.

I-25. Debriefing Conferences. Upon notification of award, Offerors whose proposals were not selected will be given the opportunity to be debriefed. The Issuing Office will schedule the debriefing at a mutually agreeable time. The debriefing will not compare the Offeror with other Offerors, other than the position of the Offeror's proposal in relation to all other Offeror proposals. An Offeror's exercise of the opportunity to be debriefed does not constitute nor toll the time for filing a protest (See **Section I-26** of this RFP).

I-26. RFP Protest Procedure. The RFP Protest Procedure is on the DGS website at http://www.dgs.pa.gov/Documents/Procurement%20Forms/Handbook/Pt1/Pt%20I%20Ch%2058%20Bid%20Protests.pdf. A protest by a party that has not or has not yet submitted a proposal must be filed no later than the proposal submission deadline specified in the Calendar of Events of the RFP. Offerors may file a protest within **seven** days after the protesting Offeror knew or should have known of the facts giving rise to the protest, but in no event may an Offeror file a protest later than **seven** days after the date the notice of award of the contract is posted on the DGS website. The date of filing is the date of receipt of the protest. A protest must be filed in writing with the Issuing Office. To be timely, the protest must be received by 4:00 p.m. on the seventh day.

I-27. Use of Electronic Versions of this RFP. This RFP is being made available by electronic means. If an Offeror electronically accepts the RFP, the Offeror acknowledges and accepts full responsibility to ensure that no changes are made to the RFP. In the event of a conflict between a version of the RFP in the Offeror's possession and the Issuing Office's version of the RFP, the Issuing Office's version shall govern.

PART II

CRITERIA FOR SELECTION

II-1. Mandatory Responsiveness Requirements. To be eligible for selection, a proposal must:

A. Be timely received from an Offeror (see **Part I, Section I-11**); and

B. Be properly signed by the Offeror (see **Part I, Section I-12A).**

C. Meet all of the Mandatory Minimum Qualifications outlined in Section III-4 (see Part III, Section III-4).

II-2. Technical Nonconforming Proposals. The three (3) Mandatory Responsiveness Requirements set forth in **Section II-1** above (A-C) are the only RFP requirements that the Commonwealth will consider to be *non-waivable.* The Issuing Office reserves the right, in its sole discretion, to (1) waive any other technical or immaterial nonconformities in an Offeror's proposal, (2) allow the Offeror to cure the nonconformity, or (3) consider the nonconformity in the scoring of the Offeror's proposal.

II-3. Evaluation. The Issuing Office has selected a committee of qualified personnel to review and evaluate timely submitted proposals. Independent of the committee, BDISBO will evaluate the Small Diverse Business and Small Business Participation Submittal and provide the Issuing Office with a rating for this component of each proposal. The Issuing Office will notify in writing of its selection for negotiation the responsible Offeror whose proposal is determined to be the most advantageous to the Commonwealth as determined by the Issuing Office after taking into consideration all of the evaluation factors.

II-4. Evaluation Criteria. The following criteria will be used in evaluating each proposal:

A. Technical: The Issuing Office has established the weight for the Technical criterion for this RFP as **70**% of the total points. Evaluation will be based upon the following in order of importance: **Personnel Qualification, Soundness of Approach, Offeror Qualification, Understanding the Problem.** The final Technical scores are determined by giving the maximum number of technical points available to the proposal with the highest raw technical score. The remaining proposals are rated by applying the Technical Scoring Formula set forth at the following webpage: http://www.dgs.pa.gov/Businesses/Materials%20and%20Services%20Procurement/Procurement-Resources/Pages/default.aspx.

B. Cost: The Issuing Office has established the weight for the Cost criterion for this RFP as **10**% of the total points. The cost criterion is rated by giving the proposal with the lowest total cost the maximum number of Cost points available. The remaining proposals are rated by applying the Cost Formula set forth at the following webpage: http://www.dgs.pa.gov/Businesses/Materials%20and%20Services%20Procurement/Procurement-Resources/Pages/default.aspx.

C. Small Diverse Business and Small Business Participation: BDISBO has established the minimum evaluation weight for the Small Diverse Business and Small Business Participation criterion for this RFP as **20**% of the total points.

1. The Small Diverse and Small Business point allocation is based entirely on the percentage of the contract cost committed to Small Diverse Businesses and Small Businesses.

2. A total combined SDB/SB commitment less than one percent (1%) of the total contract cost is considered de minimis and will receive no Small Diverse Business or Small Business points.

3. Based on a maximum total of 200 available points for the Small Diverse Business and Small Business Participation Submittal, the scoring mechanism is as follows:

Small Diverse Business and Small Business Raw Score =

200 (SDB% + (1/3 * SB %))

4. The Small Diverse Business and Small Business Raw Score is capped at 200.

5. The Offeror with the highest raw score will receive 200 points. Each Offeror's raw score will be pro-rated against the Highest Offeror's raw score by applying the formula set forth on the following webpage: http://www.dgs.pa.gov/Businesses/Materials%20and%20Services%20Procurement/Procurement-Resources/Pages/RFP_SCORING_FORMULA.aspx.

6. The Offeror's prior performance in meeting its contractual obligations to Small Diverse Businesses and Small Businesses will be considered by BDISBO during the scoring process. To the extent the Offeror has failed to meet prior contractual commitments, BDISBO may recommend to the Issuing Office that the Offeror be determined non-responsible for the limited purpose of eligibility to receive Small Diverse Business and Small Business points.

D. **Domestic Workforce Utilization**: Any points received for the Domestic Workforce Utilization criterion are bonus points in addition to the total points for this RFP. The maximum amount of bonus points available for this criterion is 3% of the total points for this RFP.

To the extent permitted by the laws and treaties of the United States, each proposal will be scored for its commitment to use domestic workforce in the fulfillment of the contract. Maximum consideration will be given to those Offerors who will perform the contracted direct labor exclusively within the geographical boundaries of the United States or within the geographical boundaries of a country that is a party to the World Trade Organization Government Procurement Agreement. Those who propose to perform a portion of the direct labor outside of the United States and not within the geographical boundaries of a party to the World Trade Organization Government Procurement Agreement will receive a correspondingly smaller score for this criterion. See the following webpage for the Domestic Workforce Utilization Formula:

http://www.dgs.pa.gov/Businesses/Materials%20and%20Services%20Procurement/Procurement-Resources/Pages/RFP_SCORING_FORMULA.aspx.

E. **Iran Free Procurement Certification and Disclosure**. Prior to entering a contract worth at least $1,000,000 or more with a Commonwealth entity, an offeror must: a) certify it is not on the current list of persons engaged in investment activities in Iran created by the Pennsylvania Department of General Services ("DGS") pursuant to Section 3503 of the Procurement Code and is eligible to contract with the Commonwealth under Sections 3501-3506 of the Procurement Code; or b) demonstrate it has received an exception from the certification requirement for that solicitation or contract pursuant to Section 3503(e). All offerors must complete and return the Iran Free Procurement Certification form, **(Appendix D, Iran Free Procurement Certification Form),** which is attached hereto and made part of this RFP. The completed and signed Iran Free Procurement Certification form must be submitted as part of the Technical Submittal.

See the following web page for current Iran Free Procurement list:

http://www.dgs.pa.gov/businesses/materials%20and%20services%20procurement/procurement-resources/pages/default.aspx#.WDNfJJgo6Ht

II-5. Offeror Responsibility. To be responsible, an Offeror must submit a responsive proposal and possess the capability to fully perform the contract requirements in all respects and the integrity and reliability to assure good faith performance of the contract.

In order for an Offeror to be considered responsible for this RFP and therefore eligible for selection for best and final offers or selection for contract negotiations:

A. The total score for the technical submittal of the Offeror's proposal must be greater than or equal to **75%** of the **available technical points**; and

B. The Offeror's financial information must demonstrate that the Offeror possesses the financial capability to assure good faith performance of the contract. The Issuing Office will review the Offeror's previous three financial statements, any additional information received from the Offeror, and any other publicly-available financial information concerning the Offeror, and assess each Offeror's financial capacity based on calculating and analyzing various financial ratios, and comparison with industry standards and trends.

An Offeror which fails to demonstrate sufficient financial capability to assure good faith performance of the contract as specified herein may be considered by the Issuing Office, in its sole discretion, for Best and Final Offers or contract negotiation contingent upon such Offeror providing contract performance security for the first contract year cost proposed by the Offeror in a form acceptable to the Issuing Office. Based on the financial condition of the Offeror, the Issuing Office may require a certified or bank (cashier's) check, letter of credit, or a performance bond conditioned upon the faithful performance of the contract by the Offeror. The required performance security must be issued or executed by a bank or surety company authorized to do business in the Commonwealth. The cost of the required performance security will be the sole responsibility of the Offeror and cannot increase the Offeror's cost proposal or the contract cost to the Commonwealth.

Further, the Issuing Office will award a contract only to an Offeror determined to be responsible in accordance with the most current version of Commonwealth Management Directive 215.9, Contractor Responsibility Program.

II-6. Final Ranking and Award.

A. After any best and final offer process conducted, the Issuing Office will combine the evaluation committee's final technical scores, BDISBO's final Small Diverse Business and Small Business Participation Submittal scores, the final cost scores, and (when applicable) the domestic workforce utilization scores, in accordance with the relative weights assigned to these areas as set forth in this Part.

B. The Issuing Office will rank responsible offerors according to the total overall score assigned to each, in descending order.

C. The Issuing Office must select for contract negotiations the offeror with the highest overall score.

D. The Issuing Office has the discretion to reject all proposals or cancel the request for proposals, at any time prior to the time a contract is fully executed, when it is in the best interests of the Commonwealth. The reasons for the rejection or cancellation shall be made part of the contract file.

PART III

TECHNICAL SUBMITTAL

PSERS is the administrator of a cost-sharing multiple-employer defined benefit retirement system (the "Defined Benefit Plan") established by the Commonwealth of Pennsylvania to provide pension benefits for employees of the public school system in the Commonwealth. PSERS' funding policy provides for periodic member contributions at statutory rates and periodic employer contributions at actuarially determined rates that are sufficient to accumulate assets to pay defined benefits when due. The Public School Employees' Retirement Fund consists of all monies of the Defined Benefit Plan. As provided by statutes, the Board has exclusive control and management responsibility of PSERS' Fund and full power to invest the Fund. In exercising its fiduciary responsibility to PSERS' membership, the Board is governed by the "prudent investor" rule and has adopted an Investment Policy Statement to formally document investment objectives and responsibilities. This policy, as well as applicable state law, defines permissible investments for PSERS. The Investment Policy Statement, Objectives, and Guidelines can be obtained on the internet at http://www.psers.pa.gov/About/Investment/Pages/Guide.aspx.

The market value of PSERS' net assets in the Fund totaled approximately $56.7 billion as of June 30, 2018. Based on this valuation of its assets, PSERS is the 15th largest defined benefit public pension fund in the nation. A copy of the Fund's most recent comprehensive annual financial report can be obtained on the internet at http://www.psers.pa.gov under the Forms & Publications section. The Board needs investment consulting and performance measurement services to fulfill its fiduciary duties with respect to the Fund.

In addition, on June 12, 2017, Pennsylvania Governor Tom Wolf signed Act 5 of 2017 into law. This pension legislation represents a substantial change to PSERS' operations and made significant changes to PSERS' benefit structure for future members. School employees who become new members of PSERS on July 1, 2019 and thereafter will choose one of three new retirement plan options for their retirement benefits. The new plan design options include two hybrid plans consisting of defined benefit and defined contribution components and a stand-alone defined contribution plan (such defined contribution components, the "Defined Contribution Plan"). The School Employees' Defined Contribution Trust ("Trust") consists of all monies of the Defined Contribution Plan. The Board is the trustee ("Trustee") of the Trust. Defined contribution monies are self-directed by the retirement system members. The current stand-alone defined benefit plan will no longer be available to new members after June 30, 2019. As Trustee of the Trust, the Board needs the services detailed in this RFP relating to the Trust. Such services will begin on the later of July 1, 2019 or upon execution of a contract for investment consulting services between PSERS and the successful bidder.

III-1. Requested Services: Fund

The contractor will provide non-discretionary investment consulting and/or performance measurement services for the period June 1, 2019 through May 31, 2024.

A. In providing Consulting Services for the Fund, and for all major asset classes, the consultant will:

1. Conduct a comprehensive review and analysis of investment objectives, policies, asset allocation, and portfolio structure, inclusive of defining an investable risk beta portfolio, and recommend changes, if appropriate.

2. Review the adequacy of PSERS' Investment Professionals and resources, and make recommendations on PSERS' Investment Professionals and resource changes, if any.

3. Work with PSERS' Investment Professionals and the actuary to conduct an asset/liability study annually for each calendar year and present the results to the Board in March of the following year.

4. Work with PSERS' Investment Professionals to develop an appropriate investment management structure for the Fund and each asset class that considers the role of active versus passive strategies, investment management styles, and separation of alpha from beta under different market conditions.

5. Recommend appropriate performance and risk benchmarks for individual portfolios, each asset class, and for the total Fund.

6. Review and make recommendations regarding individual portfolio risk guidelines at least annually.

7. Recommend suitable investment opportunities and practical implementation methods; research supporting such recommendations must have been completed within the prior 12 months.

8. Recommend appropriate investment strategies, tactics, procedures, and practices.

9. Provide research reports on asset allocation, investment issues, and provide description and evaluation of alternative approaches.

10. Provide information on market conditions and explain their impact on the Fund's investments.

11. Provide PSERS with information on high conviction new managers at the earliest possible juncture to permit PSERS to secure capacity and negotiate terms with promising emergent managers.

12. Assist PSERS' Investment Professionals in conducting public market investment manager searches and facilitate the hiring of suitable institutional quality managers, including:

    a. providing opportunities and expense reimbursement for PSERS to jointly meet and evaluate new managers at industry conferences;

    b. providing a list of potential institutional quality managers appropriate for the mandate being considered;

    c. conducting interviews with potential managers at PSERS;

    d. conducting on-site due diligence meetings with potential managers prior to their selection; and

    e. providing assistance with the contract/fee negotiations.

13. Provide on-going monitoring and oversight reports for all of PSERS' public market investment managers, including:

    a. advance notice to PSERS of in-person meeting with investment managers in the Fund's portfolio;

b. analysis of the manager's absolute and relative performance in relation to benchmarks, investment objectives, and peer groups, including analysis of ex-post risk-adjusted performance;

c. an analysis of attribution, holdings, style, and risk;

d. updated research on each investment manager in the Fund's portfolio updated at least once every 18 months to include a review of investment performance, process, and the manager's organization;

e. conduct on-site investment and operational due diligence meetings with current investment managers a minimum of every three years;

f. advice on manager retention/termination; and

g. assist in developing a formal manager review process.

14. Advise PSERS' Investment Professionals and the Board about new developments in investment management techniques and portfolio management strategies. Analyze how new techniques might improve the investment program and whether they should be considered for implementation.

15. Make available all firm research, including proprietary research, regardless of the firm department in which it was created. Research must be made available by electronic system.

16. Provide access and consultation with the firm's research staff.

17. Meet with the Board to report on investment matters. Generally, there are six regularly scheduled Board meetings annually. Special meetings may be scheduled as needed.

18. Report the performance results to the Board quarterly, including relative results versus established benchmarks, results versus other public defined benefit pension plans, and the returns relative to the risks taken.

19. Maintain and provide access to a database of U.S. and non-U.S. investment managers, including their philosophies, processes, organizations, performance, fees, and clients.

20. Provide and maintain a secure, client-facing, web-based platform that is frequently updated and continuously available to PSERS that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools, allowing PSERS to:

    a. formulate investment policy and implement strategies;

    b. monitor and evaluate individual portfolio, asset class, and total fund performance, risk, and attribution analytics;

    c. formulate investment policy and implement strategies;

d. develop asset allocation and rebalancing recommendations;

e. select and evaluate public market investment managers, including public market manager research and consultant ratings;

f. analyze and optimize manager teams; and,

g. compare the Fund performance, including ex-post risk-adjusted performance, at the asset class and total fund levels to various peer groups.

It is expected that at least 20 years of the Fund's historical performance data, by investment portfolio, asset class, and at the total fund level will be included and that the database will be updated on a monthly basis. The foregoing services shall be made available directly to PSERS through CONSULTANT's proprietary tools or indirectly through licensed third party applications.

21. Provide (a) two, one-day, or (b) one, two-day, on-site, Fiduciary and Governance training sessions per year, which can be new Board member training, Board member training, PSERS' Investment Professional training, or some combination thereof. PSERS reserves the right to videotape any training sessions for educational purposes.

22. Advise the Board and PSERS' Investment Professionals on risk-related subjects (e.g., risk measurement, risk mitigation).

23. Advise the Board and PSERS' Investment Professionals on fiduciary and governance related subjects as requested by PSERS, including the following items:

(a) Provide advice and insights, as may be requested by PSERS, on public pension fund industry common and best practices;

(b) Assist as may be requested by PSERS with the development of new Board member orientation materials and conduct orientation sessions;

(c) Review and make recommendations, consistent with industry best practices, regarding clarity and documentation of the Board's governance framework, including the Investment Policy Statement ("IPS"), Board and Committee Charters, Delegations of Authority, investment implementation policies and procedures, etc.;

(d) Assist as may be requested with the development of a Board authority and delegation matrix, including:

(i) Clarification of what authority the Board has retained, what authority has been delegated, and to whom, and
(ii) Delegations to PSERS' Investment Professionals from the Board and/or CIO.

(e) Assist, as may be requested by PSERS, with strategic planning;

(f) Develop and administer, as may be requested by PSERS, a Board annual self-evaluation process.

24. Carry out other assignments that may be specified by the Board and PSERS' Investment Professionals, as required.

25. Conduct an operational risk gap analysis which will include an evaluation of the quality of the operational policies and procedures governing PSERS' Investment Professionals. The written report will include observations, comparisons to peers and recommendations in the following areas:

(a) Investment Framework (Front, Middle, and Back Office)
(b) Trade/Transaction Execution Policies and Procedures
(d) Investment and Counterparty Risk Oversight
(e) Compliance and Audit Testing
(f) Data Governance, Technology and Business Continuity and Disaster Recovery Plans
(g) Key service provider selection and monitoring procedures.

B. In providing Performance Measurement Services for the Fund, including all major asset classes recognized by PSERS as well as individual portfolios, the consultant will:

1. Prepare a written monthly report containing the calculated total return (gross and net of fees) for asset class, portfolio management styles, and individual portfolios, and compare PSERS' calculated data with benchmarks determined by PSERS and with data for a similar population of funds by asset class and portfolio management styles for all of the public market portfolios and composites. Returns should be calculated for the following time periods: one-month, three-months, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 20-year, 25-year, 30-year, and since inception.

2. Prepare a quarterly written report containing performance measurement attribution and analysis for each asset class and individual portfolio. The report should include a historical return analysis, dollar oriented analysis, return oriented (wealth relative) analysis, excess return analysis, and risk/return analysis. Returns should be calculated for the following time periods: quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 20-year, 25-year, 30-year, and since inception.

3. Reconcile performance with both individual portfolio managers as well as the custodian bank on a monthly basis.

4. Calculate PSERS' money weighted rate of return as required by GASB 75.

5. Create additional composites with historical returns for those composites as requested by PSERS.

6. Provide quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, and 10-year quartile ranking report of composite returns by fund (i.e. total fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes).

7. Provide consecutive year quartile ranking reports of composite returns by fund (i.e. total fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes) for the past five years.

8. Conduct performance attribution analysis to determine the value added by investment policy, asset allocation, and security selection.

9. Provide reasonable assistance to PSERS in uploading the consultant's performance data to PSERS' own investment system(s).

10. Prepare ex-post risk statistics and analytics for the same time periods, to the degree of depth, including benchmark comparatives, and use the same performance data from the above. Ex-post risk statistics and analytics should be robust and inclusive of industry best practices risk information.

III-2. Requested Services: Trust

The contractor will provide consulting services for the Trust including:

1. Review each plan's existing investment options.

2. Determine if the investment options offered by each plan are optimum choices given the considerations for diversification, risk and return.

3. Recommend additions or deletions to investment options as needed.

4. Provide a recommended transition plan and timeline incorporating any proposed changes in investment options.

5. Conduct a review of each plan's pricing structure including fund management fees and terms between the plans and the third party administrator (TPA).

6. Work with the TPA to review specific plan metrics, provide best practices and recommendations, and address issues that arise each quarter.

7. Assist in the development of investment policies for the plan.

8. Annually review general investment policy documents.

9. Periodically review goals, objectives and best practices with PSERS' investment committee.

10. Recommend enhancements to PSERS' investment committee governance processes.

11. Perform periodic fiduciary training.

12. Monitor, review, and provide advice on legislative and regulatory issues.

13. Monitor, review, and provide advice regarding best practices.

14. Monitor, review, and provide advice regarding fiduciary obligations.

15. Provide ongoing review of strengths and vulnerabilities in current practices.

16. Serve as the liaison between the record-keeper and PSERS to maximize the vendor relationship, resolve issues with the record-keeper, and ensure contractual commitments are met.

17. Lead and otherwise assist in any requisite RFP, RFQ, or RFI processes.

III-3. Requirements.

A. Emergency Preparedness.

To support continuity of operations during an emergency, including a pandemic, the Commonwealth needs a strategy for maintaining operations for an extended period of time. One part of this strategy is to ensure that essential contracts that provide critical business services to the Commonwealth have planned for such an emergency and put contingencies in place to provide needed goods and services.

1. Describe how you anticipate such a crisis will impact your operations.

2. Describe your emergency response continuity of operations plan. Please attach a copy of your plan, or at a minimum, summarize how your plan addresses the following aspects of pandemic preparedness:

a. Employee training (describe your organization's training plan, and how frequently your plan will be shared with employees).

b. Identified essential business functions and key employees (within your organization) necessary to carry them out.

c. Contingency plans for:

i. How your organization will handle staffing issues when a portion of key employees are incapacitated due to illness.

ii. How employees in your organization will carry out the essential functions if contagion control measures prevent them from coming to the primary workplace.

d. How your organization will communicate with staff and suppliers when primary communications systems are overloaded or otherwise fail, including key contacts, chain of communications (including suppliers), etc.

e. How and when your emergency plan will be tested, and if the plan will be tested by a third-party.

III-4. Mandatory Minimum Qualifications.

A. The Offeror must meet all of the following minimum qualifications, and agree to meet each of the following requirements, to be given further consideration. Failure to satisfy each of the minimum qualifications, or agree to meet each of the following requirements, will result in the immediate rejection of the proposal.

1. As of December 31, 2018, the Offeror must have at least five (5) tax-exempt clients, of which at least 3 are public pension plan clients having over $10 billion in assets, for whom it provides investment consulting work at both fund- and asset-class levels. Duties related to each engagement must include asset allocation, asset/liability, and risk analysis.

2. The Offeror must have been in the business of providing investment consulting services for at least five years, evidenced by a certificate of incorporation or copy of Form ADV as well as documentation of investment consulting clients (including venture capital/private equity/real estate consulting clients) which date back five years.

3. The Offeror must be a Registered Investment Advisor with the SEC under the Investment Advisors Act of 1940. Provide a copy of the latest Form ADV Parts I and II.

4. The primary consultant and principal assistant that will be assigned to the PSERS account must each have at least five years' experience analyzing, monitoring, recommending for investment, or investing in, each asset class recognized by PSERS in its Investment Policy Statement, Objectives, and Guidelines, which can be obtained at http://www.psers.pa.gov/About/Investment/Pages/Guide.aspx.

5. The Offeror must have, or have access to, a database sufficient in size and scope to allow an analysis of the risk and returns of investment firms and each of their strategy offerings.

6. The Offeror's primary consultant must not have provided general consulting services to either the Commonwealth of Pennsylvania, State Employees' Retirement System, or the Commonwealth of Pennsylvania, Pennsylvania Municipal Retirement System during the past three years.

7. The Offeror will be required to reimburse PSERS for, or pay directly on PSERS' behalf, the reasonable travel expenses actually incurred by PSERS, if any, (i) for members of PSERS' Professional Staff to travel to Offeror's location for due diligence and/or to discuss performance results, economic outlook, investment strategy, organization changes and other pertinent matters; (ii) to attend investment conferences, training, seminars or similar events sponsored by Offeror (or any affiliate of Offeror relating to the services provided under this Agreement); and (iii) to attend meetings and interviews at existing or prospective investment manager sites. Reimbursable or directly payable expenses will include airfare, automobile rental, lodging, meals, Offeror-sponsored event registration fees, and other travel-related expenses at maximum allowance rates established by the Commonwealth Management Directive 230.10 as revised, Travel and Subsistence Allowances. The reimbursable or directly payable expenses for each of (i), (ii), and (iii), above, will not exceed $25,000 per calendar year.

8. Offeror will be required to perform services under this agreement subject to the exercise of that degree of judgment and care under the circumstances then prevailing which persons of prudence, discretion, and intelligence who are expert in such matters, exercise in the management of like matters, not in regard to speculation but in regard to the permanent disposition of the Fund, considering the probable income to be derived therefrom as well as the probable safety of the invested capital. Offeror will be required to acknowledge, with respect to PSERS and the Fund

and/or Trust, that, without qualification, it is a "fiduciary" as that term is defined in the Employee Retirement Income Security Act of 1974 (ERISA), regardless of the applicability of ERISA to this agreement.

9. Offeror will be required to include in its consulting services staff professionals dedicated to, and expert in, investment risk, fiduciary, and investment governance topics.

10. Offeror must provide and maintain a secure, client-facing, web-based platform that is frequently updated and continuously available to PSERS that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools.

B. The Offeror's consulting team must provide written responses to each of the aforementioned mandatory qualifications and requirements substantiating how your firm satisfies each qualification and confirming that your firm will satisfy each requirement. The responses must contain sufficient information as prescribed to assure the Board of its accuracy. **Failure to provide complete information will result in immediate rejection of the proposal.**

III-5. Offeror's Qualifications.

A. Please provide the following information about your firm:

1. Provide a summary description of your firm including the name, year formed, history, ownership structure, names of owners or partners, subsidiary or affiliate relationships, and the reporting and control structure. If you are an affiliate or subsidiary of another company, what percentage of the firm's total revenue does your division generate? Please describe the organizational structure and your relationship to the parent company and any other subsidiaries. List services to the investment community (trading, investment management, database) other than investment consulting services, provided by your firm, as well as services of any parent, subsidiary, or affiliate. If investment consulting is not your only line of business, please make clear in answering these questions the history and circumstances of your entrance into investment consulting.

2. Do senior executives have ownership interests in the firm? If so, how much?

3. State the name, title, address and telephone number of the proposal contact person. Will the primary consultant assigned to PSERS account have ownership interest in the firm or is there a specific arrangement for sharing in the profits earned by the enterprise (e.g., salary, bonus, group/individual performance incentives, profit sharing, etc.)? Please describe.

B. Please provide the following financial information:

1. Audited financial statements for the past three (3) years.

2. Any special audit reports concerning internal controls for the past three (3) years.

C. Within the past five years, have there been any significant developments (e.g., changes in ownership, personnel reorganization, new business ventures) in your firm? If so, describe these developments in detail.

D. Do you anticipate any significant changes in your firm? If so, describe these anticipated changes and their impact on clients.

E. Have any senior executives left the firm in the past five years? Please describe the circumstances of their departure(s).

F. Explain your firm's goals for expansion and accepting new client business. How will the firm control the quality of service to clients? Include the following:

1. Total number of accounts that will be accepted.

2. Total assets that will be accepted.

3. Plans for additions to professional staff and approximate timing in relation to growth of accounts and/or assets.

G. What is the location of firm headquarters and any branch offices? If several locations, what quality controls does the firm use to ensure consistency of services among clients, and how does the firm handle research, information processing and databases?

H. List your firm's lines of business and approximate contributions of each business to your firm's total revenue. If you are an affiliate or subsidiary of another company, what percentage of the firm's total revenue does your division generate? Please describe the organizational structure and your relationship to the parent company and any other subsidiaries.

I. Over the past five years, has your organization or any officer or principal been involved in any litigation or other legal proceedings, regulatory or other governmental investigation relating to your investment or consulting activities? If so, provide a brief explanation and indicate the current status.

J. Has your firm or any officer, director, partner, principal or employee ever been the subject of any non-routine investigation, inquiry, or enforcement action by a governmental agency or self-regulatory body regarding fiduciary responsibilities, consulting activities, or other investment-related matters or activities? If so, describe each instance and summarize any directives or letters of opinion that were issued.

K. Please provide a copy of the most recent review by a government agency or regulatory body of your firm that relates to the services sought by PSERS.

L. Please describe the levels of coverage for errors and omissions insurance and any fiduciary or professional liability insurance your firm carries. Is the coverage on a per client basis, or is the dollar figure applied to the firm as a whole? List the insurance carriers. Has your firm ever submitted a claim to your errors and omissions, liability, fiduciary or fidelity bond carrier(s)? If so, describe each instance.

M. Present the previous experience and expertise of the firm providing the services proposed for PSERS.

1. List the names of pension funds your firm has as clients, indicating whether your firm represents these clients on a discretionary or non-discretionary basis.

2. List your five largest public pension plan clients by assets. For each of these pension fund clients, please provide asset value of client by asset class, year client retained your firm, average five year asset mix of client, percent of funds for which you provided consulting services, and the five year annualized total return of the client funds' investment portfolio as of June 30, 2018.

3. Please complete the following for current clients:

Asset Value of Pension Fund Client	No. of Pension Fund Clients	Average Years Clients Retained the Firm
Less than $1 billion		
$1 billion – less than $10 billion		
$10 billion – less than $30 billion		
More than $30 billion		

4. Does your firm operate any funds or other pooled investment vehicles, including, but not limited to, funds of funds? Please identify each.

5. Please list the names of pension plan clients that you have added in the last three years, and the assets of each. Specify if DB, DC, or both.

6. Please provide the names of all pension plan clients that you have lost in the last three years, the asset size of each, and why they were lost. Specify if DB, DC, or both.

7. Does your firm have any record or rating system that depicts value it has added over either a random fund selection process or an intelligent indexing approach? If so, please provide and explain.

8. How does your firm evaluate the quality of its consulting services?

N. Describe your research and analysis capabilities, noting supporting human expertise and technology.

1. Are your resources internal or external? If any external resources are used, provide a description including the name of vendors providing these resources. How is the information used to inform and advise clients? List investment research reports or studies that you have provided clients in the past 12 months. Describe your capability to carry out special projects requested by PSERS. Provide sample reports that best represent your research capabilities.

2. Does your firm maintain a secure, client-facing platform that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools?

3. Is all firm research, including proprietary research, available to clients regardless of the firm department in which it was created?

4. Is analysis available to clients through firm analysts and software comparing public market managers with their peers? How quickly is this information provided following request?

5. Outline the sources used to obtain data for publication of newsletters or periodicals. Include samples of your publications.

6. Describe any other service not included in Part IV "Work Statement" that you believe would be beneficial to PSERS and that you are proposing to provide for PSERS.

7. State what you believe differentiates your consulting services from your competitors.

8. Explain in detail any potential for conflict that would be created by your firm contracting with PSERS, including other client relationships that may inhibit services to PSERS and/or the other clients.

9. How does your firm resolve potential conflicts of interest in recommending or making investments in prospective programs among clients?

III-6. Personnel Qualifications

A. Provide an organization chart showing name, title, function, and area of expertise of pension fund consulting professionals and support staff.

B. For proposed primary consultant, principal assistant, and risk professionals, provide the names of all clients and nature of engagement for which these individuals assume a similar role. What are their other duties for the firm?

C. Delineate the proposed management of services to PSERS. Provide names of staff who will serve as primary consultants, principal assistants, and other general contacts with your firm. Specify the role and scope of involvement for each individual. Will the primary consultant be available to attend all Board meetings and assist PSERS' Investment Professionals when needed?

D. For proposed primary consultant, principal assistant, risk professionals, and other key individuals who will be providing services to PSERS, provide a biographical profile to include education, years and areas of professional investment consulting experience, and years and areas of professional investment consulting experience with your firm.

E. Provide name and position of pension fund consulting professionals who were added to the firm during the past three years. Provide name and position of pension fund consulting professionals who left the firm during the past three years. Have any senior executives left or joined the firm in the past five (5) years? Please describe the circumstances of their departure(s) or their current roles. Please provide a description of your succession and continuity plans for management of the firm.

F. How does the firm monitor performance of consultants, analysts, and other investment professionals that it employs?

G. Provide a brief general description of the firm's compensation agreements for professional staff, including bonuses, profit sharing and equity ownership. Is some component of compensation deferred? Does your firm have employment contracts and/or non-compete agreements with investment professionals?

H. Describe the job qualifications required by your firm when hiring investment professionals. Are there specific qualifications unique to those involved in investment consulting?

I. Describe your internal training procedures for consultants and research analysts.

III-7. Soundness of Approach.

A. General Consulting Services (includes all asset classes)

1. What is the overall philosophy of the firm regarding an investment consultant's role with respect to the board of trustees, internal investment professionals, and investment managers?

2. State as clearly as possible the firm's investment philosophy. Are there any fundamental beliefs about capital markets which underpin the firm's investment advice to its pension plan clients? Include discussion on your views as they pertain to varying investment environments (e.g., inflationary, recessionary), and on the separation of alpha from beta.

3. What are the most critical issues to consider in establishing investment policy for a public sector DB pension plan? DC?

4. Please summarize, in one page or less, the firm's investment consulting capabilities and expertise. What are the firm's major strengths and limitations? Do you provide any services which are not provided by other investment consultants? Why should PSERS engage you as its investment consultant?

5. How would you suggest that we measure and evaluate the performance of your firm as an investment consultant?

6. Describe the process you will use to recommend investment objectives and policies for PSERS. Provide samples of investment objectives and policies you have developed for pension fund clients that demonstrate the types of approaches your firm might recommend to PSERS. Highlight risk management components of the process.

7. Describe the process and resources you will use to recommend asset allocations for PSERS. Discuss the possible circumstances and process whereby you might recommend that an asset allocation should be changed. Provide samples of asset allocation plans you have developed for pension fund clients.

8. Included as **Appendix J** is the Fund's Asset Allocation Plan as of June 30, 2018. Provide observations, and recommended changes, if any.

9. Describe the process you will use to recommend a structured investment program that includes core versus specialty portfolios, active versus passive portfolios, mix of investment management styles, and number of portfolios. Provide a sample structured investment program.

10. A sizeable portion of the Fund is invested internally by PSERS' Investment Professionals. How will you evaluate the expertise, performance, and consistency of investment approach employed by PSERS' Investment Professionals?

11. Describe how you will review the adequacy of PSERS' Investment Professionals and resources available to administer PSERS' investment program and invest the Fund's and/or the Trust's assets. Include in your description how you will assess the appropriateness of PSERS'

Professional Staff size and expertise, and the technological tools available to PSERS' Professional Staff.

12. How will you evaluate investment expenses incurred? Describe the evaluation framework in detail. What sources of industry/peer data will you employ?

13. Describe your process, and the variables included, in preparing a written Asset/Liability Study. Provide a sample Asset/Liability Study you would submit to the Board.

14. Describe what you will include in the analysis of PSERS' results with the Annual Investment Plan.

15. Describe the variables and methodology you will consider in recommending performance benchmark(s) for PSERS. Provide samples of benchmarks you have recently recommended for current pension fund clients. If risk benchmarks are different than performance benchmarks, describe the differences and provide the same information as performance benchmarks (i.e. variables, methodology and sample benchmarks).

16. Describe how you will identify and evaluate new investment opportunities to recommend to PSERS. Provide samples of reports that would be made available to PSERS which detail the results of your firm's analysis.

17. Discuss your willingness to provide PSERS with information on high conviction new managers at the earliest possible juncture to permit PSERS to secure capacity and negotiate terms with promising emergent managers.

18. Discuss your willingness to provide opportunities and expense reimbursement for PSERS to jointly meet and evaluate new managers at industry conferences.

19. Discuss your willingness to provide advance notice to PSERS of in-person meetings with investment managers in PSERS' portfolio.

20. Describe your overall approach to manager research and selection, including a list of any specific criteria that must be met in order for a manager to be considered and any characteristics that will automatically exclude a manager from consideration. Please provide an outline of your manager evaluation framework and sample reports.

21. Describe the process you will use to conduct investment manager searches and to recommend candidates to PSERS. Identify all criteria that might be taken into account in order to complete your recommendations. Include a description of the size of your manager database and experience negotiating performance-based fees.

22. Describe your process of reviewing investment manager performance and consistency of investment approach.

23. Describe your process of performing due diligence review and analysis on the professional staff and operations of investment managers. Provide samples of reports that would be made available to PSERS which detail the results of your firm's analysis.

24. Do you have dedicated individuals or teams separately responsible for investment, operational, and legal/compliance due diligence? If so, does each group have authority to "veto" a prospective investment before a recommendation is made to a client or at any time thereafter?

25. Do you perform background checks on the key individuals of all prospective managers? What roles/titles are typically included in this group (i.e. CIO, portfolio managers, CEO, CFO, etc.)? What specific red flags are you looking for? What service provider(s) do you utilize for background checks?

26. Describe your approach to performing reference checks on prospective managers, including both named and informal references.

27. Do you examine and contact the third-party service providers of all prospective managers? If so, describe the key diligence components and areas of focus with respect to: 1) Administrators, 2) Custodians and Prime Brokers, 3) Auditors, and 4) Legal Advisors.

28. Please discuss the firm's database of investment managers. How many single-strategy and how many fund of funds managers are in the database? What are some key factors the firm uses to rate managers in the database? Can the database be accessed by clients online?

29. How willing is the firm to perform due diligence on managers that are not in the database but that the Board would like reviewed? Is there an extra charge for that type of research?

30. Each year, on average, how many managers do you: 1) Meet with, 2) Subject to full due diligence, 3) Update prior full due diligence, and 4) Approve for investment?

31. Do you host any client events or conferences? If so, please describe them. Are managers invited to attend?

32. Discuss your willingness to establish a knowledge transfer relationship with PSERS and describe the activities and information that this would entail including data sharing and analytics.

33. Describe the access and interaction PSERS would have with members of your staff, other than the assigned consultant and backup.

34. Briefly summarize your philosophy regarding the consultant's relationships with boards, internal investment professionals, and investment managers.

35. List all standard services provided in a typical pension plan consulting assignment. List the specialized services that you have provided to meet other needs of your clients.

B. Performance Measurement, Risk, and Attribution Reporting

1. Describe the content, format, and method of delivery of the **quarterly** performance reports you will prepare for PSERS. Performance reports are deemed to be inclusive of ex-post risk reporting and analysis. Describe instances where performance and risk indices and benchmarks are different. Include:

   a. Data and method used to calculate total return before and after fees. Please identify which criteria in your methodology can be customized by client preference. PSERS, PSERS' custodian bank, investment managers, and/or fund administrators will supply a monthly portfolio asset list with accrual market values for marketable securities. PSERS' will supply quarterly portfolio market values and cash flow data for real estate, venture capital, and private equity investments.

Please indicate whether you use your own pricing sources and describe how you will investigate/resolve pricing errors in the custodian bank's asset list. Describe how you handle pricing for derivative investments. Identify your pricing sources and hierarchy by asset class.

b. Time periods for which total returns can be calculated.

c. Standard indices, custom indices, and benchmarks you will use for comparison.

d. Total population of funds and public pension funds (including a large fund subset) you will use for universe comparisons.

e. Characteristics you will compare.

f. Breakdown of PSERS' fund market value.

g. Market conditions.

Please comment on your ability to provide draft quarterly performance reports within 3 business days following receipt of final quarter-end market values from our custodian and partnerships. Will you be able to issue final reports within 3 business days after receiving comments from PSERS on the draft? What quality control systems and procedures do you use to ensure that reports are prepared accurately and delivered on time?

Provide sample quarterly pension fund performance reports.

h. Describe in detail the performance measurement attribution and analysis service you propose to provide for PSERS. Note its usefulness for PSERS. Provide sample reports.

2. Describe the content, format, and method of delivery of the **monthly** performance reports you will prepare for PSERS and its advisors. Performance reports are deemed to be inclusive of ex-post risk reporting and analysis. Describe instances where performance and risk indices and benchmarks are different. The monthly reports will include only the public market portfolios and composites and will exclude the private market portfolios.

a. Data and method used to calculate total return before and after fees. Please identify which criteria in your methodology can be customized by client preference. PSERS' custodian bank, investment managers and/or fund administrators will supply a monthly portfolio asset list with accrual market values for marketable securities.

Please indicate whether you use your own pricing sources and describe how you will investigate/resolve pricing errors in the custodian bank's asset list. Describe how you handle pricing for derivative investments.

b. Time periods for which total returns can be calculated.

c. Standard indices, custom indices, and benchmarks you will use for comparison.

d. Total population of funds and public pension funds (including a large fund subset) you will use for universe comparisons.

e. Characteristics you will compare.

Please comment on your ability to provide draft monthly performance reports within 3 business days following receipt of final month-end market values from our custodian. Will you be able to issue final reports within 3 business days after receiving comments from PSERS on the draft? What quality control systems and procedures do you use to ensure that reports are prepared accurately and delivered on time?

Provide sample monthly pension fund performance reports by asset class.

3. Describe in detail the PC-based or Internet-based fund management and consulting tools to which your firm will provide the Board and PSERS' Investment Professionals access. Provide sample reports. NOTE: PSERS may require a demonstration of such tools.

4. Provide sample reports by asset class depicting investment and risk exposures, and note their usefulness for PSERS.

C. Defined Contribution Plan Experience

1. Describe the firm's experience in working with defined contribution plan sponsors.

2. List all of the firm's standard services provided in a typical defined contribution plan advisory and investment consulting relationship.

3. List all of the firm's standard services provided in a typical defined contribution plan manager search and evaluation program.

4. What are the firm's capabilities in the area of providing performance monitoring and evaluation of defined contribution annuity products?

5. Describe the firm's methodology for determining types of funds in the investment line-up.

6. Describe the firm's methodology for determining the asset classes to be recommended to a defined contribution plan sponsor.

7. What is the firm's philosophy on default investment options?

8. What is the firm's philosophy on tiered investment options (i.e. target date funds, core array, brokerage account, etc.)?

9. What is the firm's philosophy on the number of participant directed investment options that the Defined Contribution Plan should provide?

10. What is the firm's philosophy regarding active versus passive participant directed investment options?

11. How would the firm evaluate the types of risk associated with the Trust investments you would recommend for the Defined Contribution Plan?

12. Does the firm have experience in evaluating third party administrator services? If yes, please describe.

13. Does the firm have resources dedicated to defined contribution consulting and/or research? If yes, please describe and provide organizational charts and biographies as appropriate.

14. List other special or unique services that the firm has provided to other clients, particularly defined contribution plan clients.

III-8. Miscellaneous.

A. Please discuss the appropriate role(s) of risk management in administration of investments for a public pension plan such as PSERS. Specify criteria that should be measured and analyzed, and the appropriate role(s) of the Board, PSERS' Professional Staff, and consultant in measuring and analyzing the risk criteria. How does this relate to your definition of beta? How does this relate to your views on the separation of alpha from beta? Do you think of risk using a risk factor approach?

B. Please discuss your views on the appropriateness of either passively managed portfolios, actively managed portfolios, or a combination of both actively and passively managed portfolios, by asset class. What important factors must be considered by a pension fund such as PSERS in order to determine which of these approaches is likely to be most beneficial?

C. In which circumstances might ETFs be appropriate for PSERS? What risks, benefits, and other factors must be considered? Please be specific.

D. For each asset class specified below, identify the role you see it playing in a large pension fund today and in the future, and identify form (e.g., separate account, derivative) of investments (if any) you feel are prudent.

1. Real Estate
2. Commodities
3. Infrastructure
4. Hedge Funds
5. Alternative (e.g., venture capital, private equity, private debt)
6. Risk Parity
7. Energy Master Limited Partnerships
8. Leverage

9. Smart Beta

10. Cyber Currencies (i.e., bitcoin)

E. Please discuss your firm's ability and experience in performing detailed investment or operational due diligence reviews on public pension plans with internal investment management.

F. What do you see as being the most significant changes that will be occurring in asset allocation for pension funds over the next 10 years? Please comment.

G. Disclose all services provided and compensation received (including the sources of such compensation, whether direct or indirect) between your firm and investment managers, plan officials, beneficiaries, sponsors, and/or others as required by Standard 2b of the Investment Management Consultants Association Standards of Practice.

H. Describe any business relationships that you or any of your affiliates have had within the past two years with the Commonwealth of Pennsylvania or with members of PSERS' Professional Staff or the Board.

I. State whether you, any of your principals, or any other affiliates have any business involvements that could be viewed as potential conflicts of interest.

J. Provide a copy of your current Code of Ethics adopted pursuant to 204A-1 of the Advisers Act.

K. What procedures and written policies do you have to reduce/eliminate any conflict of interest that could occur between investment managers and plan sponsors?

L. Please state clearly whether your firm has any current tax issues or disputes with the Commonwealth of Pennsylvania (PSERS would be unable to execute a contract with your firm until these circumstances were resolved).

III-9. References. List five current pension fund clients as references. For each reference, include client name, name of contact person, address, telephone number, asset value of client, services the client uses, and number of years the client retained the firm. The client should have funds of similar size and complexity to PSERS and you should be providing services similar to those proposed for PSERS. PSERS intends to contact the references.

In addition, identify the five (5) largest clients lost within the last 5 years and indicate the reason(s) for termination. Include client name, name of contact person with title, address (both building and email), telephone number, services the client used, and number of years the client retained the firm.

III-10. Work Plan. Describe in narrative form your technical plan for accomplishing the work. Use the task descriptions in Part IV of this RFP as your reference point. Modifications of the task descriptions are permitted; however, reasons for changes should be fully explained. Indicate the number of person hours allocated to each task. Include a Program Evaluation and Review Technique (PERT) or similar type display, time related, showing each event. If more than one approach is apparent, comment on why you chose this approach.

III-11. Objections and Additions to Standard Contract Terms and Conditions. The Offeror will identify which, if any, of the terms and conditions contained in **Part VI and Appendix A** it would like to negotiate and what additional terms and conditions the Offeror would like to add to the standard contract terms and conditions. The Offeror's failure to make a submission under this paragraph will result in its waiving its right to do so later, but the Issuing Office may consider late objections and requests for additions if to do so, in the Issuing Office's sole discretion, would be in the best interest of the Commonwealth. The Issuing Office may, in its sole discretion, accept or reject any requested changes to the standard contract terms and conditions. The Offeror shall not request changes to the other provisions of the RFP, nor shall the Offeror request to completely substitute its own terms and conditions for **Part VI and Appendix A**. All terms and conditions must appear in one integrated contract. The Issuing Office will not accept references to the Offeror's, or any other, online guides or online terms and conditions contained in any proposal.

Regardless of any objections set out in its proposal, the Offeror must submit its proposal, including the cost proposal, on the basis of the terms and conditions set out in **Part VI and Appendix A**. The Issuing Office will reject any proposal that is conditioned on the negotiation of the terms and conditions set out in **Part VI and Appendix A or to other provisions of the RFP as specifically identified above**. The Board will not consider proposals that contain any limitations of Offeror liability for services provided. Any proposal containing such a limitation shall be rejected.

PART IV

COST SUBMITTAL

IV-1. Cost Submittal. The information requested in this **Part IV** shall constitute the Cost Submittal. The Cost Submittal shall be placed in a separate sealed envelope within the sealed proposal, separated from the technical submittal. The total proposed cost should be broken down into the components set forth in **Appendix F – Cost Submittal Worksheet.** The percentage of commitment to Small Diverse Businesses and Small Businesses should not be stated in the Cost Submittal. Offerors should **not** include any assumptions in their cost submittals. If the Offeror includes assumptions in its cost submittal, the Issuing Office may reject the proposal. Offerors should direct in writing to the Issuing Office pursuant to **Part I, Section I-9** of this RFP any questions about whether a cost or other component is included or applies. All Offerors will then have the benefit of the Issuing Office's written answer so that all proposals are submitted on the same basis.

The Issuing Office will reimburse the selected Offeror for work satisfactorily performed after execution of a written contract and the start of the contract term, in accordance with contract requirements, and only after the Issuing Office has issued a notice to proceed.

PART V

SMALL DIVERSE BUSINESS AND SMALL BUSINESS PARTICIPATION SUBMITTAL

V-1. Small Diverse Business and Small Business General Information. The Issuing Office encourages participation by Small Diverse Businesses and Small Businesses as prime contractors, and encourages all prime contractors to make significant commitments to use Small Diverse Businesses and Small Businesses as subcontractors and suppliers**.**

A Small Business must meet each of the following requirements:

- The business must be a for-profit, United States business;
- The business must be independently owned;
- The business may not be dominant in its field of operation;
- The business may not employ more than 100 full-time or full-time equivalent employees;
- The business may not exceed an average of $38.5 million in gross annual revenues over the preceding three years.

For credit in the RFP scoring process, a Small Business must complete the DGS/BDISBO self-certification process. Additional information on this process can be found at:

http://www.dgs.pa.gov/Businesses/Small%20Diverse%20Business%20Program/Pages/default.aspx

A Small Diverse Business is a DGS-verified minority-owned small business, woman-owned small business, veteran-owned small business, service-disabled veteran-owned small business, LGBT-owned small business, Disability-owned small business, or other small businesses as approved by DGS, that are owned and controlled by a majority of persons, not limited to members of minority groups, who have been deprived of the opportunity to develop and maintain a competitive position in the economy because of social disadvantages.

For credit in the RFP scoring process, a Small Diverse Business must complete the DGS verification process. Additional information on this process can be found at:

http://www.dgs.pa.gov/Businesses/Small%20Diverse%20Business%20Program/Pages/default.aspx

An Offeror that qualifies as a Small Diverse Business or a Small Business and submits a proposal as a prime contractor is not prohibited from being included as a subcontractor in separate proposals submitted by other Offerors.

A Small Diverse Business or Small Business may be included as a subcontractor with as many prime contractors as it chooses in separate proposals.

The Department's directory of self-certified Small Businesses and DGS/BDISBO-verified Small Diverse Businesses can be accessed from: http://www.dgs.internet.state.pa.us/suppliersearch

Questions regarding the Small Diverse Business and Small Business Programs, including questions about the self-certification and verification processes can be directed to:

Department of General Services

Bureau of Diversity, Inclusion and Small Business Opportunities (BDISBO)
Room 611, North Office Building
Harrisburg, PA 17125
Phone: (717) 783-3119
Fax: (717) 787-7052
Email: RA-BDISBOVerification@pa.gov
Website: www.dgs.pa.gov

V-2. Small Diverse Business and Small Business (SDB/SB) Participation Submittal. All Offerors are required to submit the Small Diverse Business and Small Business Participation Submittal Form and related Letter(s) of Intent (available at http://www.dgs.pa.gov/_layouts/download.aspx?SourceUrl=http://www.dgs.pa.gov/Documents/Procurement%20Forms/Small%20DIverse%20Business%20and%20Small%20Business%20Participation%20Submittal.xlsx) **as described in Part I, Section I-11**. To receive points for Small Diverse Business or Small Business participation commitments, the Small Diverse Business or Small Business must be listed in the Department's directory of self-certified Small Businesses and DGS/BDISBO-verified Small Diverse Businesses as of the proposal due date and time. BDISBO reserves the right to adjust overall Small Diverse Business or Small Business commitments to correctly align with the Small Diverse Business or Small Business status of a prime contractor or subcontractor as of the solicitation due date and time, and also to reflect the correct sum of individual subcontracting commitments listed within the Letters of Intent.

A. Offerors must indicate their status as a Small Diverse Business and as a Small Business through selection of the appropriate checkboxes.

B. Offerors must include a numerical percentage which represents the total percentage of the total cost in the Cost Submittal that the Offeror commits to paying to Small Diverse Businesses and Small Businesses as subcontractors.

C. Offerors must include a listing of and required information for each of the Small Diverse Businesses and/or Small Businesses with whom they will subcontract to achieve the participation percentages outlined on the Small Diverse Business and Small Business Participation Submittal.

D. Offerors must include a Letter of Intent (available at the following link: http://www.dgs.pa.gov/_layouts/download.aspx?SourceUrl=http://www.dgs.pa.gov/Documents/Procurement%20Forms/Small%20DIverse%20Business%20and%20Small%20Business%20Participation%20Submittal.xlsx) signed by both the Offeror and the Small Diverse Business or Small Business for each of the Small Diverse Businesses and Small Businesses identified in the Small Diverse Business and Small Business Participation Submittal form. At minimum, the Letter of Intent must include the following:

   1. The fixed numerical percentage commitment and associated estimated dollar value of the commitment made to the Small Diverse Business or Small Business; and

   2. A description of the services or supplies the Small Diverse Business or Small Business will provide; and

   3. The timeframe during the initial contract term and any extensions, options and renewals when the Small Diverse Business or Small Business will perform or provide the services and/or supplies; and

4. The name and telephone number of the Offeror's point of contact for Small Diverse Business and Small Business participation; and

5. The name, address, and telephone number of the primary contact person for the Small Diverse Business or Small Business.

E. Each Small Diverse Business and Small Business commitment which is credited by BDISBO along with the overall percentage of Small Diverse Business and Small Business commitments will become contractual obligations of the selected Offeror.

NOTE: Offerors will not receive credit for any commitments for which information as above is not included in the Small Diverse Business and Small Business Participation Submittal. Offerors will not receive credit for stating that after the contract is awarded they will find a Small Diverse Business or Small Business.

NOTE: Equal employment opportunity and contract compliance statements referring to company equal employment opportunity policies or past contract compliance practices do not constitute proof of Small Diverse Business and/or Small Business Status or entitle an Offeror to receive credit for Small Diverse Business or Small Business participation.

V-3. Contract Requirements—Small Diverse Business and Small Business Participation. All contracts containing Small Diverse Business and Small Business Participation must contain the following contract provisions to be maintained through the initial contract term and any subsequent options or renewals:

A. Each Small Diverse Business and Small Business commitment which was credited by BDISBO and the total percentage of such Small Diverse Business and Small Business commitments made at the time of proposal submittal, BAFO or contract negotiations, as applicable, become contractual obligations of the selected Offeror upon execution of its contract with the Commonwealth.

B. For purposes of monitoring compliance with the selected Offeror's SDB or SB commitments, the contract cost is the total amount paid to the selected Offeror throughout the initial contract term.

C. All Small Diverse Business and Small Business subcontractors credited by BDISBO must perform at least 50% of the work subcontracted to them.

D. The individual percentage commitments made to Small Diverse Businesses and Small Businesses cannot be altered without written approval from BDISBO.

E. Small Diverse Business and Small Business commitments must be maintained in the event the contract is assigned to another prime contractor.

F. The selected Offeror and each Small Diverse Business and Small Business for which a commitment was credited by BDISBO must submit a final, definitive subcontract agreement signed by the selected Offeror and the Small Diverse Business and/or Small Business to BDISBO within 30 days of the final execution date of the Commonwealth contract. A Model Subcontract Agreement which may be used to satisfy this requirement – **Model Form of Small Diverse and Small Business Subcontract Agreement –** is available at the following link: http://www.dgs.pa.gov/_layouts/download.aspx?SourceUrl=http://www.dgs.pa.gov/Documents/Proc urement%20Forms/Model%20Form%20Subcontract%20Agreement.docx). The subcontract must contain:

1. The specific work, supplies or services the Small Diverse Business and/or Small Business will perform; location for work performed; how the work, supplies or services relate to the project; and the specific timeframe during the initial term and any extensions, options and renewals of the prime contract when the work, supplies or services will be provided or performed.

2. The fixed percentage commitment and associated estimated dollar value that each Small Diverse Business and/or Small Business will receive based on the final negotiated cost for the initial term of the prime contract.

3. Payment terms indicating that the Small Diverse Business and/or Small Business will be paid for work satisfactorily completed within 14 days of the selected Offeror's receipt of payment from the Commonwealth for such work.

4. Commercially reasonable terms for the applicable business/industry that are no less favorable than the terms of the selected Offeror's contract with the Commonwealth and that do not place disproportionate risk on the Small Diverse Business and/or Small Business relative to the nature and level of the Small Diverse Business' and/or Small Business' participation in the project.

G. If the subcontract terms omit any of the information required in paragraph F, and that information is otherwise reflected within the selected Offeror's SDB and SB Participation Submittal or LOI, that information is incorporated into the subcontract agreement. To the extent that any subcontract terms conflict with the requirements of paragraph F or information contained within the selected Offeror's SDB and SB Participation Submittal or LOI, the order of precedence is as follows: 1) the requirements of paragraph F, 2) the selected Offeror's SDB and SB Participation Submittal, and 3) the terms of the subcontract agreement.

H. If the selected Offeror and a Small Diverse Business or Small Business credited by BDISBO cannot agree upon a definitive subcontract within 30 days of the final execution date of the Commonwealth contract, the selected Offeror must notify BDISBO.

I. The Selected Offeror shall complete the Prime Contractor's Quarterly Utilization Report and submit it to the contracting officer of the Issuing Office and BDISBO within ten (10) business days at the end of each quarter of the contract term and any subsequent options or renewals. This information will be used to track and confirm the actual dollar amount paid to Small Diverse Business and Small Business subcontractors and suppliers and will serve as a record of fulfillment of the contractual commitment. If there was no activity during the quarter, the form must be completed by stating "No activity in this quarter." A late fee of $100.00 per day may be assessed against the Selected Offeror if the Utilization Report is not submitted in accordance with the schedule above.

J. The Selected Offeror shall notify the Contracting Officer of the Issuing Office and BDISBO when circumstances arise that may negatively impact the selected Offeror's ability to comply with Small Diverse Business and/or Small Business commitments and to provide a corrective action plan. Disputes will be decided by the Issuing Office and DGS.

K. If the Selected Offeror fails to satisfy its Small Diverse Business and/or Small Business commitment(s), it may be subject to a range of sanctions BDISBO deems appropriate. Such sanctions include, but are not limited to, one or more of the following: a determination that the selected Offeror is not responsible under the Contractor Responsibility Program; withholding of payments; suspension or termination of the contract together with consequential damages; revocation of the selected Offeror's Small Diverse Business status and/or Small Business status; and/or suspension or debarment from future contracting opportunities with the Commonwealth.

PART VI

CONTRACT TERMS AND CONDITIONS

Please refer to this website for Commonwealth Standard Contract Terms and Conditions (BOP-1203):

http://www.dgs.pa.gov/Documents/Procurement%20Forms/BOP-1203_Std_Terms_and_Conditions_ElectronicContract.pdf

APPENDIX A

SAMPLE PURCHASE ORDER TERMS AND CONDITIONS AND INFORMATION SECURITY ADDENDUM

PURCHASE ORDER
TERMS AND CONDITIONS
RIDER I

Pursuant to purchase order number _______(“Purchase Order”), _______________(the “CONSULTANT”) agrees to perform the services set forth therein, those set forth below, those set forth in its Proposal of XX XX, 2019, which is attached to the Purchase Order as Rider __ and incorporated therein by reference, and those set forth in the Public School Employees’ Retirement Board (“Board”) transacting business as the Public School Employees’ Retirement System’s (“PSERS”) Request for Proposal (“RFP”) dated XX XX, 2019, which is attached to the Purchase Order as Rider ___ and incorporated therein by reference.

A. Consulting Services for the Public School Employees Retirement Fund (the “Fund”), including all asset classes and investments:

1. The CONSULTANT will conduct a comprehensive review and analysis of investment objectives, policies, asset allocation, and portfolio structure, inclusive of defining an investable risk beta portfolio, and recommend changes, if appropriate.

2. The CONSULTANT will review the adequacy of PSERS’ Investment Professionals and resources, and recommend changes, if appropriate.

3. The CONSULTANT will prepare a written Asset/Liability Study annually for each calendar year and present the results to the Board in August of the following year.

4. The CONSULTANT will recommend appropriate performance and risk benchmarks for individual portfolios, each asset class, and for the total fund.

5. The CONSULTANT will review and make recommendations regarding individual portfolio risk guidelines at least annually.

6. The CONSULTANT will recommend suitable investment opportunities and practical implementation methods; research supporting such recommendations must have been completed within the prior 12 months.

7. The CONSULTANT will recommend appropriate investment strategies, tactics, procedures and practices.

8. The CONSULTANT will provide research reports on asset allocation, investment issues, and description and evaluation of alternative approaches.

9. The CONSULTANT will provide information on market conditions and explain their impact on the Fund’s investments.

10. The CONSULTANT will provide PSERS with information on high conviction new managers at the earliest possible juncture to permit PSERS to secure capacity and negotiate terms with promising emergent managers.

11. The CONSULTANT will assist PSERS' Investment Professionals in conducting public market investment manager searches and facilitate the hiring of suitable institutional quality managers, including:

    a. providing opportunities and expense reimbursement for PSERS to jointly meet and evaluate new managers at industry conferences;

    b. providing a list of potential institutional quality managers appropriate for the mandate being considered;

    c. conducting interviews with potential managers at PSERS;

    d. conducting on-site due diligence meetings with potential managers prior to their selection; and

    e. providing assistance with the contract/fee negotiations.

12. The CONSULTANT will provide on-going monitoring and oversight reports for all of PSERS' public market investment managers, including:

    a. advance notice to PSERS of in-person meeting with investment managers in PSERS' portfolio;

    b. analysis of the manager's absolute and relative performance in relation to benchmarks, investment objectives, and peer groups, including analysis of ex-post risk-adjusted performance;

    c. an analysis of attribution, holdings, style, and risk;

    d. updated research on each investment manager in PSERS' portfolio updated at least once every 18 months to include a review of investment performance, process, and the manager's organization;

    e. on-site investment and operational due diligence meetings with current investment managers a minimum of every three years;

    f. advice on manager retention/termination; and

    g. assist in developing a formal manager review process.

13. The CONSULTANT will advise PSERS' Investment Professionals and the Board about new developments in investment management techniques and portfolio management strategies. Analyze how new techniques might improve the investment program and whether they should be considered for implementation.

14. The CONSULTANT will make available all firm research, including proprietary research, regardless of the firm department in which it was created. Research must be made available by electronic system.

15. The CONSULTANT will provide access and consultation with the firm's research staff.

16. The CONSULTANT will meet with the Board to report on investment matters. Generally, there are six regularly scheduled Board meetings annually. Special meetings may be scheduled as needed.

17. The CONSULTANT will report the performance results to the Board quarterly, including relative results versus pre-established benchmarks, results versus other public defined benefit pension plans, and the returns relative to the risks taken.

18. The CONSULTANT will maintain and provide access to a database of U.S. and non-U.S. investment managers, including their philosophies, processes, organizations, performance, fees, and clients.

19. The CONSULTANT will provide and maintain a secure, client-facing, web-based platform that is frequently updated and continuously available to PSERS that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools that allows PSERS' Investment Professionals to:

    a. formulate investment policy and implement strategies;

    b. monitor and evaluate asset class and total fund performance and risk;

    c. develop asset allocation and rebalancing recommendations;

    d. select and evaluate public market investment managers, including public market manager research and consultant ratings;

    e. assess investment risks;

    f. analyze and optimize manager teams; and,

    g. compare the Fund performance, including ex-post risk-adjusted performance, at the asset class and total fund levels to various peer groups.

    It is expected that at least 20 years of PSERS historical performance data, by investment portfolio, asset class, and at the total fund level will be included and that the database will be updated on a monthly basis. The foregoing services shall be made available directly to PSERS through CONSULTANT's proprietary tools or indirectly through licensed third party applications.

20. The CONSULTANT will provide (a) two, one-day, or (b) one, two-day, on-site, Fiduciary and Governance training sessions per year, which can be new Board member training, Board member training, PSERS' Investment Professional training, or some combination thereof. PSERS reserves the right to videotape any training sessions for educational purposes. Any additional Fiduciary

and Governance training sessions, in any one year, beyond those provided for in this Subsection 20 will be invoiced and paid quarterly in arrears at per session cost to be mutually agreed upon by the parties in writing.

21. The CONSULTANT will advise the Board and PSERS' Investment Professionals on risk-related subjects (e.g., risk measurement, risk mitigation).

22The CONSULTANT will advise the Board and PSERS' Investment Professionals on fiduciary and governance related subjects as requested by PSERS, including the following items:

(a) The CONSULTANT will provide advice and insights, as may be requested by PSERS, on public pension fund industry common and best practices;

(b) The CONSULTANT will assist as may be requested by PSERS with the development of new Board member orientation materials;

(c) The CONSULTANT will review and make recommendations, consistent with industry best practices, regarding clarity and documentation of the Board's governance framework, including the Investment Policy Statement ("IPS"), Board and Committee Charters, Delegations of Authority, investment implementation policies and procedures, etc.;

(d) The CONSULTANT will assist as may be requested with the development of a Board authority and delegation matrix, including:

(i) Clarification of what authority the Board has retained, what authority has been delegated, and to whom, and
(ii) Delegations to PSERS' Investment Professionals from the Board and/or CIO.

(e) The CONSULTANT will assist, as may be requested by PSERS, with strategic planning;

(f) The CONSULTANT will develop and administer, as may be requested by PSERS, a Board annual self-evaluation process.

23. The CONSULTANT will carry out other assignments that may be specified by the Board and PSERS' Investment Professionals, as required.

24. The CONSULTANT will conduct an operational risk gap analysis which will include an evaluation of the quality of the operational policies and procedures governing PSERS' Investment Professionals. The written report will include observations, comparisons to peers and recommendations in the following areas:

(a) Investment Framework (Front, Middle, and Back Office)
(b) Trade/Transaction Execution Policies and Procedures
(d) Investment and Counterparty Risk Oversight
(e) Compliance and Audit Testing
(f) Data Governance, Technology and Business Continuity and Disaster Recovery Plans
(g) Key service provider selection and monitoring procedures.

B. Performance Measurement, Risk, and Attribution Services for the Fund, including all asset classes and individual portfolios:

1. The CONSULTANT will prepare a monthly report containing calculated total return (before and after fees) for asset class, portfolio management styles, and individual portfolios, and compare PSERS' calculated data with benchmarks and with data for a similar population of funds by asset class and portfolio management styles for all of the public market portfolios and composites. Returns should be calculated for the following time periods: one-month, three-months, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 15-year, 20-year, 25-year, 30-year, and since inception.

2. The CONSULTANT will prepare a quarterly written report containing performance measurement attribution and analysis for each asset class and individual portfolios. The report should include a historical return analysis, dollar oriented analysis, return oriented (wealth relative) analysis, excess return analysis and risk/return analysis. Returns should be calculated for the following time periods: quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 15-year, 20-year, 25-year, 30-year, and since inception.

3. The CONSULTANT will be responsible for reconciling performance with both individual portfolio managers as well as the custodian bank on a monthly basis.

4. The CONSULTANT will be responsible for the creation of additional composites with historical returns for those composites as requested by PSERS.

5. The CONSULTANT will provide quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 15-year, 20-year, 25-year, and 30-year quartile ranking reports of composite returns by Fund (i.e. Total Fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes).

6. The CONSULTANT will provide consecutive year quartile ranking reports of composite returns by Fund (i.e. Total Fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes) for the past five years.

7. The CONSULTANT will provide a performance attribution analysis to determine the value added by investment policy, asset allocation, and security selection.

8. The CONSULTANT will provide reasonable assistance to PSERS in uploading the consultant's performance data to PSERS' own investment system(s).

9. The CONSULTANT will prepare ex-post risk statistics and analytics for the same time periods, to the degree of depth, including benchmark comparatives, and use the same performance data from the above. Ex-post risk statistics and analytics should be robust and inclusive of industry best practices risk information.

C. Consulting Services for the School Employees' Defined Contribution Trust (the "Trust"). The CONSULTANT will:

1. Review each plan's existing investment options.

2. Determine if the investment options offered by each plan are optimum choices given the considerations for diversification, risk and return.

3. Recommend additions or deletions to investment options as needed.

4. Provide a recommended transition plan and timeline incorporating any proposed changes in investment options.

5. Conduct a review of each plan's pricing structure including fund management fees and terms between the plans and the third party administrator ("TPA").

6. Work with the TPA to review specific plan metrics, provide best practices and recommendations, and address issues that arise each quarter.

7. Assist in the development of investment policies for the plan.

8. Annually review general investment policy documents.

9. Periodically review goals, objective and best practices with PSERS' investment committee.

10. Recommend enhancements to PSERS' investment committee governance processes.

11. Perform periodic fiduciary training.

12. Monitor, review, and provide advice on legislative and regulatory issues.

13. Monitor, review, and provide advice regarding best practices.

14. Monitor, review, and provide advice regarding fiduciary obligations.

15. Provide ongoing review of strengths and vulnerabilities in current practices.

16. Serve as the liaison between the record-keeper and PSERS to maximize the vendor relationship, resolve issues with the record-keeper, and ensure contractual commitments are met.

17. Lead and otherwise assist in any requisite RFP, RFQ, or RFI processes.

D. Terms and Conditions

1. The CONSULTANT's compensation for performing the above services shall be as set forth in the Purchase Order. The CONSULTANT acknowledges and agrees that no further fees are payable by PSERS for the services rendered under the Purchase Order.

2. The CONSULTANT shall hold the Commonwealth of Pennsylvania, the Board, PSERS, the Fund and the Trust, their beneficiaries, directors, officers, agents, and employees harmless from and indemnify the Commonwealth of Pennsylvania, the Board, PSERS, the Fund and the Trust, their beneficiaries, directors, officers, agents, and employees against any and all claims, demands, actions, or liability of any nature, including attorneys' fees and court costs, based upon or arising out of any services performed, or the failure to perform services, by the CONSULTANT, its directors, officers, employees, and agents under the Purchase Order and shall, at the request of PSERS, defend at the CONSULTANT's expense actions brought against the Commonwealth of

Pennsylvania, the Board, PSERS and/or the Fund or the Trust, based upon any such claims or demands, and the costs of such defense shall be borne by the CONSULTANT and shall not constitute any expense of, nor shall be paid out of, the Fund, the Trust, Board, PSERS or Commonwealth of Pennsylvania assets.

3. PSERS acknowledges that [name of PC-Based or Internet-Based tool] (the "Software") is provided under the Purchase Order solely for PSERS' use. PSERS shall not provide any other organization with access to the Software, or with reports or any other information obtained through it, except that PSERS may provide any asset manager who manages the Fund's or the Trust' assets with copies of reports that relate to the assets under management by that manager. Notwithstanding the foregoing, PSERS shall be authorized to provide access to and copies of the reports and any other information obtained through the Software and the services performed under the Purchase Order to the public and any other organization as may be required under the Right to Know Law and other similar laws.

   The Purchase Order entitles PSERS to use as many copies of the Software as it shall reasonably require during the term of the Purchase Order. CONSULTANT retains all title and ownership of the Software, including the original disk copy and all subsequent copies of the Software, regardless of the form or media in or on which the original and other copies may exist. The Purchase Order is not a sale of the original Software or any copy.

   CONSULTANT retains all title and ownership of the software and accompanying documentation, including the original disk copy and all subsequent copies of the software and documentation, regardless of the form or media in or on which the original and other copies may exist. PSERS agrees upon termination of the Purchase Order to return to CONSULTANT all software and portions and copies thereof, documentation and other equipment furnished with the service.

   All reports prepared under the Purchase Order for PSERS shall become the property of PSERS.

   CONSULTANT shall defend, at its expense, any action brought against PSERS arising out of any claim that PSERS' use of the services provided hereunder infringes upon the intellectual property rights of any third party; provided further that CONSULTANT shall indemnify and hold PSERS harmless against any and all damages and costs awarded against PSERS by final court order or fully executed settlement agreement.

   The Software and accompanying written materials (the "Documentation") are owned by CONSULTANT and are protected by United States copyright laws and international treaty provisions. Therefore, PSERS must treat the Software and Documentation like any other copyrighted material. Unauthorized copying of the Software, including Software that has been modified, merged, or included with other software, or the Documentation is expressly forbidden. Subject to these restrictions, PSERS may make a reasonable number of copies of the Software solely for back-up purposes.

   PSERS may not distribute copies of the Software or Documentation to others, nor may PSERS rent or lease the Software or the Documentation or transfer control of the Software or Documentation to a third party without CONSULTANT's prior express written consent. In addition, PSERS may not modify, adapt, translate, reverse engineer, decompile, disassemble, or create derivative works based on the Software without CONSULTANT's prior express written consent.

CONSULTANT warrants that (i) it has the right to provide PSERS with access to the Software in accordance with the Purchase Order, and (ii) the Software shall conform to the written documentation and shall operate in accordance with CONSULTANT's written representations to PSERS.

Neither party shall be liable to the other party for any loss, injury, delay, damages or other casualties suffered by the other due to strikes, riots, storms, fires, or acts of God or government, beyond the reasonable control of such party.

4. The CONSULTANT shall not enter into any agreement by or on behalf of PSERS that (i) is binding on PSERS or allows, either expressly or by operation of law, recourse to PSERS, and (ii) creates any actual or potential liability on the part of PSERS that exceeds the scope of authority delegated to the CONSULTANT under the Purchase Order, or (iii) waives any of PSERS' rights, defenses, causes of action, or immunities. Liabilities that are not authorized by PSERS and prohibited by this Section D (4) include, without limitation, any obligation on the part of PSERS to indemnify a third party or to pay attorney fees, legal expenses, penalties, or liquidated damages.

5. The CONSULTANT shall maintain during the term of the Purchase Order a policy of errors and omissions insurance for the protection of the Fund and/or the Trust, with a limit of liability of at least $10,000,000, to cover the CONSULTANT, its officers, and its affiliates to the extent any affiliate performs services under the Purchase Order. Unless otherwise approved by PSERS, the maximum deductible on the errors and omissions policy shall be no greater than $1,000,000. The CONSULTANT shall submit copies of the actual policies of said insurance as directed by PSERS, and PSERS shall cause to be issued a written determination on compliance. CONSULTANT shall thereafter maintain annual filings of current certificates of insurance with PSERS during the term of the Purchase Order and any extension thereof. If the CONSULTANT changes insurance carriers for insurance required hereunder, CONSULTANT shall submit copies of the actual policies of said insurance as directed by PSERS. The errors and omissions policy shall contain a provision or endorsement that coverage afforded thereunder shall not be canceled or changed until the underwriter has furnished PSERS at least 30 days' prior written notice of any cancellation or change. PSERS may, in its discretion, require such changes with respect to insurance coverage as it deems appropriate for the protection of the PSERS' Fund by giving written notice of such changes to the CONSULTANT at least 30 days in advance of the effective date for such changes.

6. The CONSULTANT represents and confirms that it is duly registered and in good standing as an investment advisor under the Investment Advisers Act of 1940 or is exempt therefrom (and will maintain such registration or exemption). If registered pursuant to said Act, the CONSULTANT has furnished to PSERS Parts I and II of the CONSULTANT's current Form ADV filed with the Securities and Exchange Commission pursuant to Section 203(c) of the Investment Advisers Act of 1940.

7. The CONSULTANT shall perform its services under the Purchase Order as an independent contractor, and CONSULTANT acknowledges that it maintains Workers' Compensation Insurance and shall accept full responsibility for the payments of premiums for Workers' Compensation Insurance and Social Security, as well as all income tax deductions and other taxes or payroll deductions required by law for itself for performing services specified by the Purchase Order.

8. The CONSULTANT shall provide immediate written notice to PSERS of any change in the CONSULTANT's status, including, without limitation, change in directors, officers, or employees

who consult on PSERS' account; modification of the business organization; material change in SEC or other government or private registration, accreditation, or licensing; material deterioration of financial condition including but not limited to the filing of petition in bankruptcy; the CONSULTANT's awareness that its representations and warranties herein cease to be true; and litigation alleging the CONSULTANT's negligence or fraud.

9. The CONSULTANT covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services under the Purchase Order. CONSULTANT further covenants that, in the performance of the Purchase Order, it will not knowingly engage any other person having such interest.

10. It is agreed between the parties to the Purchase Order that the Purchase Order contemplates the rendition of expert professional services, and, therefore, neither the Purchase Order, nor any interest therein, nor any claim arising thereunder shall be transferred or assigned by either party to any other party or parties.

11. The performance of work under the Purchase Order may be terminated by the BOARD in whole or in part, from time to time. Any such termination shall be effected by delivery to the CONSULTANT of a written Notice of Termination specifying the extent to which performance of the work under the contract is terminated and the date on which such termination becomes effective. In the event of termination, fees for services shall be prorated and paid or repaid. Such termination shall not relieve CONSULTANT of any liability that may be incurred for its activities in connection with the Purchase Order prior to said termination. Likewise, CONSULTANT shall have the right to terminate the Purchase Order with thirty (30) days' written notice to PSERS. Also, under these circumstances, the fees for services shall be prorated and paid or repaid.

12. The CONSULTANT shall not publish or otherwise disclose, except to PSERS and except matters of public record, any information or data obtained hereunder from private individuals, organizations, or public agencies, in a publication whereby the information or data furnished by or about any particular person or establishment can be identified as relating to PSERS or its responsibilities, except with the consent of such person or establishment.

13. The CONSULTANT agrees that any specific plans, material, records, etc., developed under the Purchase Order remain the property of PSERS, and reproduction or duplication of such materials may be done only with the approval of PSERS.

14. No member of the General Assembly of the Commonwealth of Pennsylvania or any individual employed by the Commonwealth shall be admitted to any share or part of the Purchase Order, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to the Purchase Order if made with a corporation for its general benefit.

15. The CONSULTANT shall comply with the Standard Contract Terms and Conditions attached to the Purchase Order as Rider ___ and incorporated therein by reference, which provisions may be modified from time to time with written notice to CONSULTANT.

16. CONSULTANT shall maintain such records, books, and accounts pertaining to services and payments under the Purchase Order in accordance with generally accepted accounting principles consistently applied. All such records, books, and accounts shall be maintained and preserved during the term of the Purchase Order and any extension thereof and for four years thereafter.

During such period, PSERS, or any other department or representative of the Commonwealth of Pennsylvania, from time to time upon reasonable notice, shall have the right to inspect, duplicate, and audit such records, books, and accounts for all purposes authorized and permitted by law. CONSULTANT may preserve such records, books, and accounts in original form or on microfilm, magnetic tape, or any other generally recognized and accepted process.

17. Any notice, demand, direction, instruction, or other communication required or permitted hereunder shall be confirmed in writing and shall be sufficiently given for all purposes when sent (a) by certified or registered U.S. mail, postage prepaid, (b) by a nationally recognized courier service that maintains verification of actual delivery, (c) by facsimile, with a copy sent by first class U.S. mail (provided that if the date of dispatch is not a working day, the facsimile shall be deemed to have been received at the opening of business of the addressee on the next working day), or (d) by delivering the same in person to any party at the following addresses or such other addresses as may be designated in writing from time to time by the parties:

PSERS:	James H. Grossman, Jr., Chief Investment Officer Pennsylvania, Public School Employees' Retirement System 5 North Fifth Street Harrisburg, Pennsylvania 17101
CONSULTANT:	____________________________ ____________________________ ____________________________ ____________________________

18. PSERS reserves all immunities, defenses, rights, or actions arising out of its status as a sovereign entity or from the Eleventh Amendment to the United States Constitution. No provision of the Purchase Order shall be construed as a waiver of any such immunities, defenses, rights, or actions.

19. Execution of the Purchase Order constitutes certification by CONSULTANT that (a) the number appearing on the Purchase Order is CONSULTANT's correct taxpayer identification number, and (b) CONSULTANT is not subject to backup withholding because (i) CONSULTANT is exempt from backup withholding, (ii) CONSULTANT has not been notified by the IRS that it is subject to backup withholding as a result of a failure to report all interest or dividends, or (iii), the IRS has notified CONSULTANT that it is no longer subject to backup withholding.

20. The Purchase Order shall be governed by the laws of the Commonwealth of Pennsylvania and, for all purposes, shall be construed in accordance with said laws and the decisions of the courts of the Commonwealth of Pennsylvania therein, and shall be binding upon the successors and assigns of the parties thereto, and constitutes the entire agreement between PSERS and CONSULTANT with respect to the consulting services to be furnished as provided herein. No amendment or modification changing the scope or terms of the Purchase Order shall have any force or effect unless it is in writing and approved by both parties.

21. If any one or more of the covenants, agreements, provisions, or terms of the Purchase Order shall be held contrary to any express provision of law, or contrary to the policy of express law though not expressly prohibited, or against public policy, or shall for any reason whatsoever be held invalid, then such covenants, agreements, provisions, or terms shall be deemed severable from the remaining

covenants, agreements, provisions, or terms of the Purchase Order and shall in no way affect the validity or enforceability of the remainder of the Purchase Order or the rights of the parties thereto.

22. CONSULTANT shall reimburse PSERS, or pay directly on PSERS' behalf, the reasonable travel expenses actually incurred by PSERS, if any, for each contract year (i) for travel to CONSULTANT's location for due diligence and/or to discuss performance results, economic outlook, investment strategy, organization changes and other pertinent matters and (ii) to attend investment conferences, training, seminars or similar events sponsored by CONSULTANT or any affiliate of CONSULTANT. Reimbursable or directly payable expenses shall include airfare, automobile rental, lodging, meals, CONSULTANT -sponsored meeting registration fees, and other travel-related expenses at maximum allowance rates established by the Commonwealth Management Directive 230.10 as revised, Travel and Subsistence Allowances. The reimbursable or directly payable expenses for each of (i) or (ii), above, shall not exceed $25,000 per calendar year. PSERS shall submit a properly documented claim for reimbursement or direct payment of such travel expenses, which CONSULTANT shall pay within 30 days after receipt.

23. CONSULTANT shall perform services under the Purchase Order subject to the exercise of that degree of judgment and care under the circumstances then prevailing which persons of prudence, discretion, and intelligence who are experts in such matters, exercise in the management of like matters, not in regard to speculation but in regard to the permanent disposition of the Fund, considering the probable income to be derived therefrom as well as the probable safety of the invested capital. CONSULTANT acknowledges that it is a "fiduciary" with respect to PSERS and the Fund as that term is defined in the Employee Retirement Income Security Act of 1974 (ERISA), regardless of the applicability of ERISA to the Purchase Order.

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Information Security Addendum

Rider II

This Information Security Addendum ("Addendum") made as of the Effective Date, by and between the Commonwealth of Pennsylvania, Public School Employees' Retirement System ("PSERS") and ______________________________ ("Contractor") sets forth additional terms and conditions with respect to information security applicable to ______________________________ (the "Agreement). The terms and conditions agreed to in this Addendum are the minimum required for the Agreement and shall take precedence over any term of the Agreement which attempts to reduce, waive or remove these terms and conditions.

WHEREAS, PSERS wishes to disclose certain information to Contractor, and Contractor is authorized to collect and/or use certain information, pursuant to the terms of the Agreement; and

WHEREAS, PSERS and Contractor intend to protect the privacy and provide for the confidentiality of such information.

NOW THEREFORE, in consideration of the foregoing recitals, which are incorporated herein, and the mutual promises and undertakings hereinafter set forth, and the exchange of information pursuant to the Agreement and this Addendum, the parties agree as follows:

I. Definitions

A. Authorized Persons. Authorized Persons include Contractor's employees and contractors who have appropriate PSERS' clearance and a specific need for such access in order to perform Contractor's services for PSERS.

B. Industry Standards. Industry Standards include National Institute of Standards and Technology (NIST) 800 Series, NIST Cybersecurity Framework and ISO 27001/2, or their generally recognized equivalents.

C. PSERS Data. PSERS Data is any data or information that Contractor creates, obtains, accesses, receives (from PSERS or on behalf of PSERS), hosts or uses in the course of its performance of the Agreement;

D. Public Data. Public Data means any specific information or data, regardless of form or format, that PSERS has actively and intentionally disclosed, disseminated, or made available to the public.

E. Multi-Factor Authentication: The use of two or more of the Authentication Methods listed below. Two-factor would employ two of the methods; three-factor would employ one each of all three methods.

i. Something you know (e.g. PIN, password, shared information)
ii. Something you possess (e.g. token, smart card, digital certificate)
iii. Something you are (biometrics – e.g. fingerprint, voice, iris, face).

F. Services. The services pursuant to the Agreement and any Statement of Work ("SOW").

G. Documentation. All documentation related to the Services, including but not limited to the SOW.

H. PSERS Confidential Information. PSERS Data that is not Public Data, including but not limited to information containing personally identifiable information ("PII") protected health information ("PHI") and electronic protected health information ("ePHI") as defined in HIPPA regulations, investment portfolio information and trade secrets. (For the avoidance of doubt, trade secrets include but are not limited to limited partnership agreements, side letters, private placement memoranda and similar information.)

II. Data Security.

A. Compliance. Contractor shall comply with the Information Technology ("IT") standards and policies issued by the Governor's Office of Administration, Office for Information Technology (OA/OIT) (located at: http://www.oa.pa.gov/Policies/Pages/itp.aspx), including the accessibility standards set out in IT Bulletin ACC001, IT Accessibility Policy. The Contractor shall ensure that Services procured under this Contract comply with the applicable standards. In the event such standards change during Contractor's performance, and the Commonwealth requests that Contractor comply with the changed standard, then any incremental costs incurred by Contractor to comply with such changes shall be paid for pursuant to a change order to the Contract.

B. Data Protection. To the extent that Contractor is charged with creating, accessing, transmitting, maintaining, hosting or using PSERS' Data under the Agreement, Contractor shall preserve the confidentiality, integrity and availability of PSERS' Data by implementing and maintaining administrative, technical and physical controls that conform to Commonwealth of Pennsylvania IT Policies and Industry Standards. Implemented security controls shall provide a level of security which is commensurate with the sensitivity of the data to be protected.

C. Data Use and Access. Contractor shall use PSERS' Data only and exclusively to support the performance of services for PSERS under the Agreement and not for any other purpose. With the exception of Public Data, absent PSERS' prior written consent, Contractor shall not at any time during or after the term of the Agreement disclose PSERS' Data to any person, other than Authorized Persons and PSERS personnel in connection with the performance of the services (except as required by law). If such disclosure is required by law, Contractor shall notify PSERS prior to such disclosure, unless such notification is prohibited by law.

D. Data Backup. Where appropriate to protect the integrity and availability of PSERS' Data, Contractor shall maintain (and cause any third-party hosting company that it uses to maintain) a means to backup and recover PSERS' Data in the event that PSERS' Data is lost, corrupted or improperly destroyed. PSERS shall have the right to establish backup security for PSERS' Data and to keep backup PSERS' Data and PSERS' Data files in its possession if it chooses.

E. Return of PSERS' Data. Contractor shall ensure that, upon request, PSERS can retrieve PSERS' Data in the event the Contractor is unable to continue providing the services under the Agreement due to termination of the Agreement or otherwise. In the event of a termination and upon PSERS' request, the Contractor will provide PSERS' Data in a mutually acceptable format.

F. Destruction of PSERS' Data. Contractor shall erase, destroy, and/or render unrecoverable all PSERS' Data in Contractor's possession that is no longer required for the performance of its duties under the Agreement. Upon request, Contractor shall certify in writing that these actions have been completed within seven (7) days of PSERS' request.

G. Effect of Termination. Unless directed otherwise by PSERS, upon termination of the Agreement for any reason, Contractor shall maintain PSERS' Data and continue to extend the protections of the Agreement and this Addendum to such information for a period of six months at which point it shall return and destroy all PSERS' Data received from PSERS (or created or received by Contractor on behalf of PSERS) regardless of form, and shall retain no copies of PSERS' Data. If return or destruction of PSERS' Data is not feasible, Contractor shall continue to extend the protections of the Agreement and this Addendum to such information and limit further use of PSERS' Data to those purposes that make the return or destruction of PSERS' Data infeasible.

III. Contractor Security.

A. Information Security Program. For the term of the Agreement, Contractor agrees that it has and will maintain a formal information security program which is appropriate for the types of services that it provides. Such program is and will be consistent with Industry Standards.

B. Contractor Personnel. Contractor agrees that it shall only use highly qualified personnel and contractors in performing the Agreement and, to the extent not prohibited by applicable law, shall require each to pass a background check.

C. Acceptance of Acceptable Use Policy. Contractor shall ensure that all Contractor personnel, including employees and contractors, who access PSERS' network as a part of performing the Agreement, will agree to PSERS' Acceptable Use Policy as found in Management Directive 205.34, as it may be amended from time to time.

D. Multi-Factor Authentication. For services exposed to the Internet, where sensitive information is stored, processed or transmitted, Contractor will provide Multi-Factor Authentication for user authentication to the web application via workstation and mobile browsers. If the service is provided via mobile application as well, that application must also be protected by Multi-Factor Authentication.

E. Security Awareness Training. Contractor shall ensure its personnel and partners are provided cybersecurity awareness education and are adequately trained to perform their information security-related duties and responsibilities consistent with Commonwealth of Pennsylvania IT Policies.

IV. Security Incident and Breach Notification.

A. Contractor agrees to notify PSERS upon learning of: (i) unauthorized access, loss, alteration, theft or corruption of PSERS' Confidential Information; (ii) any event that creates a substantial risk to the confidentiality, integrity or availability of PSERS' Data; (iii) a breach of any of Contractor's security obligations under this Addendum; or (iv) any other event requiring notification under applicable law. In such an instance, Contractor agrees to:

i. Take such action as may be necessary to preserve forensic evidence and eliminate the cause of the risk or breach within Contractor's reasonable control. As soon as practicable after discovery, Contractor shall undertake a thorough forensic investigation of any compromise or improper use and provide PSERS all information necessary to enable PSERS to fully understand the nature and extent of the compromise or improper use to the extent known.

ii. And, notify PSERS by telephone at (___) ___-____ and (___) ___-____and by e-mail at RA-PSISO@pa.gov regarding such an event without undue delay and in any event within 24 hours of discovery, and

iii. To the extent that the breach or incident was the fault of Contractor:

a) assume the cost of informing all such affected individuals in accordance with applicable law, and

b) indemnify, hold harmless and defend PSERS and its trustees, officers, and employees from and against any claims, damages, or other harm related to such incident or breach.

B. Security Incident Investigations.

Contractor agrees to cooperate with PSERS in investigating a security incident, as declared by PSERS, and provide the name and contact information, of at least two (2) security contacts who will respond to PSERS in a timely manner, dependent on criticality, in the event that PSERS must investigate a security incident. The current security contacts are as follows:
Contact Names: ___________________________ ___________________________
Phone Numbers: ___________________________ ___________________________
Email Addresses: ___________________________ ___________________________

V. Maintenance of Safeguards.

A. Contractor shall maintain and follow Industry Standards with respect to any of PSERS' Confidential Information in Contractor's possession or control and protect such information against any loss, alteration, theft or corruption.

B. At PSERS' request, Contractor shall provide PSERS with copies of its information security policies, processes, and procedures. Contractor will notify PSERS of any changes to its policies, processes or procedures that relate to the security of PSERS' Confidential Information in Contractor's possession.

VI. Information Security Audit.

A. PSERS shall have the right to review Contractor's information security program prior to the commencement of Services and from time to time during the Term of the Agreement. During the performance of the Services, on an ongoing basis annually and immediately in the event of a security incident, PSERS, including its professional advisors and auditors, at its own expense, shall be entitled to perform, or to have performed, an on-site assessment of Contractor's information security program.

B. PSERS shall have the right to review Contractor's information security program through Contractor's annual submission to PSERS of its current SOC2 report. The report must document an assessment conducted by a qualified, independent third party. Assessment scope must address the services provided to PSERS, including but not limited to related people, process and technology.

C. Upon PSERS' request, Contractor agrees to complete, within forty-five (45 days) of receipt of PSERS' request, an assessment questionnaire provided by PSERS regarding Contractor's information security program, including artifacts for a subset of controls.

VII. Application Security.

In the event the Contractor conducts application software development for PSERS, Contractor will either make source codes available for review by PSERS or will conduct source code scanning using a commercial security tool. Scans must be conducted annually and at any time significant code changes are made. Scan reports will be made available to PSERS within two weeks of execution. Contractor must disclose remediation timelines for high, medium and low risk security code defects. Scans must occur before code is implemented in production. High risk security code defects may not be implemented in production without written approval from either PSERS' Executive Director, Deputy Executive Director or Assistant Executive Director.

VIII. Compliance with Applicable State and Federal Law.

Contractor shall comply with all applicable federal, state, and local laws concerning data protection and privacy when handling PSERS' Data.

IX. Enforcing Compliance.

Contractor shall enforce and be responsible for compliance by all its personnel and contractors with the provisions of this Information Security Addendum and all other confidentiality obligations owed to PSERS.

X. Accommodation of Additional Protections.

Contractor agrees to comply with such additional protections as PSERS shall reasonably request.

XI. Termination.

A breach by Contractor of any provision of this Addendum, as reasonably determined by PSERS, shall constitute a material breach of the Agreement and shall provide grounds for immediate termination of the Agreement by PSERS pursuant to the Agreement.

XII. Indemnification.

Contractor shall indemnify, hold harmless and defend PSERS from and against all claims, losses, liabilities, damages, judgments, costs and other expenses, including PSERS's costs and attorney fees, incurred as a result of, or arising directly or indirectly out of or in connection with Contractor's failure to meet any of its security obligations under this Addendum; and (ii) any claims, demands, awards, judgments, actions and proceedings made by any person or organization arising out of or in any way connected with Contractor's performance under this Addendum. Limitations on Contractor's liability, regardless of conflicting language elsewhere in the Agreement, shall not apply to claims related to Contractor's breach of the information security sections of this Addendum.

XIII. Intellectual Property Infringement Indemnification.

Contractor shall indemnify, defend and hold PSERS harmless from any and all claims brought against PSERS alleging that the Services and/or Documentation or PSERS' use of the Services and/or Documentation constitutes a misappropriation or infringement of intellectual property ("IP") of any Third Party. Contractor agrees to be responsible for all costs or expenses, to include reasonable attorneys' fees awarded or resulting from any claim. PSERS shall, after receiving notice of a claim, advise Contractor of such notification. Limitations on Contractor's liability, regardless of conflicting language elsewhere in any Agreement, shall not apply to claims related to Contractor's misappropriation or infringement of another's intellectual property.

XIV. Contractor Liability Insurance.

Contractor shall procure, and maintain for the duration of the contract, insurance against claims and damages which may arise from or in connection with the performance of its work to include IP infringement and privacy or data breaches coverage. Coverage shall have limits of no less than $5,000,000.00 per occurrence and $10,000,000.00 aggregate.

XV. Survival; Order of Precedence.

The provisions of this Addendum shall survive expiration or termination of the Agreement.

XVI. Entire Agreement.

The Agreement, including any exhibits and/or schedules thereto, and this Addendum contain the entire understanding of the Parties with respect to the subject matter hereof and supersedes all prior agreements, oral or written, and all other communications between the Parties relating to such subject matter.

APPENDIX B
PROPOSAL COVER SHEET
COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
RFP# PSERS RFP 2018-6

Enclosed in three separately sealed submittals is the proposal of the Offeror identified below for the above-referenced RFP:

Offeror Information:	
Offeror Name	
Offeror Mailing Address	
Offeror Website	
Offeror Contact Person	
Contact Person's Phone Number	
Contact Person's Facsimile Number	
Contact Person's E-Mail Address	
Offeror Federal ID Number	
Offeror SAP/SRM Vendor Number	

Submittals Enclosed and Separately Sealed:	
☐	Technical Submittal ☐ Domestic Workforce Utilization Certification
☐	Small Diverse Business and Small Business Participation Submittal ☐ Small Diverse Business and Small Business Participation Submittal Form ☐ Small Diverse Business and Small Business Letter(s) of Intent
☐	Cost Submittal

Signature	
Signature of an official authorized to bind the Offeror to the provisions contained in the Offeror's proposal:	
Printed Name	
Title	

FAILURE TO COMPLETE, SIGN AND RETURN THIS FORM WITH THE OFFEROR'S PROPOSAL MAY RESULT IN THE REJECTION OF THE OFFEROR'S PROPOSAL

APPENDIX C
DOMESTIC WORKFORCE UTILIZATION CERTIFICATION

To the extent permitted by the laws and treaties of the United States, each proposal will be scored for its commitment to use the domestic workforce in the fulfillment of the contract. Maximum consideration will be given to those offerors who will perform the contracted direct labor exclusively within the geographical boundaries of the United States or within the geographical boundaries of a country that is a party to the World Trade Organization Government Procurement Agreement. Those who propose to perform a portion of the direct labor outside of the United States and not within the geographical boundaries of a party to the World Trade Organization Government Procurement Agreement will receive a correspondingly smaller score for this criterion. In order to be eligible for any consideration for this criterion, offerors must complete and sign the following certification. This certification will be included as a contractual obligation when the contract is executed. Failure to complete and sign this certification will result in no consideration being given to the offeror for this criterion.

I, ______________________ **[title]** of ____________________________________ **[name of Contractor]** a _______________ **[place of incorporation]** corporation or other legal entity, ("Contractor") located at ____ **[address],** having a Social Security or Federal Identification Number of ________________________, do hereby certify and represent to the Commonwealth of Pennsylvania ("Commonwealth") (Check **one** of the boxes below):

☐ All of the direct labor performed within the scope of services under the contract will be performed exclusively within the geographical boundaries of the United States or one of the following countries that is a party to the World Trade Organization Government Procurement Agreement: Aruba, Austria, Belgium, Bulgaria, Canada, Chinese Taipei, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Liechtenstein, Lithuania, Luxemburg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom

OR

☐ ________________ **percent** (_____**%**) **[Contractor must specify the percentage]** of the direct labor performed within the scope of services under the contract will be performed within the geographical boundaries of the United States or within the geographical boundaries of one of the countries listed above that is a party to the World Trade Organization Government Procurement Agreement. Please identify the direct labor performed under the contract that will be performed outside the United States and not within the geographical boundaries of a party to the World Trade Organization Government Procurement Agreement and identify the country where the direct labor will be performed: ____
____
[Use additional sheets if necessary]

The Department of General Services **[or other purchasing agency]** shall treat any misstatement as fraudulent concealment of the true facts punishable under Section 4904 of the *Pennsylvania Crimes Code*, Title 18, of Pa. Consolidated Statutes.

Attest or Witness:

____
Corporate or Legal Entity's Name

____
Signature/Date

____
Signature/Date

____
Printed Name/Title

____
Printed Name/Title

APPENDIX D
IRAN FREE PROCUREMENT CERTIFICATION

http://www.dgs.pa.gov/Documents/Procurement%20Forms/IranFreeProcurementCertificationForm.pdf

http://www.dgs.pa.gov/Documents/Procurement%20Forms/ProposedIranFreeProcurementList.pdf

APPENDIX E

Trade Secret Confidential Proprietary Information Notice Form

http://www.dgs.pa.gov/Documents/Procurement%20Forms/TradeSecret_ConfidentialPropertyInfoNotice.pdf

APPENDIX F
COST SUBMITTAL

Defined Benefit Component Only

Calendar Year	Fee for Consulting, External Manager ODD & Performance Measurement	Fee for Consulting Only	Fee for External Manager Operational Due Diligence Only	Fee for Performance Measurement Only
06/01/2019 to 05/31/2020	$	$	$	$
06/01/2020 to 05/31/2021	$	$	$	$
06/01/2021 to 05/31/2022	$	$	$	$
06/01/2022 to 05/31/2023	$	$	$	$
06/01/2023 to 05/31/2024	$	$	$	$
Total (5 years)	**$**	**$**	**$**	**$**

Defined Contribution Component Only

Calendar Year	Fee for Consulting, External Manager ODD, & Performance Measurement	Fee for Consulting Only	Fee for External Manager Operational Due Diligence Only	Fee for Performance Measurement Only
06/01/2019 to 05/31/2020	$	$	$	$
06/01/2020 to 05/31/2021	$	$	$	$
06/01/2021 to 05/31/2022	$	$	$	$
06/01/2022 to 05/31/2023	$	$	$	$
06/01/2023 to 05/31/2024	$	$	$	$
Total (5 years)	**$**	**$**	**$**	**$**

Defined Benefit/Defined Contribution Combined

Calendar Year	Fee for Consulting, External Manager ODD, & Performance Measurement	Fee for Consulting Only	Fee for External Manager Operational Due Diligence Only	Fee for Performance Measurement Only
06/01/2019 to 5/31/2020	$	$	$	$
06/01/2020 to 5/31/2021	$	$	$	$
06/01/2021 to 05/31/2022	$	$	$	$

06/01/2022 to 05/31/2023	$	$	$	$
06/01/2023 to 05/31/2024	$	$	$	$
Total (5 years)	**$**	**$**	**$**	**$**

Fees should include the use of analytics software as well as attendance at up to six board meetings a year (on average, your attendance would normally only be requested quarterly).

APPENDIX G
SMALL DIVERSE BUSINESS (SDB) AND SMALL BUSINESS (SB) PARTICIPATION SUBMITTAL

Project Description: ____

RFP #: ____

Proposal Due Date: ____

Commonwealth Agency Name: ____

OFFEROR (Prime Contractor) INFORMATION

Offeror Company's Name: ____

Offeror Contact Name: ____________________ **Email:** ____________________

Title: ____________________ **Phone:** ____________________

Is your firm a DGS-Verified Small Diverse Business? ☐ Yes ☐ No (MUST check one)
If yes, Verification Expiration Date: ____________________

Is your firm a DGS-Self-Certified Small Business? ☐ Yes ☐ No (MUST check one)
If yes, Certification Expiration Date: ____________________

To confirm your company's SDB/SB status and expiration, please click or use the following link:
http://www.dgs.pa.gov/Businesses/Small%20Diverse%20Business%20Program/Small-Diverse-Business-Verification/Pages/Finding-Small-Diverse-Businesses.aspx

SUBCONTRACTING INFORMATION:

Percentage Commitment for SDB and SB Subcontracting Participation

After examination of the contract documents, which are made a part hereof as if fully set forth herein, the Offeror commits to the following percentages of the total contract cost for Small Diverse Business and Small Business subcontracting participation.

Small Diverse Business Subcontracting percentage commitment:

__________**%** ______________________________ **Percent**
(Figure) (Written)

Small Business Subcontracting percentage commitment:

__________**%** ______________________________ **Percent**
(Figure) (Written)

Listing SDB and SB Subcontractors

The Offeror must list in the chart below the SDBs and SBs that will be used to meet the percentage commitments provided above, along with the requested information about each SDB and SB Subcontractor. Include as many pages as necessary. Offerors must also include a Letter of Intent (LOI) for each SDB/SB listed. To receive points for SDB or SB participation commitments, the SDB or SB must be listed in the Department's directory of self-certified SBs and DGS/BDISBO-verified SDBs as of the proposal due date. The directory of self-certified SBs and DGS/BDISBO-verified SDBs can be accessed at the following link:

http://www.dgs.pa.gov/Businesses/Small%20Diverse%20Business%20Program/Small-Diverse-Business-Verification/Pages/Finding-Small-Diverse-Businesses.aspx

SDB/SB name, percent commitment to SDB/SB, and estimated $ value of commitment will automatically populate in the LOI tabs.

Offeror Company's Name:	0					
SDB/SB Subcontractor Name	SDB or SB	Primary Contact Name	Description of Services or Supplies to be Provided	% of Total Contract Cost Committed	Estimated $ Value of Commitment for Initial Contract Term	Will SDB/SB be used for Options/ Renewals? (YES/NO)

APPENDIX H
SMALL DIVERSE AND SMALL BUSINESS
LETTER OF INTENT

[redacted]

Dear [redacted]

This letter serves as confirmation of the intent of this offeror to utilize [redacted] on the above-referenced RFP issued by the [redacted]

If Offeror is the successful vendor, the referenced SDB/SB shall perform the following work, goods or services during the initial term of the prime contract and during any extensions, options or renewal periods of the prime contract exercised by the Commonwealth, as more specifically set forth below:

[redacted]

Identify the specific work, goods or services the SDB/SB will perform below:

[redacted]

These services represent [redacted] of the total cost in the Offeror's cost submittal for the initial term of the contract. Dependent on final negotiated contract pricing and actual contract usage or volume, it is expected that the above-referenced SDB/SB will receive an estimated [redacted] during the initial contract term.

The above-referenced SDB/SV represents that it meets the small or small diverse business requirements set forth in the RFP and all required documentation has been provided to the Offeror for its SDB/SB submission.

We look forward to the opportunity to serve the [redacted] on this project. If you have any questions concerning our small business or small diverse business commitment, please feel free to contact me at the number below.

Sincerely,

[redacted]

Acknowledged,

[redacted]

APPENDIX I

MODEL FORM OF SMALL DIVERSE AND SMALL BUSINESS SUBCONTRACTOR AGREEMENT

This Subcontractor Agreement ("Subcontract") is made effective as of ___________ __, 20__, by and between ____, ("Contractor") and ____,
a Small Diverse Business or Small Business ("Subcontractor") (collectively referred to as the "Parties").

RECITALS

Contractor has entered into a contract dated ______________________ (the "Prime Contract") with the Department of ___________________ of the Commonwealth of Pennsylvania ("Commonwealth"). Under the Prime Contract, Contractor has agreed to provide certain supplies, services or construction ("Services") to the Commonwealth.

In connection with the Procurement leading to the Prime Contract, Contractor and Subcontractor entered into a letter agreement dated _____________________ ("Letter of Intent") whereby the Contractor committed a certain percentage of work ("Small Diverse Business or Small Business Commitment") under the Prime Contract to the Subcontractor.

As contemplated by the Letter of Intent and in accordance with the provisions of the Procurement and Prime Contract, the Parties have agreed to enter into this Subcontract to fulfill the Small Diverse Business or Small Business Commitment expressed in the Letter of Intent and as required by the Prime Contract.

DEFINITIONS

The following words and terms when used in this Subcontract shall have the following meanings:

Bureau – The Department's Bureau of Diversity, Inclusion and Small Business Opportunities.

Contracting Officer – The person authorized to administer and make written determinations for the Commonwealth with respect to the Prime Contract.

Department – The Department of General Services of the Commonwealth of Pennsylvania.

Issuing Office – The department, board, commission or other agency of the Commonwealth of Pennsylvania that issued the Procurement.

Procurement – The Invitation for Bids, Request for Quotes, Request for Proposals or other solicitation and all associated final procurement documentation issued by the Commonwealth to obtain proposals from firms for award of the Prime Contract.

Small Business – A business in the United States which is independently owned, not dominant in its field of operation, employs no more than 100 full-time or full-time equivalent employees, and earns less than $7 million in gross annual revenues for building design, $20 million in gross annual revenues for sales and services and $25 million in gross annual revenues for those businesses in the information technology sales or service business.

Small Diverse Business – A Department-verified minority-owned small business, woman-owned small business, veteran-owned small business, service-disabled veteran-owned small business, LGBT-owned small business, or disability-owned small business.

AGREEMENT

Now, therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and intending to be legally bound, the Parties hereby agree as follows:

1. Subcontractor Representations. Subcontractor represents and warrants to Contractor as follows:

(a) Subcontractor is self-certified as a Small Business in accordance with the requirements and procedures established by the Bureau of Diversity, Inclusion and Small Business Opportunities; [Subcontractor is also verified as a Small Diverse Business by the Bureau of Diversity, Inclusion and Small Business Opportunities in accordance with the requirements and procedures established by the Bureau;]

(b) Subcontractor possesses the necessary knowledge, experience, expertise, capital, resources and personnel required to perform the Services it will provide under this Subcontract;

(c) Subcontractor (i) is duly organized, validly existing and in good standing under the laws of its state of incorporation or organization, (ii) has the power and authority to own its properties and to carry on business as now being conducted, and (iii) has the power to execute and deliver this Subcontract;

(d) The execution and performance by Subcontractor of the terms and provisions of this Subcontract have been duly authorized by all requisite action, and neither the execution nor the performance of this Subcontract by Subcontractor will violate any provision of law, any order of any court or other agency of government, the organizational documents of Subcontractor or any indenture, agreement or other instrument to which Subcontractor is a party, or by which Subcontractor is bound, or be in conflict with, result in a breach of, or constitute (with due notice or lapse of time or both) a default under, or except as may be provided by this Subcontract, result in the creation or imposition of any lien, charge or encumbrance of any nature whatsoever upon any of the property or assets of Subcontractor pursuant to, any such indenture agreement or instrument;

(e) Subcontractor has obtained all licenses, permits and approvals required to perform the Services it will provide under this Subcontract; and

(f) Subcontractor is not under suspension or debarment by the Commonwealth or any other governmental entity, instrumentality or authority.

2. Contractor Representations. Contractor represents and warrants to Subcontractor as follows:

(a) Contractor (i) is duly organized, validly existing and in good standing under the laws of its state of incorporation or organization, (ii) has the power and authority to own its properties and to carry on business as now being conducted, and (iii) has the power to execute and deliver this Subcontract;

(b) The execution and performance by Contractor of the terms and provisions of this Subcontract by Contractor have been duly authorized by all requisite action, and neither the execution nor the performance of this Subcontract will violate any provision of law, any order of any court or other agency of government, the organizational documents of Contractor or any indenture, agreement or other instrument to which Contractor is a party, or by which Contractor is bound, or be in conflict with, result in a breach of, or constitute (with due notice or lapse of time or both) a default under, or except as may be provided by this Subcontract, result in the creation or imposition of any lien, charge or encumbrance of any nature whatsoever upon any of the property or assets of Contractor pursuant to, any such indenture agreement or instrument;

(c) Contractor has obtained all licenses, permits and approvals required to perform the Services to be provided by Contractor under the Prime Contract; and

(d) Contractor is not under suspension or debarment by the Commonwealth or any other governmental entity, instrumentality or authority.

3. Relationship of the Parties. The provisions of this Subcontract are not intended to create, nor shall be deemed or construed to create, any joint venture, partnership or other relationship between Contractor and Subcontractor, other than that of independent entities contracting with each other solely for the purpose of carrying out the provisions of this Subcontract. Neither of the Parties to this Subcontract, nor any of their respective employees, agents, or other representatives, shall be construed to be the agent, employee or representative of the other party. Neither party shall have the authority to bind the other party, nor shall a party be responsible for the acts or omissions of the other party, unless otherwise stated in this Subcontract. Similarly, the Parties expressly acknowledge that neither the Contractor nor the Subcontractor is an agent, employee or representative of the Commonwealth and each party covenants not to represent itself accordingly.

4. Prime Contract Flow-Down.

(a) General. This agreement is a subcontract under the Prime Contract and all provisions of the Prime Contract and any amendments thereto applicable to the Services being performed by the Subcontractor shall extend to and be binding upon the Parties as part of this Subcontract.

(b) Specific. The Parties agree to comply with the following provisions of the Prime

Contract, which are incorporated herein by reference:

(1) The Americans with Disabilities Act Provisions.
(2) Nondiscrimination/Sexual Harassment Clause.
(3) Contractor Integrity Provisions.
(4) Contractor Responsibility Provisions.

(c) Termination. Should the Prime Contract be terminated pursuant to the terms and conditions provided in the Procurement, such termination shall have the same effect on this Subcontract. Payment for Services provided as of the date of termination must be made in accordance with the Section 13 of this Subcontract.

(d) Audit Provisions. The Commonwealth shall have the right, at reasonable times and at a site designated by the Commonwealth, to audit the books, documents, and records of the Parties to the extent that the books, documents, and records relate to the Parties' compliance with the provisions set forth in subsection (b) above or to the Small Diverse Business or Small Business Commitment effectuated through this Subcontract. The Parties shall preserve such books, documents, and records for a period of three years from the date of final payment hereunder. The Parties shall give full and free access to all such records to the Commonwealth and/or its authorized representatives.

5. Order of Precedence. The Letter of Intent, Procurement and Prime Contract are incorporated herein by reference into this Subcontract. In the event of any conflict or inconsistency among the individual components of this Subcontract, such conflict or inconsistency shall be resolved by observing the following order of precedence:

(a) This Subcontract;
(b) The Letter of Intent;
(c) The Prime Contract; and
(d) The Procurement.

6. Further Action. The Parties shall take such actions and complete, execute and deliver any and all documents or instruments necessary to carry out the terms and provisions of this Subcontract, to effectuate the purpose of this Subcontract, and to fulfill the obligations of each party hereunder.

7. Description of Services. Subcontractor will perform the following Services for the Contractor which Contractor is obligated to provide to the Commonwealth under the Prime Contract:

[DESCRIBE IN DETAIL THE SPECIFIC SUPPLIES, SERVICES OR CONSTRUCTION THE SUBCONTRACTOR WILL PROVIDE OR PERFORM]

____
____
____
____

____
____.

8. Small Diverse Business or Small Business Commitment. The above-referenced Services represent __ % of the final negotiated total cost for the initial term of the Prime Contract. Any proposed change to the Small Diverse Business or Small Business Commitment must be submitted in writing to the Bureau which will make a recommendation to the Commonwealth Contracting Officer regarding a course of action.

9. Performance of Services. Subcontractor may not subcontract more than 50% of the work subcontracted to it hereunder without written permission from the Bureau. Subcontractor will perform the Services strictly in accordance with any applicable plans and specifications as contained in the Prime Contract and the reasonable deadlines set by Contractor in view of the requirements of the Prime Contract, and in a good workmanlike manner consistent with industry standards, meeting all applicable local, state and federal laws, regulations and policies.

10. Location of Services. Subcontractor will provide the Services at the following address(es):
____
____.

11. Timeframe for Performance of Services. The Services will be provided by Subcontractor during the initial term of the Prime Contract, and during any extensions, options or renewal periods of the Prime Contract exercised by the Commonwealth, as more specifically set forth below:

[IDENTIFY THE SPECIFIC TIME PERIODS DURING THE INITIAL CONTRACT TERM AND EXTENSIONS, OPTIONS AND RENEWALS WHEN THE SUBCONTRACTOR WILL PERFORM COMPONENT SERVICES]

____
____
____
____
____.

12. Pricing of Services. Subcontractor shall provide or perform the Services at the pricing specified in Exhibit ___ to this Subcontract. [ATTACH A BILL OF MATERIALS, RATE CARD OR OTHER APPROPRIATE COST SHEET COVERING THE SERVICES TO BE PROVIDED.]

13. Payment for Services. Contractor shall exert reasonable and diligent efforts to collect prompt payment from the Commonwealth. Contractor shall pay Subcontractor in proportion to amounts received from the Commonwealth which are attributable to the Services performed by Subcontractor. Contractor shall pay Subcontractor within fourteen (14) days after the Contractor receives such payment from the Commonwealth, unless the parties expressly agree upon a different payment schedule or structure as set forth below:
____

____
____.

14. Utilization Reports. Both the Contractor and Subcontractor shall complete Quarterly Utilization Reports (or similar type documents containing the same information) and submit them to the Contracting Officer and to the Bureau within ten (10) business days at the end of each quarter. This information will be used to determine the actual dollar amount paid to Subcontractor and will also serve as a record of fulfillment of Contractor's Small Diverse Business and Small Business Commitments. If there was no activity during the quarter, then the form must be completed by stating "No activity in this quarter." A late fee of $100.00 per day may be assessed against the Contractor if its Utilization Report is not submitted in accordance with the schedule above.

15. Change Orders. If the Commonwealth issues any change order or other formal contract instrument either expanding or limiting the work to be performed under the Prime Contract, the Parties shall accept such Change Orders. Contractor agrees to provide Subcontractor with written notice of any such change orders that affect the Services to be provided by the Subcontractor hereunder as soon as practical after Contractor receives such notice. Any resulting increase or decrease in the Services, Small Diverse Business or Small Business Commitment provided for in Paragraphs 7 or 8 above must be in writing, mutually agreed to, and signed by both Parties and communicated to the Bureau. If the Parties are unable to reach an agreement regarding any adjustment to the Services, Small Diverse Business or Small Business Commitment necessitated by a Commonwealth Change Order, the Parties must submit the matter in writing to the Bureau which will make a recommendation to the Contracting Officer regarding a course of action.

16. Force Majeure. Neither party will incur any liability to the other if its performance of any obligation under this Subcontract is prevented or delayed by causes beyond its control and without the fault or negligence of either party. Causes beyond a party's control may include, but are not limited to, acts of God or war, changes in controlling law, regulations, orders or the requirements of any governmental entity, severe weather conditions, civil disorders, natural disasters, fire, epidemic and quarantines, general strikes throughout the trade, and freight embargoes. The existence of such causes beyond a party's control shall extend the period for performance to such extent as may be necessary to enable complete performance in the exercise of reasonable diligence after the causes have been removed.

17. Dispute Resolution.

(a) The Parties will attempt to resolve any dispute arising out of or relating to this Subcontract through friendly negotiations.

(1) The Parties expressly acknowledge and confer upon the Bureau and Contracting Officer the authority to adjudicate disputes that the Parties cannot resolve amicably concerning the Parties' compliance with their Small Diverse Business and Small Business Commitments as provided in the Prime Contract and this Subcontract.

(2) The Bureau may recommend to the Contracting Officer a range of sanctions it deems appropriate if the Bureau determines a party has failed to satisfy or perform its Small Diverse Business or Small Business commitment. Such sanctions include, but are not limited to, one or more of the following: a determination that the party is not responsible under the Contractor Responsibility Program; withholding of Prime Contract and/or Subcontract payments; suspension or termination of the Prime Contract and/or Subcontract together with consequential damages; revocation of the party's Small Business self-certification status and/or Small Diverse Business verification status; and/or suspension or debarment of one or both parties from future contracting opportunities with the Commonwealth.

(3) The Parties' acknowledge that their prior performance in meeting their Small Diverse Businesses and Small Businesses contractual obligations will be considered by the Bureau during future procurement scoring processes. To the extent a party has failed to meet prior contractual commitments, the Bureau may recommend to the Issuing Office that the party be determined non-responsible for the limited purpose of eligibility to receive SDB/SB points or consideration as a qualified Small Diverse Business or Small Business.

(b) Nothing herein shall be construed to prevent either party from seeking such relief as provided by law in a court or tribunal of competent jurisdiction.

18. Notices. Any written notice to any party under this Subcontract shall be deemed sufficient if delivered personally, or by facsimile, telecopy, electronic or digital transmission (provided such delivery is confirmed), or by a recognized overnight courier service (e.g., DHL, Federal Express, etc.) with confirmed receipt, or by certified or registered United States mail, postage prepaid, return receipt requested, and sent to the following:

If to Contractor:

____
____
____

If to Subcontractor:

____
____
____

19. Waiver. No waiver by either party of any breach of this Subcontract shall be deemed to waive any other breach. No acceptance of payment or performance after any breach shall be deemed a waiver of any breach. No failure or delay to exercise any right by a party upon another's default shall prevent that party from later exercising that right, nor shall such failure or delay operate as a waiver of any default.

20. Severability. If any provision of this Subcontract shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable. If a court finds that any provision of this Subcontract is invalid or unenforceable, but that by limiting such provision it would become valid and enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited.

21. Assignment. Neither party may assign or transfer this Subcontract without the prior written consent of the Commonwealth. If Contractor's Prime Contract with the Commonwealth is assigned to another contractor, the new contractor must maintain the Small Diverse Business and Small Business Commitment set forth in the Prime Contract as implemented through this Subcontract.

22. Applicable Law. This Subcontract shall be governed by the laws of the Commonwealth of Pennsylvania.

23. Entire Agreement. This Subcontract constitutes the entire agreement of the Parties regarding the subject of this Subcontract as of the date of execution. No other agreement or understandings, verbal or written, expressed or implied, are a part of this Subcontract unless specified herein.

24. Amendment. This Subcontract may be modified or amended only if made in writing and signed by both Parties. Any proposed change to the Contractor's Small Diverse Business or Small Business Commitment to Subcontractor must be submitted in writing to the Bureau which will make a recommendation to the Contracting Officer regarding a course of action.

25. Binding Effect. This Subcontract shall be binding upon, and inure to the benefit of, the Parties and their respective heirs, representatives, successors and assigns.

26. Counterparts. This Subcontract may be executed by the Parties in counterparts, each of which together shall be deemed an original but all of which together shall constitute one and the same instrument. A party's delivery of a duly executed signature page of this Subcontract in electronic format shall have the same force and effect as delivery of an original signature page.

ADDITIONAL TERMS AND CONDITIONS

[THE PARTIES MAY INCLUDE ADDITIONAL TERMS AND CONDITIONS APPROPRIATE FOR THE SERVICES TO BE PROVIDED SO LONG AS THEY ARE COMMERCIALLY REASONABLE TERMS FOR THE APPLICABLE BUSINESS OR INDUSTRY, ARE NO LESS FAVORABLE THAN THE TERMS OF THE PRIME CONTRACT, AND DO NOT PLACE DISPROPORTIONATE RISK ON THE SMALL DIVERSE BUSINESS OR SMALL BUSINESS RELATIVE TO THE NATURE AND LEVEL OF THE SMALL DIVERSE BUSINESS' OR SMALL BUSINESS' PARTICIPATION IN THE PROJECT. SUCH TERMS MAY INCLUDE:

Background Checks
Confidentiality/Disclosure of Information
Data Security

Insurance
Invoicing Requirements
Environmental Protection
Intellectual Property Rights
Record Retention/Audits
Service Level Agreements (SLAs) (consistent with Prime Contract SLAs)
Public Works Construction Requirements (including Bonding, E-Verify, Prevailing Wage, and Prompt Payment provisions)

IN WITNESS WHEREOF, the Parties hereto have caused this Subcontract to be executed by their duly authorized officers as set forth below.

Contractor	Subcontractor
Insert Company Name	*Insert Company Name*
By: ____________________________	By: ____________________________
Signature	Signature
____________________________	____________________________
Printed Name	Printed Name
____________________________	____________________________
Title	Title
____________________________	____________________________
Date	Date

PSERS' Investment Portfolio
Asset Allocation as of June 30, 2018 (Unaudited)

Asset Class	Market Value (In millions)	% of Total	Target Allocations	Policy Ranges
Publicly Traded Global Equity	$11,564.7	20.8%		
Private Markets	$8,117.4	14.6%		
Total Equities	$19,682.1	35.4%	34.00%	+/- 10.0%
Investment Grade	$4,766.4	8.6%		
Credit-Related	$5,337.4	9.6%		
Inflation Protected	$7,976.8	14.4%		
Total Fixed Income	$18,080.7	32.5%	35.00%	+/- 10.0%
Master Limited Partnership (MLP)	$2,613.0	4.7%		
Infrastructure	$1,133.3	2.0%		
Commodities	$4,267.7	7.7%		
Real Estate	$5,487.0	9.8%		
Total Real Assets	$13,500.0	24.2%	25.00%	+/- 10.0%
Risk Parity	$5,439.2	9.8%	10.00%	+/- 5.0%
Absolute Return	$5,671.3	10.2%	10.00%	+/- 4.0%
Cash and Cash Equivalents*	$2,457.6	4.4%	3.00%	+/- 3.0%
GROSS INVESTMENT PORTFOLIO	**$64,832.6**	**116.6%**	**117.00%**	
Financing	($9,249.5)	(16.6%)	(17.0%)	+/- 9.0%
NET INVESTMENT PORTFOLIO	**$55,583.1**	**100.0%**	**100.00%**	
Net Other Assets and Liabilities	$1,145.6			
PSERS TOTAL NET ASSETS	**$56,728.7**			

* - includes Cash, Cash Equivalents, and net asset value accounting adjustments

Aon Hewitt Investment Consulting

Proposal for Investment Consulting Services

RFP Number: PSERS RFP 2018-6

Technical Submittal

Public School Employees’ Retirement System

February 19, 2019

Contact:
Claire Shaughnessy
Partner
Merritt 7 Corporate Park, Building 201
Norwalk, CT 06851
+1.203.523.8163
claire.shaughnessy@aon.com

aon.com

Empower Results®

February 19, 2019

Ms. Cathy Gusler
Public School Employees' Retirement System
5 North 5th Street
Harrisburg, PA 17101

Re: RFP#: PSERS RFP 2018-6

Dear Cathy,

Thank you for including Aon Hewitt Investment Consulting, Inc., an Aon Company as a candidate in your search for Investment Consulting Services for the Commonwealth of Pennsylvania Public School Employees' Retirement System ("PSERS"). We are very appreciative of the opportunity to re-bid to be the general consultant for PSERS. As the incumbent general consultant, we believe that Aon Hewitt Investment Consulting (AHIC) is uniquely positioned and has the right experience and the capabilities necessary to be an effective long-term partner for PSERS' investment consulting needs. The Aon team of experts PSERS has relied on over the past five years of Claire Shaughnessy, Phil Kivarkis, Rian Akey, and Jeanna Cullins will continue to partner with PSERS to provide a deep and experienced team across all aspects of the general consultant engagement including manager selection, asset allocation, operational due diligence and fiduciary and governance services. We are happy to add Kevin Vandolder, DC Client Practice Leader, as the lead consultant for the new PSERS Defined Contribution Trust.

Our firm has a long history of serving public plans, so we understand the challenges that come with that important responsibility. We believe that one of our key strengths and differentiating capabilities is our ability to provide comprehensive asset allocation, investment policy, and implementation advice to our clients drawing from a global well of knowledge, experience, research, and quantitative analysis. But our even greater experience lies in tailoring that advice to each individual client. The annual asset liability review and stress testing Aon conducts on the PSERS Fund is an example of the customized, tailored approach we take to every client engagement. All advice that we provide is customized to help ensure that it's right for each public plan's circumstances, risk tolerance, and financial objectives. We believe we have brought this level of experience to PSERS and will continue to do so in the future.

Perhaps one of the most distinguishing characteristics of AHIC is the way we interact with clients. We take a genuine interest in their success. We strive to understand and appreciate the complexities of the environment in which our clients operate. As the general consultant since 2013, Aon has developed a deep appreciation of the unique challenges facing PSERS today as it seeks to continue to meet the retirement needs of its over 600,000 participants. We believe that, as fiduciaries, the best approach is a collaborative one and that the best results will come from sharing our best thinking and thoroughly vetting investment opportunities. Our advice and approach will seek to reflect this.

We are proud of our strategic partner relationship with PSERS and hope we are fortunate enough to continue. In addition to our extensive experience with public fund Defined Benefit plans, Aon has been working with public fund defined contribution plans for over 40 years and works and advises 32 public fund retainer clients with total assets of $1.518 billion as of June 30, 2018.

We recognize the additional time and cost involved in re-issuing the general consultant RFP and thank PSERS for its patience and for the opportunity to re-bid. We greatly value our partnership and have adjusted our fee proposal for the first year to compensate PSERS for the additional cost of re-issuing the RFP. We are committed to providing the necessary resources to fully support PSERS and their needs. Our proposal is being signed by our NA Chief Executive Officer, Stephen Cummings. Steve is authorized to submit and represent the information contained in this response on behalf of AHIC. In accordance with our standard practice, this bid and any award is subject to the final approval of Aon leadership and subsequent execution of a definitive agreement between us.

Stephen Cummings, NA Chief Executive Officer

Aon Hewitt Investment Consulting, Inc., an Aon company
200 East Randolph Street, Suite 1500
Chicago, IL 60601
t + 1.847.442.0064
f +1.312.381.1368
steve.cummings@aon.com

Included in the **Appendix** are Aon Hewitt Investment Consulting's Form ADV, Parts 2A and 2B.

Please contact us if there is any additional information you require or if we can make this proposal more responsive to your needs. We hope to have the opportunity to discuss our capabilities in more detail with you in person in the near future. Thank you again for your consideration.

Sincerely,

Aon Hewitt Investment Consulting, Inc.

Claire Shaughnessy	Stephen Cummings
Partner	NA Chief Executive Officer

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APPENDIX B

PROPOSAL COVER SHEET
COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
RFP# PSERS RFP 2018-6

Enclosed in three separately sealed submittals is the proposal of the Offeror identified below for the above-referenced RFP:

Offeror Information:	
Offeror Name	Aon Hewitt Investment Consulting, Inc.
Offeror Mailing Address	200 E. Randolph St., Suite 1500 Chicago, IL 60601
Offeror Website	www.aon.com
Offeror Contact Person	Claire Shaughnessy
Contact Person's Phone Number	+1.203.523.8163
Contact Person's Facsimile Number	+1.203.523.6750
Contact Person's E-Mail Address	claire.shaughnessy@aon.com
Offeror Federal ID Number	36-3109431
Offeror SAP/SRM Vendor Number	383098

Submittals Enclosed and Separately Sealed:	
☒	Technical Submittal ☒ Domestic Workforce Utilization Certification
☐	Small Diverse Business and Small Business Participation Submittal ☐ Small Diverse Business and Small Business Participation Submittal Form ☐ Small Diverse Business and Small Business Letter(s) of Intent
☒	Cost Submittal

Signature	
Signature of an official authorized to bind the Offeror to the provisions contained in the Offeror's proposal:	Stephen Cummings
Printed Name	Steve Cummings
Title	NA Chief Executive Officer, Aon Hewitt Investment Consulting

FAILURE TO COMPLETE, SIGN AND RETURN THIS FORM WITH THE OFFEROR'S PROPOSAL MAY RESULT IN THE REJECTION OF THE OFFEROR'S PROPOSAL

Executive Summary

Aon Hewitt Investment Consulting

We believe Aon Hewitt Investment Consulting, Inc. ("AHIC") is well-qualified to execute the requested scope of work. We are a full-service investment consulting firm that serves a wide array of clients, including public retirement systems, state investment boards, nonprofits, state and federal oversight entities, corporate pension funds and defined contribution plans, endowments, and foundations. Our history goes back over 40 years through our legacy organizations. Aon Hewitt Investment Consulting is one of the largest firms of its type in the U.S.[1], with clients having combined assets of $2.279 trillion (as of 6/30/2018, represents $2,164 B in advised US retainer non-discretionary assets and $115 B in discretionary assets under management). While our size affords us efficiencies and depth of resources, we pride ourselves on high-touch, client centric consulting. The proposed consulting team for the Commonwealth of Pennsylvania Public School Employees' Retirement System (PSERS) embodies this philosophy.

We have carefully managed the growth in our firm and acquired specific experience to cater to the wide range of specialized services that government entities seek. The quality and depth of our professional resources, alignment of our interests with our clients, and wide range of experience we have developed are well respected in the industry.

We Are Experienced Investment Consultants

Our investment knowledge is solid and based on rigorous research and analysis. We are proud of the steady stream of topical research papers we have published that the institutional investment community values. Many times the topics we cover come from challenges raised or suggestions made by our clients. In that way, we benefit not only our clients but also the larger investment community.

We have internal actuarial expertise available to our investment consultants. We have an appreciation of the financial and investment challenges that the PSERS' Board and PSERS' Investment Professionals face, and we believe we have the experience to navigate such challenges. By leveraging our investment and actuarial experience and our comprehensive analytic and modeling tools, databases, and decision resources, we will work to ensure that you receive investment consulting services that meet your needs[2].

We Understand the Public Sector

We understand the many challenges and significant opportunities facing public retirement systems and state investment boards. We appreciate the funding challenges and the pressure to reach ever-increasing investment returns while also being mindful of risks. We understand the "fishbowl" environment in which public funds operate, where investment decisions are far more visible than they would be with a private-sector entity. We understand and fully appreciate that governing a public retirement system and managing its assets are difficult jobs.

[1]Source: Pensions & Investments 2017 Consultant Survey. Pension & Investments, 2017 Investment Consultant Survey, 68 firms participated in the survey. The rankings are based on the industry data reported by Pensions & Investments as of 03/31/2017. The rankings are based on the worldwide assets under management in investment outsourcing programs reported by each advisor who supplied data to Pensions & Investments. The survey does not report on any undisclosed facts about any of the advisors who participated in the survey that could call into question the validity of the underlying data. The survey does not state or imply that the rankings represent the quality of advice provided by any advisor who participated in the survey. The survey discloses the complete list of advisors who participated in the survey. The data may not represent any one client's experience because the data reflects the cumulative asset growth across the entire sampling of the clients of each advisor who participated in the survey. The data is not indicative of the future performance of advisors who participated in the survey. The survey was conducted by Pensions & Investments. No advisor paid a fee to participate in the survey.
[2]Actuarial services provided by an Aon Hewitt Investment Consulting, Inc. affiliate.

Aon has spoken extensively regarding the unique needs of public pensions and has recently presented to the Pennsylvania Public Pension Management and Asset Review Commission (in September of 2018) as an expert witness on the topic of asset allocation principles and trends in public plans. Our extensive knowledge of public plans given our long experience working with many plans enables us to provide forward-looking advice regarding many of the challenging topics facing public plan boards such as asset allocation, investment structures (active/passive), fee reduction ideas and governance structures.

We Promote Governance Best Practices

AHIC has demonstrated a genuine sensitivity to the complex elements of good governance processes. This is reflected in the way we approach our work. We first seek to fully understand the way your investment decisions are made, what responsibilities are retained by the Board and what are delegated, how oversight and monitoring activities are performed, and how you define success.

With our clients, we don't just look at numbers. We look at policies, procedures, accountability, and future planning. AHIC is experienced in problem solving at staff the and board levels and has significant experience in both strategic and tactical contexts. We are skilled in assisting our clients to achieve smooth, efficient decision making, resolving concerns promptly, helping our clients to implement changes on schedule and on budget, and advising complex portfolios forward as planned.

Aon understands PSERS governance needs. Jeanna Cullins, Leader of the AHIC's Fiduciary Practice, has worked with the Board's Governance Working Group and PSERS' Investment Professionals to update PSERS' Investment Policy Statement, Objectives and Guidelines and more clearly define the investment governance structure of PSERS. In addition, Jeanna and her team have conducted fiduciary training sessions with new members of the Board. Given this existing relationship and prior work, Aon can continue PSERS efforts to re-think its governance structure as Pennsylvania pursues potential governance changes such as consolidating its investment office with SERS and other governance topics without any loss of time.

Our Research Capabilities Benefit Our Clients

We have structured our firm to focus heavily on research that's relevant to our clients. This includes a dedicated global asset allocation team, an investment policy services group, a global investment management team, and fiduciary services. These teams focus their efforts on issues such as market research, investment program structure, portfolio modeling, investment manager research, policy development, and governance best practices.

Producing thoughtful research papers is highly valued and rewarded in our firm. Therefore, research isn't merely an afterthought or a secondary function for our investment professionals—it is core to our business.

Our research capabilities are not limited to understanding the investment capabilities of asset management firms, but includes our dedicated operational due diligence team which is led by Rian Akey. Rian and his team conduct comprehensive operational due diligence on all Buy rated investment products and have extensive experience evaluating the operations of PSERS public market managers. This experience also includes evaluating the middle and back office of internal investment organizations which PSERS can utilize to conduct the operational risk gap analysis outlined in PSERS' scope of services.

Our Databases and Tools Are Extensive

Over 23,000 investment manager strategies and thousands of market indices are covered in our databases (as of September 30, 2018). This means we offer clients broad coverage of the investment manager universe and have access to return and portfolio data not only for the strategies included in their plans but also for appropriate market indices. We also have sophisticated tools that allow us to screen, monitor, analyze, and understand investment products and benchmarks.

We Offer PSERS an Experienced Team

As our firm has continued to expand, we have made a conscious effort to ensure that the complex needs of public fund plan sponsors are met. Our professional staff includes industry experts spanning the full range of consulting disciplines, including asset/liability modeling, asset allocation studies, investment policy development, analytical research, portfolio construction, investment manager searches and monitoring, custodian bank searches and monitoring, governance matters, risk analysis, and regulatory compliance. We do in-house training where we share information among partners and senior-level consultants. And we are constantly making investments to improve our capabilities.

The primary consultant team of Claire Shaughnessy, Amanda Janusz and Darren Moran have worked with PSERS since the inception of our strategic partnership in 2013. Jeanna Cullins, Lead Fiduciary Consultant and Rian Akey, Global Head of Operational Due Diligence have worked with PSERS on several projects over the past three years. We have added Kevin Vandolder as the Lead Defined Contribution Consultant to lead Aon's team in providing the expanded consultant services for the new Defined Contribution Plan. All team members selected for this engagement have consulted with public funds with similar missions and goals. They work well together and with boards and staffs. They have assisted clients in developing and monitoring strong investment programs. They will be readily accessible, offer you their best independent judgment, and work tirelessly on your behalf.

We believe this opportunity with PSERS is one that many consulting firms would naturally be interested in. You have a large fund with a good reputation. We expect the competition to be extensive, but we hope you will find that our knowledge, experience, and passion for excellence are second to none.

Part III: Technical Submittal

III-1. Requested Services: Fund

The contractor will provide non-discretionary investment consulting and/or performance measurement services for the period June 1, 2019 through May 31, 2024.

A. In providing Consulting Services for the Fund, and for all major asset classes, the consultant will:

1. ***Conduct a comprehensive review and analysis of investment objectives, policies, asset allocation, and portfolio structure, inclusive of defining an investable risk beta portfolio, and recommend changes, if appropriate.***

2. ***Review the adequacy of PSERS' Investment Professionals and resources, and make recommendations on PSERS' Investment Professionals and resource changes, if any.***

3. ***Work with PSERS' Investment Professionals and the actuary to conduct an asset/liability study annually for each calendar year and present the results to the Board in March of the following year.***

4. ***Work with PSERS' Investment Professionals to develop an appropriate investment management structure for the Fund and each asset class that considers the role of active versus passive strategies, investment management styles, and separation of alpha from beta under different market conditions.***

5. ***Recommend appropriate performance and risk benchmarks for individual portfolios, each asset class, and for the total Fund.***

6. ***Review and make recommendations regarding individual portfolio risk guidelines at least annually.***

7. ***Recommend suitable investment opportunities and practical implementation methods; research supporting such recommendations must have been completed within the prior 12 months.***

8. ***Recommend appropriate investment strategies, tactics, procedures, and practices.***

9. ***Provide research reports on asset allocation, investment issues, and provide description and evaluation of alternative approaches.***

10. ***Provide information on market conditions and explain their impact on the Fund's investments.***

11. ***Provide PSERS with information on high conviction new managers at the earliest possible juncture to permit PSERS to secure capacity and negotiate terms with promising emergent managers.***

12. ***Assist PSERS' Investment Professionals in conducting public market investment manager searches and facilitate the hiring of suitable institutional quality managers, including:***

    a. ***providing opportunities and expense reimbursement for PSERS to jointly meet and evaluate new managers at industry conferences;***

   b. ***providing a list of potential institutional quality managers appropriate for the mandate being considered;***

   c. ***conducting interviews with potential managers at PSERS;***

   d. ***conducting on-site due diligence meetings with potential managers prior to their selection; and***

   e. ***providing assistance with the contract/fee negotiations.***

13. ***Provide on-going monitoring and oversight reports for all of PSERS' public market investment managers, including:***

   a. ***advance notice to PSERS of in-person meeting with investment managers in the Fund's portfolio;***

   b. ***analysis of the manager's absolute and relative performance in relation to benchmarks, investment objectives, and peer groups, including analysis of ex-post risk-adjusted performance;***

   c. ***an analysis of attribution, holdings, style, and risk;***

   d. ***updated research on each investment manager in the Fund's portfolio updated at least once every 18 months to include a review of investment performance, process, and the manager's organization;***

   e. ***conduct on-site investment and operational due diligence meetings with current investment managers a minimum of every three years;***

   f. ***advice on manager retention/termination; and***

   g. ***assist in developing a formal manager review process.***

14. ***Advise PSERS' Investment Professionals and the Board about new developments in investment management techniques and portfolio management strategies. Analyze how new techniques might improve the investment program and whether they should be considered for implementation.***

15. ***Make available all firm research, including proprietary research, regardless of the firm department in which it was created. Research must be made available by electronic system.***

16. ***Provide access and consultation with the firm's research staff.***

17. ***Meet with the Board to report on investment matters. Generally, there are six regularly scheduled Board meetings annually. Special meetings may be scheduled as needed.***

18. ***Report the performance results to the Board quarterly, including relative results versus established benchmarks, results versus other public defined benefit pension plans, and the returns relative to the risks taken.***

19. ***Maintain and provide access to a database of U.S. and non-U.S. investment managers, including their philosophies, processes, organizations, performance, fees, and clients.***

20. Provide and maintain a secure, client-facing, web-based platform that is frequently updated and continuously available to PSERS that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools, allowing PSERS to:

    a. formulate investment policy and implement strategies;

    b. monitor and evaluate individual portfolio, asset class, and total fund performance, risk, and attribution analytics;

    c. formulate investment policy and implement strategies;

    d. develop asset allocation and rebalancing recommendations;

    e. select and evaluate public market investment managers, including public market manager research and consultant ratings;

    f. analyze and optimize manager teams; and,

    g. compare the Fund performance, including ex-post risk-adjusted performance, at the asset class and total fund levels to various peer groups.

    It is expected that at least 20 years of the Fund's historical performance data, by investment portfolio, asset class, and at the total fund level will be included and that the database will be updated on a monthly basis. The foregoing services shall be made available directly to PSERS through CONSULTANT's proprietary tools or indirectly through licensed third party applications.

21. Provide (a) two, one-day, or (b) one, two-day, on-site, Fiduciary and Governance training sessions per year, which can be new Board member training, Board member training, PSERS' Investment Professional training, or some combination thereof. PSERS reserves the right to videotape any training sessions for educational purposes..

22. Advise the Board and PSERS' Investment Professionals on risk-related subjects (e.g., risk measurement, risk mitigation).

23. Advise the Board and PSERS' Investment Professionals on fiduciary and governance related subjects as requested by PSERS, including the following items:

    (a) Provide advice and insights, as may be requested by PSERS, on public pension fund industry common and best practices;

    (b) Assist as may be requested by PSERS with the development of new Board member orientation materials and conduct orientation sessions;

    (c) Review and make recommendations, consistent with industry best practices, regarding clarity and documentation of the Board's governance framework, including the Investment Policy Statement ("IPS"), Board and Committee Charters, Delegations of Authority, investment implementation policies and procedures, etc.;

    (d) Assist as may be requested with the development of a Board authority and delegation matrix, including:

(i) Clarification of what authority the Board has retained, what authority has been delegated, and to whom, and

(ii) Delegations to PSERS' Investment Professionals from the Board and/or CIO.

(e) Assist, as may be requested by PSERS, with strategic planning;

(f) Develop and administer, as may be requested by PSERS, a Board annual self-evaluation process.

24. Carry out other assignments that may be specified by the Board and PSERS' Investment Professionals, as required.

25. Conduct an operational risk gap analysis which will include an evaluation of the quality of the operational policies and procedures governing PSERS' Investment Professionals. The written report will include observations, comparisons to peers and recommendations in the following areas:

(a) Investment Framework (Front, Middle, and Back Office)

(b) Trade/Transaction Execution Policies and Procedures

(d) Investment and Counterparty Risk Oversight

(e) Compliance and Audit Testing

(f) Data Governance, Technology and Business Continuity and Disaster Recovery Plans

(g) Key service provider selection and monitoring procedures.

B. In providing Performance Measurement Services for the Fund, including all major asset classes recognized by PSERS as well as individual portfolios, the consultant will:

1. Prepare a written monthly report containing the calculated total return (gross and net of fees) for asset class, portfolio management styles, and individual portfolios, and compare PSERS' calculated data with benchmarks determined by PSERS and with data for a similar population of funds by asset class and portfolio management styles for all of the public market portfolios and composites. Returns should be calculated for the following time periods: one-month, three-months, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 20-year, 25-year, 30-year, and since inception.

2. Prepare a quarterly written report containing performance measurement attribution and analysis for each asset class and individual portfolio. The report should include a historical return analysis, dollar oriented analysis, return oriented (wealth relative) analysis, excess return analysis, and risk/return analysis. Returns should be calculated for the following time periods: quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 20-year, 25-year, 30-year, and since inception.

3. Reconcile performance with both individual portfolio managers as well as the custodian bank on a monthly basis.

4. Calculate PSERS' money weighted rate of return as required by GASB 75.

5. ***Create additional composites with historical returns for those composites as requested by PSERS.***

6. ***Provide quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, and 10-year quartile ranking report of composite returns by fund (i.e. total fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes).***

7. ***Provide consecutive year quartile ranking reports of composite returns by fund (i.e. total fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes) for the past five years.***

8. ***Conduct performance attribution analysis to determine the value added by investment policy, asset allocation, and security selection.***

9. ***Provide reasonable assistance to PSERS in uploading the consultant's performance data to PSERS' own investment system(s).***

10. ***Prepare ex-post risk statistics and analytics for the same time periods, to the degree of depth, including benchmark comparatives, and use the same performance data from the above. Ex-post risk statistics and analytics should be robust and inclusive of industry best practices risk information.***

AHIC confirms that we can provide the scope of services listed above in III-1. Requested Services: Fund.

III-2. Requested Services: Trust

The contractor will provide consulting services for the Trust including:

1. ***Review each plan's existing investment options.***

2. ***Determine if the investment options offered by each plan are optimum choices given the considerations for diversification, risk and return.***

3. ***Recommend additions or deletions to investment options as needed.***

4. ***Provide a recommended transition plan and timeline incorporating any proposed changes in investment options.***

5. ***Conduct a review of each plan's pricing structure including fund management fees and terms between the plans and the third party administrator (TPA).***

6. ***Work with the TPA to review specific plan metrics, provide best practices and recommendations, and address issues that arise each quarter.***

7. ***Assist in the development of investment policies for the plan.***

8. ***Annually review general investment policy documents.***

9. ***Periodically review goals, objectives and best practices with PSERS' investment committee.***

10. ***Recommend enhancements to PSERS' investment committee governance processes.***

11. ***Perform periodic fiduciary training.***

12. ***Monitor, review, and provide advice on legislative and regulatory issues.***

13. ***Monitor, review, and provide advice regarding best practices.***

14. ***Monitor, review, and provide advice regarding fiduciary obligations.***

15. ***Provide ongoing review of strengths and vulnerabilities in current practices.***

16. ***Serve as the liaison between the record-keeper and PSERS to maximize the vendor relationship, resolve issues with the record-keeper, and ensure contractual commitments are met.***

17. ***Lead and otherwise assist in any requisite RFP, RFQ, or RFI processes.***

AHIC confirms that we can provide the scope of services listed above in III-2. Requested Services: Trust.

III-3. Requirements

A. Emergency Preparedness.

To support continuity of operations during an emergency, including a pandemic, the Commonwealth needs a strategy for maintaining operations for an extended period of time. One part of this strategy is to ensure that essential contracts that provide critical business services to the Commonwealth have planned for such an emergency and put contingencies in place to provide needed goods and services.

1. ***Describe how you anticipate such a crisis will impact your operations.***

   Pandemic situations are an obvious threat that has garnered attention and support from the highest levels of our organization. Our plans are based on an all hazard approach with incident response procedures and protocols that can be applied to any infectious disease situation.

2. ***Describe your emergency response continuity of operations plan. Please attach a copy of your plan, or at a minimum, summarize how your plan addresses the following aspects of pandemic preparedness:***

Business Continuity and Disaster Recovery

Aon's Business & Technology Resilience (BTR) program provides a global, systematic, practiced response to unplanned incidents or catastrophic events, allowing Aon to continue or quickly recover business operations. The program represents the combined disciplines of Business Continuity, Technology Resilience and Situation Response under unified leadership.

All information is hosted in our dual data centers by CyrusOne. The primary is located in Carrolton, Texas and the backup/secondary is located in Sterling, Virginia. The data centers mirror in real time replication.

Aon information technology has established and documented escalation processes to manage technology outages and/or crisis situations. These procedures are regularly tested, updated and integrated with the Global Emergency Operations Center (GEOC) and Business Continuity Management programs.

Aon has implemented a 24x7 Global Emergency Operations Centre (GEOC) charged with immediate management and response to incidents and emergencies. The GEOC maintains lists of key contacts within critical support functions to be able to respond quickly and effectively to an incident.

All Aon locations are given a risk ranking using standard criteria to determine the required level of contingency planning. Business units determine business processes and dependencies that have the greatest potential impact in the event of a major disruption. This information forms the foundation for strategy and planning.

Each Aon business location has its own BCP. Each BCP is a documented plan that develops advance arrangements and procedures to enable a location to respond to an event in such a manner that critical business functions continue with planned levels of interruption or essential change. Each Business Continuity Plan includes prioritized business processes and process documentation, employee call trees, employee deployment and utilization, unique hardware/software requirements, client list, other business partner contacts, dependent sites, and recovery tasks.

Aon’s disaster recovery plans are confidential and proprietary.

Aon's BC/DR plans are created by service, not client. Therefore, we cannot share the specific BC/DR plan.

The Business Impact Analysis (BIA) is the foundation of our Business Continuity Planning process and is key to identifying what critical business processes/activities need to be recovered following any business outage and how quickly these processes need to be recovered. Business Continuity plans detail the steps required to recover business operations. The plans adhere to standard program requirements and include:

- **Business**: processes, recovery time objectives and prioritization
- **Colleagues**: capabilities, roles and responsibilities, and teams
- **Operations**: recovery strategies, recovery tasks, and procedures
- **Resources**: applications, equipment, software, supplies, telecomm, vital records and documents
- **Communications**: internal and external contact lists

Work area recovery strategies are identified and documented during the plan development cycle and are specific to individual plans. Aon relies primarily on five types of recovery strategies during significant business interruptions:

- Move key colleagues to an unaffected Aon location(s)
- Relocate key colleagues to a contracted work area recovery center or approved alternate location(s)
- Transfer work activities to an unaffected Aon location(s)
- Have key colleagues work virtually from home or other non-office locations; and
- Stop non-essential business operations

Aon colleagues who relocate to other Aon office sites or third-party locations for temporary operations can access critical systems from anywhere on the Aon network via the secure Virtual Private Network (VPN).

Aon has a geographically diverse, high availability VPN with multiple access points and flexible bandwidth that can be increased. Colleagues who normally use a fixed desktop can quickly be issued a laptop when warranted by the situation.

We have colleagues who hold the following certifications:

- Certified Business Continuity Professional – CBCP
- Certified Business Resilience Auditor – CBRA
- Associate Fellow Business Continuity Institute – AFBC

Business Technology Resilience partners with GEOC (Global Ensuring Ongoing Operations) and GEOC partners with various multiple industry and professional groups such as FEMA. There are multiple efforts to enhance our BTR from all areas (contractual, legal etc.) to make it more resilient.

Aon has won "awards of excellence" from DRI International. DRI International is a non-profit that helps organizations prepare for and recover from disasters.

Please see the DR/BC Ongoing Operations Overview in the **Appendix** section.

a. Employee training (describe your organization's training plan, and how frequently your plan will be shared with employees).

A number of internal vehicles are used for business continuity awareness including information provided during new hire orientation, postings on the company intranet, and training offered through Aon's training program. Additional awareness campaigns and training are conducted for potential high-risk incidents (i.e., hurricane season, etc.).

b. Identified essential business functions and key employees (within your organization) necessary to carry them out.

Every Business Continuity Plan Owner is required to review mission critical activities and ensure there are no "key" person dependencies. In cases where dependencies exist, an alternate is to be identified and appropriately briefed. Confirm personnel who currently delivers mission critical activities. Identify and document named alternates who can be deployed from other locations or other less critical activities. Confirm key local suppliers and review service level agreements with respect to their arrangements for a Pandemic event and then document suitable alternates to the key suppliers.

c. Contingency plans for:

i. How your organization will handle staffing issues when a portion of key employees are incapacitated due to illness.

Aon has included a Pandemic scenario in its business continuity planning since 2007 through the Business Impact Analysis and Business Resumption Planning process. The plan takes into account colleague absenteeism from 20% to 50% and up to full site closure.

Aon has established a Corporate Health Crisis Management Task Force to monitor the threat of a pandemic or any other type of heath crisis. Educating and creating awareness among colleagues about the seriousness of health crisis and precautionary measures to be taken to promote good health are fundamental to minimizing effects, should an outbreak occur. Educational materials have been published on Aon's internal news database to be viewed by all colleagues, and regular updates occur as part of our Health Crisis Awareness and Education Program. The task force meets regularly to assess the threat, continuously review current plans, assess any gaps, and make enhancements where appropriate.

Aon has defined criteria for colleagues and vendors based on the defined levels of contamination within a location with specified triggers for actions and considerations. A copy of the Aon Health Crisis Management Plan is available upon request.

ii. ***How employees in your organization will carry out the essential functions if contagion control measures prevent them from coming to the primary workplace.***

Identify and document those personnel who could deliver all or part of their role virtually.

d. ***How your organization will communicate with staff and suppliers when primary communications systems are overloaded or otherwise fail, including key contacts, chain of communications (including suppliers), etc.***

Capacity planning is part of our normal business process. The capacity planning unit monitors capacity on a daily basis, creates a broad capacity plan on an annual basis, and revises the plan periodically. This plan is built using input provided by Aon's business units on growth of the business, taking into account computing growth from existing clients, clients adding new services, new application functionality, and new clients.

Our comprehensive capacity planning effort guarantees that additional capacity is installed before service levels are adversely impacted.

Disk space is carefully managed and as with processors, our planning provides more capacity based on forecasts and is installed ahead of business impact. All data files are fully locally and remotely mirrored on our EMC storage subsystems.

Data is maintained by DB2 through data sharing. Our online systems are driven through CICS. Our implementation dynamically balances incoming online and batch work across multiple z/OS images within the sysplex. By spreading work across sysplex members, we are able to sustain higher loads than a single system as well as make applications continuously available across scheduled and unscheduled system outages.

Because we have successfully implemented Parallel Sysplex, 50% and 100% growth in volumes are fairly simple to absorb by adding additional processors and starting DB2 data sharing members of the existing DB2 groups. Batch and CICS systems can be started and managed. Because we are running only multiple production machines, additional computing power can be accomplished by adding more processing elements within the existing machines or adding more systems. We have grown our environment rapidly to address our business needs. If we were to encounter an overload situation in which our systems are unable to handle, the PSERS consulting team would reach out to you directly to inform you of any situation that might be impactful.

e. ***How and when your emergency plan will be tested, and if the plan will be tested by a third-party.***

Business Continuity Plans are reviewed annually. Aon recently switched our data centers to CyrusOne in 2018. Actual test results are not available yet but will be sometime around autumn of 2019.

Plans are regularly tested in accordance with the program standards. Exercises are developed and conducted based on criticality using one of Aon's acceptable methods. Action plans for identified deficiencies are developed. Documented results are either drafted by or submitted to the appropriate leader in the Business Technology Resilience (BTR) program.

The BTR program exercises various aspects of plans on varying schedules.

III-4. Mandatory Minimum Qualifications

A. ***The Offeror must meet all of the following minimum qualifications, and agree to meet each of the following requirements, to be given further consideration. <u>Failure to satisfy each of the minimum qualifications, or agree to meet each of the following requirements, will result in the immediate rejection of the proposal</u>.***

1. ***As of December 31, 2018, the Offeror must have at least five (5) tax-exempt clients, of which at least three (3) are public pension plan clients having over $10 billion in assets, for whom it provides investment consulting work at both fund- and asset-class levels. Duties related to each engagement must include asset allocation, asset/liability, and risk analysis.***

   AHIC provides consulting services to 32 U.S. retainer public pension clients. Within our public pension clients, we have 15 with over $10 billion in assets under advisement. Services include asset allocation studies, asset-liability analysis/spending policy, and risk analysis (as of June 30, 2018).

2. ***The Offeror must have been in the business of providing investment consulting services for at least five years, evidenced by a certificate of incorporation or copy of Form ADV as well as documentation of investment consulting clients (including venture capital/private equity/real estate consulting clients) which date back five years.***

   AHIC has provided investment consulting services through legacy organizations since 1974.

   Please refer to the **Appendix** section for AHIC's Form ADV Part 2A and 2B.

   Due to confidentiality reasons, we cannot disclose documentation of investment consulting clients. However, we have provided the breakdown of our clients by plan type below (as of June 30, 2018).

Client Type	Assets Under Advisement	Number of Clients
Corporate Clients	$598 billion	309
Public Clients	$1,518 billion	32
Taft-Hartley and Union-related Benefit Plans	$22 billion	8
Non-Profit	$128 billion	118
HNW/Trust	$1 billion	2
Insurance	$5 billion	4
Wealth	$7 billion	4
Total	**$2,279 billion**	**477**

3. The Offeror must be a Registered Investment Advisor with the SEC under the Investment Advisors Act of 1940. Provide a copy of the latest Form ADV Parts I and II.

Yes, AHIC is a registered investment advisor with the SEC under the Investment Advisors Act of 1940. ADV Form Parts I and II were replaced by ADV Parts 1A and 2A and 2B. It is our policy to include Parts 2A and 2B with our proposals. Upon request, we'll be happy to provide Part 1A, which is approximately 120 pages.

Please refer to the **Appendix** section for AHIC's Form ADV Part 2A and 2B.

4. The primary consultant and principal assistant that will be assigned to the PSERS account must each have at least five years' experience analyzing, monitoring, recommending for investment, or investing in, each asset class recognized by PSERS in its Investment Policy Statement, Objectives, and Guidelines, which can be obtained at http://www.psers.pa.gov/About/Investment/Pages/Guide.aspx.

Claire Shaughnessy, partner, will continue to serve as the lead consultant for PSERS, with the addition of Kevin Vandolder, partner, who will co-lead as the defined contribution lead consultant. Amanda Janusz and Daren Moran, senior consultants, will be the principal assisting consultants. Claire joined the AHIC in 2010 and has over 25 years of institutional investment experience analyzing, monitoring, recommending for investment, or investing in, each asset class recognized by PSERS in its Investment Policy Statement, Objectives, and Guidelines. Kevin has more than 20 years of experience serving defined contribution plan clients and researching defined contribution issues. He joined AHIC in 1996 and has 25 years of institutional investment consulting experience. Amanda joined AHIC in 2007 and has more than 10 years of investment experience and Darren joined AHIC in 2011 and has 8 years of investment experience. Both Amanda and Darren advise clients on their investment policy, asset allocation, investment manager evaluation and selection, and performance evaluation. Given the size of the relationship, Steve Cummings, Global Head of Investment Consulting, will act as the Executive Sponsor for this relationship. Steve has over 25 years of investment consulting experience with large investors such as PSERS[3].

5. The Offeror must have, or have access to, a database sufficient in size and scope to allow an analysis of the risk and returns of investment firms and each of their strategy offerings.

AHIC uses a combination of internal and external databases to support the manager research process. eVestment Alliance serves as our primary screening tool for managers and strategies across the publicly traded asset class space. We conducted a thorough build vs. buy analysis to determine the best initial screening tool for managers and strategies and find eVestment to be a standard across the industry for this purpose. Additionally, data integrity and timeliness of data updates make it a compelling tool to conduct initial screening on managers and strategies.

Investment managers do not pay any fees to upload information on eVestment, making it accessible to all managers, regardless of size. eVestment currently has over 8,000 products across the broad asset classes and we continuously encourage the broad manager community to update information on their strategies into eVestment.

While we use an external database for our initial manager screening, we also maintain a proprietary internal database that serves as a repository for our research notes, ratings, quantitative analysis, etc. In early 2015, AHIC released a new investment manager research platform that brings exciting and high-tech features to our research professionals and consultants. This system allows us to more efficiently

[3] All data provided as of December 31, 2018.

manage the information we gather and assess across a wide universe of investment products. We utilized an external technology vendor's platform and customized it to our needs.

Our database, InView, is built upon state of the art technology, which allows for easy access, storage, and retrieval of information on nearly 10,239 investment managers and over 23,000 products (as of September 30, 2018). The latest search and navigation tools are built into InView, and the home page is customizable, bringing the information most relevant to researchers to the front and center. Additionally, the database maintains a complete history of our ratings, analysis, and research based on our coverage of these strategies over time. We do not sell our database to third parties.

6. ***The Offeror's primary consultant must not have provided general consulting services to either the Commonwealth of Pennsylvania, State Employees' Retirement System, or the Commonwealth of Pennsylvania, Pennsylvania Municipal Retirement System during the past three years.***

   Claire Shaughnessy and Kevin Vandolder have not provided consulting services to the Commonwealth of Pennsylvania, State Employees' Retirement System, or the Commonwealth of Pennsylvania, Pennsylvania Municipal Retirement System during the past three years.

7. ***The Offeror will be required to reimburse PSERS for, or pay directly on PSERS' behalf, the reasonable travel expenses actually incurred by PSERS, if any, (i) for members of PSERS' professional investment staff to travel to Offeror's location for due diligence and/or to discuss performance results, economic outlook, investment strategy, organization changes and other pertinent matters; (ii) to attend investment conferences, training, seminars or similar events sponsored by Offeror (or any affiliate of Offeror relating to the services provided under this Agreement); and (iii) to attend meetings and interviews at existing or prospective investment manager sites. Reimbursable or directly payable expenses will include airfare, automobile rental, lodging, meals, Offeror-sponsored event registration fees, and other travel-related expenses at maximum allowance rates established by the Commonwealth Management Directive 230.10 as revised, Travel and Subsistence Allowances. The reimbursable or directly payable expenses for each of (i), (ii), and (iii), above, will not exceed $25,000 per calendar year.***

   AHIC confirms that we will provide reimbursement for these expenses up to the requested limit.

8. ***Offeror will be required to perform services under this agreement subject to the exercise of that degree of judgment and care under the circumstances then prevailing which persons of prudence, discretion, and intelligence who are expert in such matters, exercise in the management of like matters, not in regard to speculation but in regard to the permanent disposition of the Fund, considering the probable income to be derived therefrom as well as the probable safety of the invested capital. Offeror will be required to acknowledge, with respect to PSERS and the Fund and/or Trust, that, without qualification, it is a "fiduciary" as that term is defined in the Employee Retirement Income Security Act of 1974 (ERISA), regardless of the applicability of ERISA to this agreement.***

   AHIC acknowledges that in performing its services, it is a fiduciary to the extent of its investment advice and will act in accordance with the standards of care applicable to fiduciaries under Title I of the Employee Retirement Income Security Act of 1974, as amended (ERISA).

9. ***Offeror will be required to include in its consulting services staff professionals dedicated to, and expert in, investment risk, fiduciary, and investment governance topics.***

   AHIC has specialists experienced in investment risk, fiduciary, and governance services. Jeanna Cullins and her team have been supporting and will continue to provide support to PSERS.

10. ***Offeror must provide and maintain a secure, client-facing, web-based platform that is frequently updated and continuously available to PSERS that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools.***

    Aon's client portal provides clients such as PSERS with direct access to Aon's complete investment manager research including manager ratings, operational due diligence reviews and reports, meeting notes, and thought leadership. New features are continuously being developed and tested with users. The information within the platform is interactive is automatically updated with the most recent data available. Aon is continuing to enhance our client portal and has partnered with Pivotal Labs to upgrade our entire global technology platform. PSERS currently has access to Aon's client portal which provides access to Aon's investment and operational due diligence reports and notes.

B. ***The Offeror's consulting team must provide written responses to each of the aforementioned mandatory qualifications and requirements <u>substantiating</u> how your firm satisfies each qualification and confirming that your firm will satisfy each requirement. The responses must contain sufficient information as prescribed to assure the Board of its accuracy. Failure to provide complete information will result in the rejection of the proposal.***

   Confirmed. Please see our responses provided above for each mandatory qualification.

III-5. Offeror's Qualifications

A. ***Please provide the following information about your firm:***

   1. ***Provide a summary description of your firm including the name, year formed, history, ownership structure, names of owners or partners, subsidiary or affiliate relationships, and the reporting and control structure. If you are an affiliate or subsidiary of another company, what percentage of the firm's total revenue does your division generate? Please describe the organizational structure and your relationship to the parent company and any other subsidiaries. List services to the investment community (trading, investment management, database) other than investment consulting services, provided by your firm, as well as services of any parent, subsidiary, or affiliate. If investment consulting is not your only line of business, please make clear in answering these questions the history and circumstances of your entrance into investment consulting.***

      Aon Hewitt Investment Consulting (AHIC) is the U.S. investment consulting division of Aon, with headquarters in Chicago, IL. AHIC is a direct subsidiary of Aon Consulting Inc. and an indirect wholly owned subsidiary of Aon plc (NYSE: Aon), which is a publicly traded company. The firm combines the extensive resources of Hewitt Investment Group, EnnisKnupp, and Aon Investment Consulting into one powerful investment consulting firm.

Hewitt Investment Group began providing institutional investment consulting services in 1974; EnnisKnupp was founded in 1981 by Richard Ennis and Jim Knupp; and Aon Investment Consulting commenced business in 1986.

AHIC came together in its current form in 2010 when Hewitt Associates acquired Ennis Knupp & Associates and subsequently merged with Aon Corporation.

Additional information can be found in the Aon Proxy Statement, located on the Investor Relations Page on www.aon.com.

Shareholders

As of April 18, 2018, the beneficial owners of 5% or more of Aon's Class A Ordinary Shares entitled to vote at the Annual Meeting and known to the Company were:

Name and Address of Beneficial Owner	Number of Class A Ordinary Shares	Percent of Class (1)
The Vanguard Group 100 Vanguard Blvd. Malvern, PA 19355	17,583,612(2)	7.18%
Massachusetts Financial Services Corporation 111 Huntington Avenue Boston, MA 02199	17,426,936(3)	7.12%
BlackRock, Inc. 55 East 52nd Street New York, NY 10055	15,339,874(4)	6.26%

(1) As of April 18, 2018, we had 244,875,319 Class A Ordinary Shares outstanding.

(2) Based upon information contained in a Schedule 13G/A filed with the SEC on February 8, 2018 pursuant to Rule 13d-1(b) of the Exchange. The Vanguard Group is a registered investment advisor and has (a) sole voting power as to 360,440 Class A Ordinary Shares; (b) shared voting power as to 59,038 Class A Ordinary Shares; (c) sole dispositive power as to 17,172,448 Class A Ordinary Shares; and (d) shared dispositive power as to 411,164 Class A Ordinary Shares.

(3) Based upon information contained in a Schedule 13G filed with the SEC on February 9, 2018 pursuant to Rule 13d-1(b) of the Exchange Act. Massachusetts Financial Services Company is a parent holding company and has: (a) sole voting power as to 16,252,921 Class A Ordinary Shares; (b) shared voting power as to no Class A Ordinary Shares; (c) sole dispositive power as to 17,426,936 Class A Ordinary Shares; and (d) shared dispositive power as to no Class A Ordinary Shares.

(4) Based upon information contained in a Schedule 13G/A filed with the SEC on January 30, 2018 pursuant to Rule 13d-1(b) of the Exchange Act. BlackRock, Inc. is a parent holding company and has: (a) sole voting power as to 13,150,523 Class A Ordinary Shares; (b) shared voting power as to no Class A Ordinary Shares; (c) sole dispositive power as to 15,339,874 Class A Ordinary Shares; and (d) shared dispositive power as to no Class A Ordinary Shares.

Aon Overview

There are three general business components of Aon—Aon Hewitt, Aon Risk Solutions, and Aon Securities.

- **The Townsend Group ("Townsend"):** On December 29, 2017, Aon announced it had completed its acquisition of The Townsend Group (Townsend), majority owned by Colony NorthStar, Inc. Townsend is a provider of global investment management and advisory services primarily focused on real estate and real assets.

Aon Securities LLC ("ASL"): ASL is a FINRA registered broker-dealer and an SEC registered investment adviser, and an indirect subsidiary of our ultimate parent, Aon plc. Interests in the Aon Hewitt Group Trust (AHGT), Liquid Alternatives Fund (LAF), Opportunistic Alternatives Fund (OAF), Aon Private Credit Fund (APCF), and Aon Hewitt Institutional Funds, (AHIF) are also offered through ASL, which is not remunerated for this service. ASL often plays several roles when engaging with its clients, including structuring and distribution of securities. On the structuring side, ASL advises on the details of a proposed transaction, including the duration, pricing, and terms and conditions of securities. Once structured, ASL also sells or distributes the securities to a wide variety of investors (i.e., acts as a placement agent). As part of ASL's sale or distribution of securities, ASL may come into contact with AHIC clients as potential investors in securities being distributed by ASL. Only properly FINRA licensed registered representatives can directly engage in the sales or distributions of AH funds offered by ASL acting as placement agent. AHIC does not receive any commission for any sales of ASL distributed securities. AHIC's compensation is derived from asset-based advisory fees based on the AUM of the client's portfolio for its discretionary services regardless of the use of AH private funds or unaffiliated products/services. AHIC's advisory fees are the direct compensation paid by the client to AHIC as disclosed under the terms of a discretionary investment management agreement.

- **Aon Retirement Plan Advisors, LLC ("ARPA")** is a registered investment adviser, and like us, is a wholly owned subsidiary of Aon Consulting, Inc. ARPA provides investment consulting services primarily to smaller retirement plans (typically under $75 million in plan assets) and to companies providing certain executive benefits to their employees.
- **Aon Trust Company LLC ("ATC")** is an Illinois non-depository, state-chartered bank. AHIC serves as investment adviser with limited discretionary authority to the Aon Hewitt Collective Investment Trust (AHCIT), of which ATC is Trustee. AHIC offers the AHCIT to certain clients. Additional information on the AHCIT, including its structure, risk factors, conflicts of interest, tax-related information, fees and expenses – including the fees paid to AHIC - and other important information are available within the AHCIT private offering statement. **Aon Hewitt Limited ("AHL")** is a UK registered company that has been regulated by the UK's Financial Conduct Authority to provide regulated products and services since September 2011. AHL's main focus is on advising UK pension schemes, Trustees, and scheme sponsors on managing pension risks, setting investment strategies, improving member engagement, and providing member administration services. In addition, AHL provides HR and outsourcing services to clients.
- **Aon Hewitt, Inc.** is a wholly owned subsidiary of Aon Canada and part of the Aon plc group of companies. Aon Hewitt, Inc. offers a range of sophisticated advisory and consulting services in risk control and risk management, reinsurance, and human capital. The Canada Retirement & Investment Consulting organization consists of retirement consultants and actuaries who advise and support organizations in actively managing the risks of their retirement benefit programs.

For a listing of all our subsidiaries, please refer to our Annual Report that can be found on our website at: http://ir.aon.com.

AHIC Experience

AHIC has been providing investment consulting services to foundations, endowments, defined benefit and defined contribution retirement plans and operating funds for over 40 years. Following are a list of services we are able to provide to our clients:

- Development of Investment Policy
- Recommendations and Implementation of Investment Structures
- Investment Manager Monitoring and Due Diligence
- Custodian Selection and Oversight

- Mission Related Investment Strategy Research and Recommendations
- Investment Program Evaluation
- Performance Calculation
- Transition Management Oversight
- Investment Manager Selection
- Asset Allocation Analysis
- Asset/Liability Studies
- Portfolio Risk Analysis
- Private Equity Advisory Services
- Real Estate Advisory Services
- Delegated Services
- Board/Committee Governance Strategic Planning
- Investment Education
- Fiduciary Reviews
- Governance Diagnostics
- Fiduciary and Governance Training
- Policy development and review
- Strategic Planning
- Board Self-Assessments
- Executive Director and CIO evaluations
- Opportunistic Strategies Advisory Services

All of AHIC's revenue comes from consulting services which include advice on investment policy, investment portfolio structure, manager research and selection, cost and transition management, discretionary services, master trustee/custodian selection and oversight, board/committee governance, fiduciary audits and operational reviews, strategic planning, fiduciary education, private equity, real estate, and liquid alternatives.

2. *Do senior executives have ownership interests in the firm? If so, how much?*

Senior employees are eligible for annual incentives paid in restricted Stock Units (RSUs). Additionally, employees may participate in the firm's employee stock purchase plan (ESPP) in which participating employees can purchase company shares at a discounted price.

3. *State the name, title, address and telephone number of the proposal contact person. Will the primary consultant assigned to PSERS account have ownership interest in the firm or is there a specific arrangement for sharing in the profits earned by the enterprise (e.g., salary, bonus, group/individual performance incentives, profit sharing, etc.)? Please describe.*

The primary contact for the overall PSERS relationship is:

Claire Shaughnessy, CFA
Partner
Merritt 7 Corporate Park, Building 201
Norwalk, CT 06851
+1.203.523.8163 | claire.shaughnessy@aon.com

Consultants are compensated through a combination of base salary commensurate with industry standards and bonuses based on individual contributions, as well as success of the group and firm as a whole. Incentive compensation for partner level employees is significantly impacted by the success of the investment consulting practice. The success of our business is driven by providing high quality service to our clients and creating long term relationships. We do not assign a specific percentage of compensation based on client retention/satisfaction. However, consultants who experience recurring service issues with clients may have their annual incentives reduced or eliminated. In addition, a consultant's future employment is predicated in large part on his or her ability to serve clients well.

Our efforts to attract and retain high quality professionals include regular review of our compensation policies to ensure our compensation structure appropriately rewards for work effort, productivity, quality of work, and client retention. In addition, nonmonetary benefits are provided, including work environment free from conflicts of interest, ability to pursue education (e.g., graduate degree, CFA designation, relevant coursework), ability to perform a variety of functions, and access to leading edge industry information and technology.

We are unable to discuss specific details of any individual retention plans; however, we have both annual incentive compensation and longer-term incentive plans in place to ensure retention of our senior talent. A portion of our annual incentives (35% for incentives >$100,000 and 20% for incentives >$50,000 and <= $100,000) are paid in Restricted Stock Units (RSUs) that vest over three years (1/3 per year). Executives are eligible for long term incentives annually and these awards are typically RSUs that vest over 5 years (20% per year).

B. *Please provide the following financial information:*

1. *Audited financial statements for the past three (3) years.*

Out of respect for our environment, Aon does not provide printed 10-Ks, annual reports, or financials in our proposal responses. Below is a link to Aon's Annual Report on Form 10-K for the year ended December 31, 2018, as well as preceding years starting from 2006. The website contains revenue information by business segment: http://ir.aon.com.

2. *Any special audit reports concerning internal controls for the past three (3) years.*

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

C. *Within the past five years, have there been any significant developments (e.g., changes in ownership, personnel reorganization, new business ventures) in your firm? If so, describe these developments in detail.*

On December 29, 2017, Aon announced it had completed its acquisition of The Townsend Group (Townsend), majority owned by Colony NorthStar, Inc. Townsend is a provider of global investment management and advisory services primarily focused on real estate and real assets. On May 1, 2017, Aon completed a definitive agreement with Blackstone to sell its Benefits Administration, HR Business Process Outsourcing and related Consumer Experience businesses, subject to customary closing conditions. As of

January 1, 2015, the U.S. investment consulting group rebranded its name to Aon Hewitt Investment Consulting, Inc. from Hewitt EnnisKnupp, Inc.

D. *Do you anticipate any significant changes in your firm? If so, describe these anticipated changes and their impact on clients.*

We do not anticipate any near-term changes in our ownership structure. With Aon announcing the acquisition of The Townsend Group (Townsend) on December 29, 2017, we do anticipate some modest internal reorganization as the Townsend colleagues come onboard.

E. *Have any senior executives left the firm in the past five years? Please describe the circumstances of their departure(s).*

In the past five years, AHIC has had two senior partners depart the firm. Due to employee confidentiality reasons, we are unable to provide employee specific departure information. Reasons for leaving include retirement as well as other reasons, which we cannot share due to employee confidentiality.

F. *Explain your firm's goals for expansion and accepting new client business. How will the firm control the quality of service to clients? Include the following:*

1. *Total number of accounts that will be accepted.*

We do not have any maximum growth targets. Instead, we strive for growth at a measured pace. We are selective about pursuing growth opportunities, as our first priority is to consistently provide the highest quality service to our clients. We treat our client relationships as partnerships, valuing the quality of each more than the overall quantity.

2. *Total assets that will be accepted.*

We do not set specific limits on the number of clients that AHIC will accept, but we seek to assure that we will not take on more clients than we can responsibly handle.

3. *Plans for additions to professional staff and approximate timing in relation to growth of accounts and/or assets.*

In recent periods, we have used our position of financial strength to continue adding resources to our research and consulting areas. Our growth of professional staffing correlates to our growth as a business. Our focus is to maintain personalized service without sacrificing our relationships with existing clients for the sake of acquiring new clients by consistently reviewing consultant's capacity based on the complexity and number of his/her client relationships.

G. *What is the location of firm headquarters and any branch offices? If several locations, what quality controls does the firm use to ensure consistency of services among clients, and how does the firm handle research, information processing and databases?*

As-of September 30, 2018, AHIC has 27 offices with 339 colleagues. As of the same date, AHIC has 19 virtual colleagues.

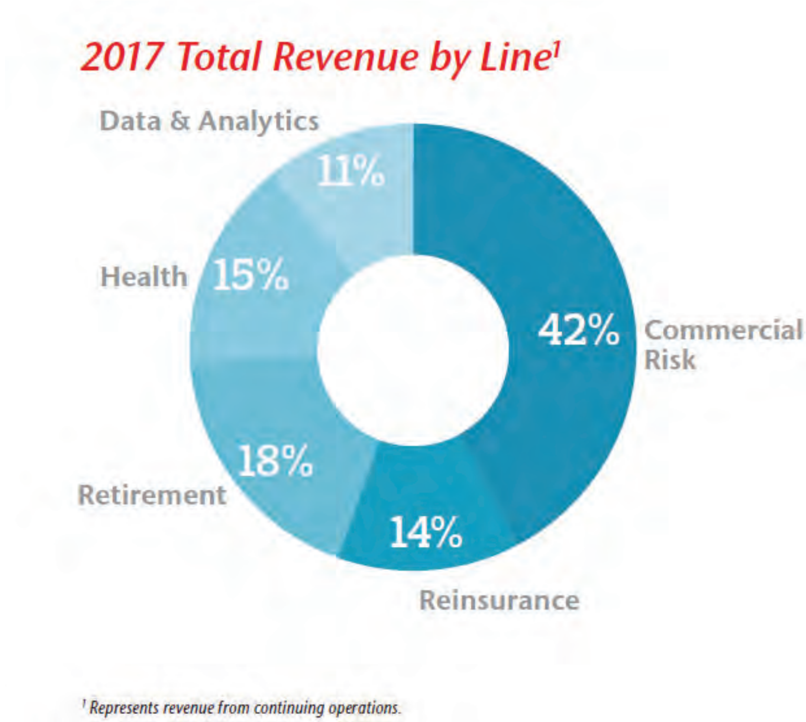
Office Location	Colleagues
Atlanta, GA	53
Bloomington, MN	2
Boston, MA	1

Office Location	Colleagues
Charlotte, NC	1
Chicago, IL	179
Clayton, MO	3
Dallas, TX	1
Denver, CO	4
Garden City, NY	1
Irvine, CA	1
Jacksonville, FL	1
Lincolnshire, IL	20
Los Angeles, CA	1
New York, NY	9
Norwalk, CT	29
Radnor, PA	5
Raleigh, NC	3
Richmond, VA	4
San Francisco, CA	2
Seattle, WA	4
Somerset, NJ	4
Southfield, MI	1
Tampa, FL	4
The Woodlands, TX	1
Waltham, MA	3
Washington, DC	1
Winston-Salem, NC	1

H. List your firm's lines of business and approximate contributions of each business to your firm's total revenue. If you are an affiliate or subsidiary of another company, what percentage of the firm's total revenue does your division generate? Please describe the organizational structure and your relationship to the parent company and any other subsidiaries.

Aon plc (NYSE:AON) is a leading global professional services firm providing a broad range of risk, retirement, and health solutions. Our 50,000 colleagues in 120 countries empower results for clients by using proprietary data and analytics to deliver insights that reduce volatility and improve performance.

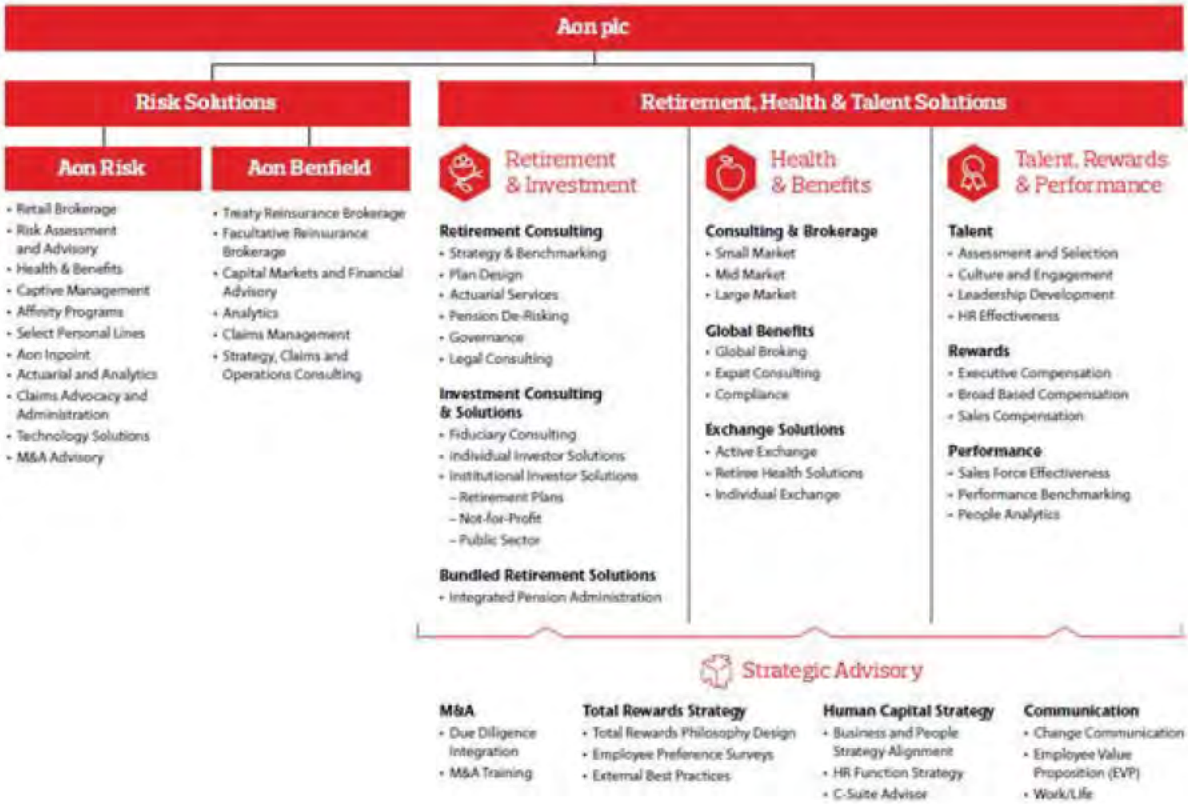
In our fiscal year 2017 (January 1, 2017 through December 31, 2017), Aon reported total revenues of $10.0 billion. Aon operates under a single P/L with five revenue streams. These include: Commercial Risk Solutions, Reinsurance Solutions, Retirement Solutions, Health Solutions, and Data & Analytic Services. We provide the 2017 revenue breakdown by line below. Please note, we do not publicly disclose revenues for individual services within our lines of business.



Additional information on our company's financial results can be found on our website at: http://ir.aon.com.

All of AHIC's revenue comes from consulting services which include advice on investment policy, investment portfolio structure, manager research and selection, cost and transition management, discretionary services, master trustee/custodian selection and oversight, board/committee governance, fiduciary audits and operational reviews, strategic planning, fiduciary education, private equity, real estate, and liquid alternatives.

The organizational structure of our parent company is set forth below, as of January 1, 2019:



Investment advisory services provided by Aon Hewitt Investment Consulting, Inc.; additional services provided by Aon affiliated entities.

I. Over the past five years, has your organization or any officer or principal been involved in any litigation or other legal proceedings relating to your investment or consulting activities? If so, provide a brief explanation and indicate the current status.

[redacted]

[redacted]

Case ID: 221102792

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

J. ***Has your firm or any officer, director, partner, principal or employee ever been the subject of any non-routine investigation or inquiry by a governmental agency or self-regulatory body regarding fiduciary responsibilities or other investment-related matters? If so, describe each instance and summarize any directives or letters of opinion that were issued.***

[redacted]

K. ***Please provide a copy of the most recent review by a government agency or regulatory body of your firm that relates to the services sought by PSERS.***

[redacted]

[redacted]

[redacted]

[redacted]

L. *Please describe the levels of coverage for errors and omissions insurance and any fiduciary or professional liability insurance your firm carries. Is the coverage on a per client basis, or is the dollar figure applied to the firm as a whole? List the insurance carriers. Has your firm ever submitted a claim to your errors and omissions, liability, fiduciary or fidelity bond carrier(s)? If so, describe each instance.*

AHIC is insured as a subsidiary under Aon's Professional Liability insurance policy, inclusive of E&O coverage, which applies to Aon and its subsidiaries on a per claim, worldwide basis, where legally permissible***. This policy includes coverage for client claims made against AHIC for services it provides in a fiduciary capacity to its clients.***

Insurance Coverage Type	Primary Carrier	AM Best Rating as of 01/02/2019	Amount of Coverage
Professional Liability (Includes E&O, Cyber Liability)	Illinois National Insurance Co.	A XV	Up to $5 million per claim and in the aggregate.

Clients sometimes inquire about **Fiduciary insurance** under the mistaken impression that this policy would respond to claims that the clients might bring. Aon's professional liability (E&O) coverage is the insurance maintained by Aon that is relevant to potential client claims. Aon's fiduciary liability protects Aon from claims that could be brought by participants in Aon's own employee benefit plans. The Fiduciary policy has professional services exclusion, meaning that it does not cover liability arising from the services that Aon provides to clients. To avoid creating confusion with the client about which insurance would be relevant to claims arising from service errors, Aon does not provide detail on its fiduciary insurance, but instead identifies its professional liability insurance coverage as the relevant coverage.

AHIC is part of a greater Aon organization that serves as one of the world's largest Professional Services firms; as a result, from time to time Aon is subject to claims, which may include errors and omissions claims. In the context of Aon's size, the rate of claim is low. Additional information on claims against Aon is included in the Commitments and Contingencies footnote of Aon's 10Q filings with the SEC. Aon's latest 10Q filing is available under the "filings" section at: http://www.sec.gov.

M. Present the previous experience and expertise of the firm providing the services proposed for PSERS.

1. List the names of pension funds your firm has as clients, indicating whether your firm represents these clients on a discretionary or non-discretionary basis.

We have worked with public funds for over 30 years and currently serve 32 retainer public fund clients with approximately $1,518 billion in assets under advisement (as of June 30, 2018), including the plans listed below[4]. (Please note, the clients who have elected to remain confidential has been excluded from the list):

Anne Arundel County Public Schools	Ohio Public Employees Retirement System
Arkansas Teacher Retirement System	PARISH OF JEFFERSON
Colorado Public Employees' Retirement Association	Pennsylvania Public School Employees' Retirement System
Commonwealth of Massachusetts	San Diego City Employees' Retirement System
Commonwealth of Puerto Rico	San Diego County Employees Retirement Association
District of Columbia Water & Sewer Authority	Sonoma County Employees' Retirement Association
Employees Retirement System of Texas	State Board of Administration of Florida
Fairfax County Public Schools	Teacher Retirement System of Texas
FDIC	Teachers' Retirement System of Louisiana
Kentucky Teachers' Retirement System	Tennessee Valley Authority
Michigan Department of Treasury	The Housing Authority of the City of Atlanta, Georgia
Minnesota State Board of Investments	Virginia Retirement System
Nebraska Investment Council	Washington Education Association Inc
New Jersey Division of Investment	Washington Metropolitan Area Transit Authority
New York State Teachers' Retirement System	

3. List your five largest public pension plan clients by assets. For each of these pension fund clients, please provide asset value of client by asset class, year client retained your firm, average five year asset mix of client, percent of funds for which you provided consulting services, and the five year annualized total return of the client funds' investment portfolio as of June 30, 2018.

Client Name[4]	Assets Under Advisement	Year Client Retained the Firm	Average 5 Yr Asset Mix (EQ/FI/Alt)[1]	% of Funds	5 Yr Annualized Net Total Return
Confidential	$553,000,000,000	2005	N/A (DC Plan)	100%	N/A (DC Plan)
State Board of Administration of Florida	$188,000,000,000	1996	62/21/17	100%	9.6%
Teacher Retirement System of Texas	$151,000,000,000	2002	57/15/28	100%	8.1%
New York State Teachers' Retirement System	$118,000,000,000	2010	61/27/12	100%	10.5%

[4] Representative Client list as of most recent quarter-end. Inclusion in this list does not represent a recommendation or endorsement of Firm's products and/or services, nor are they exclusively representative of the product(s) discussed herein. Clients included in this list are the institutional clients which have provided written consent to Firm to be named in marketing materials. It is not known whether all clients listed above approve or disapprove of AHIC or the advisory services provided.

Client Name4	Assets Under Advisement	Year Client Retained the Firm	Average 5 Yr Asset Mix (EQ/FI/Alt)[1]	% of Funds	5 Yr Annualized Net Total Return
New Jersey Division of Investment	$79,000,000,000	2013	59/21/18	100%	8.7%

Please note: Data as of June 30, 2018

[1] Equity includes public and private equity; Fixed Income includes public fixed income and cash; Alternatives includes Private Real Estate, Hedge Funds, Real Assets and Risk Parity

Please note: It is not known whether clients listed approve or disapproved of AHIC or the advisory services provided. Returns shown are net of all fees. Return calculations include the reinvestment of dividends. Past performance is not a guarantee of future results.

3. ***Please complete the following for current clients:***

Asset Value of Pension Fund Client	No. of Pension Fund Clients	Average Years Clients Retained the Firm
Less than $1 billion	179	10
$1 billion – less than $10 billion	57	11
$10 billion – less than $30 billion	10	14
More than $30 billion	9	9

Please note: Data as of June 30, 2018

4. ***Does your firm operate any funds or other pooled investment vehicles, including, but not limited to, funds of funds? Please identify each.***

Yes. AHIC serves as the investment manager to the Aon Hewitt sponsored pooled vehicles. Additionally, AHIC has investment advisory affiliates that have related parties that sponsor and/or serve as the investment adviser to pooled vehicles.

AHIC's Delegated Investment Solutions practice has been providing outsourced investment solutions since 2009. As defined by ERISA 3(38), we serve as a discretionary investment manager for our delegated/OCIO clients, and as such we take discretion, authority, and control of assets.

Additionally, on December 29, 2017, Aon finalized its acquisition of The Townsend Group, a registered investment adviser and a provider of global investment management and advisory services, with a focus on investments in real estate and real assets.

5. ***Please list the names of pension plan clients that you have added in the last three years, and the assets of each. Specify if DB, DC, or both.***

The firm has gained over 101 retainer clients over the past three years (as of June 30, 2018). Below we list the public fund clients the firm has gained over the past three years. Please feel free to notify us for contacts of additional accounts outside of public funds listed below.

As a courtesy to our clients, please contact us prior to getting in touch with our references.

Public Fund Clients—Gained	Assets[1]
Confidential	$1,000,000,000
Parish of Jefferson	$44,000,000
San Diego County Employees Retirement Association	$12,000,000,000

Public Fund Clients—Gained	Assets[1]
Minnesota State Board of Investments	$70,000,000,000
[1]*Data as of June 30, 2018.* *It is not known whether clients listed approve or disapprove of AHIC or the advisory services provided.*	

6. ***Please provide the names of all pension plan clients that you have lost in the last three years, the asset size of each, and why they were lost. Specify if DB, DC, or both.***

Below is a list of public fund clients the firm has lost in the past three years (July 1, 2015 through June 30, 2018).

Public Fund Clients—Lost	Assets[1]
Township of Abington	$214,820,000
Jackson Health Systems (Public Health Trust)	$555,346,318
Virginia Port Authority	$6,880,000
Montgomery County Public Schools Employees' Retirement and Pension System	$1,445,258,884
Texas Municipal Retirement System[2]	$0
Milwaukee County Deferred Compensation Plan	$317,872,753
Employees' Retirement System of Kansas City, Missouri	$1,081,909,523
South Carolina Retirement System	$30,102,107,036
Florida Department of Financial Services	$17,000,000,000
North Carolina Dept of State Treasurer [2]	$0

[1]*Data as of June 30, 2018.*
[2]*AHIC did not advise on the assets of this client. AHIC provided Fiduciary Services.*

It is not known whether the listed clients approve or disapprove of AHIC or the investment advisory services provided.

Due to client confidentiality reasons we do not disclose client contact information for those who have left. The majority of our lost clients has been the result of mergers/acquisitions or plan terminations. Other reasons include:

- Budgetary considerations
- Client bankruptcy
- Plan oversight changed to internal management
- Another consultant selected in re-bid process
- Differing views on plan matters
- Client outsourced services

7. ***Does your firm have any record or rating system that depicts value it has added over either a random fund selection process or an intelligent indexing approach? If so, please provide and explain.***

Please refer to our Manager Buy-Rated Record in the **Appendix** section.

8. How does your firm evaluate the quality of its consulting services?

Our quality assurance process consists of quality control oversight that works in tandem with compliance regulation.

AHIC has established Investment Practice Interest Groups for Defined Benefit, Defined Contribution and Public Funds. These Interest Groups are led by our Practice Leaders and are comprised of investment consultants with client exposure. Kevin Vandolder as DC Practice Leader heads up the Defined Contribution Interest Group. Kristen Doyle and Mike Comstock co-lead the Public Funds Interest Group. These Interest Group meets quarterly to review a variety of topics of interest and provides a forum for sharing AHIC's best thinking with our consultants regarding investment topics. In addition, AHIC has formalized our best thinking for each practice in a written "Playbook" which is approved by the U.S. Investment Committee. Lastly, our US Client Advisory Investment Consultant practice regularly reviews our client investment programs to ensure consistency of client portfolios with AHIC's current best practices.

Quality control will be handled by all members of the team but primarily will be the responsibility of Claire Shaughnessy and Kevin Vandolder, PSERS' lead consultants, to ensure all reporting, including performance/risk, is provided to Northern Trust with the highest quality of information.

In terms of performance reporting, to help ensure the accuracy of the data we receive from custodians, we follow our standard reconciliation procedures. On a monthly basis, we use data obtained from both clients' custodians and investment managers for performance measurement. Our first step is to independently calculate monthly returns using custodian data and cross check with returns calculated and provided by each investment manager. This allows us to verify the accuracy of the market values and transactions provided by the custodian. Should any discrepancies surface, our next step is to cross check both market values and cash flows between custodian and investment manager statements.

In addition to the above reconciliation, we apply our own review of the reasonableness of the returns by individual account and in aggregate at the asset class and total fund levels. When we find errors or unusual results, we work with the custodian and/or the managers to resolve any anomalies. When meaningful discrepancies persist, we notify the client and seek to resolve any issues.

All our deliverables are reviewed by at least one person (other than the preparer). Further, to ensure quality across our firm, we have a centralized research platform, meaning that our clients do not receive conflicting advice in terms of market views and areas of opportunity.

Lastly, Lyda Iturralde serves as the Chief Compliance Officer for Aon Hewitt Investment Consulting, Inc., as described in the firm's Form ADV that accompanies this response. She joined the firm in July 2015. Lyda oversees a team of compliance professionals dedicated to AHIC. AHIC's CCO reports directly to Aon's Global Chief Compliance Officer, who is aligned directly with Aon's Global Compliance Department, consisting of attorneys and compliance professionals, located throughout the world aligned regionally and by line of business.

N. Describe your research and analysis capabilities, noting supporting human expertise and technology.

AHIC has several teams that the proposed lead consultants will leverage for PSERS. This includes our Investment Policy Services team, Global Asset Allocation team, Global Investment Management team, Trust Services team, Transition Management Team, and our Fiduciary Services team. These teams focus on advancing our knowledge and thought leadership in their respective areas.

- **Global Investment Policy Services (IPS):** AHIC's IPS team (consisting of 14 employees as of September 30, 2018) is focused on risk management and policy development. The team is responsible for managing risk in general, such as: performing asset-liability analyses, asset allocation studies, investment structure reviews, benchmark reviews, and spending analyses. The team also provides top-down, strategic investment advice and researches new investment strategies. The IPS team is active in developing webinars, blog pieces and white papers on investment recommendations made to our client base. The research is original and may come from a brain-storming group—such as the Idea Development Forum—or from client questions and projects that are brought to IPS's attention. Content comes from across the firm, and the most experienced thought leaders are involved with writing and presenting pieces.
- **Global Asset Allocation Team (GAA):** A global team of economists and allocation specialists (consisting of 8 employees, as of September 30, 2018) who discuss asset class trends and develop our firm's medium-term views based upon their analysis. The GAA has been in existence for over 10 years as of September 30, 2018.
- **Aon Center for Innovation and Analytics (IC):** Investment team (consisting of 8 employees, as of September 30, 2018) focused on global high impact solutions often involving the creation of proprietary models and extensive use of data & analytics to solve business challenges. This team was created in 2014.
- **Global Investment Management** Each group in global investment management has asset class-based resources and databases, as well as team specialists that help to properly evaluate managers that our firm recommends. We have been providing clients with manager research resources since our inception in 1974. Investment Management team, consisting of more than 150 full-time global research professionals[5] covering traditional, emerging, and alternative strategies, including operational due diligence (as of September 30, 2018), is dedicated to researching and evaluating investment managers worldwide.
- **Fiduciary Services:** A team (consisting of 3 employees, as of September 30, 2018) with specialists who are aware of trends and legislative changes that make best practices available. The Fiduciary Services team began in 2005.
- **Trust Services Team**: Our dedicated Trust Services team (consisting of 4 employees, as of September 30, 2018) focuses on securities lending and custody banks, along with other related research topics. This team provides insight on best practices in the industry, and a broad knowledge of common institutional peer practices.
- **Transition Management:** AHIC Transition Management team (consisting of 4 employees, as of September 30, 2018) has experience assisting clients with transition events that have involved multiple asset classes and required expertise in complex issues such as derivative usage, foreign exchange transactions, and tax issues in international markets. Our team has knowledge and coverage of qualified transition managers to assist many clients in identifying a transition manager for a particular event or creating a bench of transition managers that are available when an event occurs.

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[5] Total combined research staff as of 9/30/2018 includes 49 GIC Manager Research Staff (AHIC and Aon affiliates manager research colleagues), 21 operational due diligence colleagues (offshore + onshore), 72 Townsend colleagues from advisory, portfolio management and strategy teams (includes all Legacy Aon RE staff, plus 2 Legacy PE Staff), and 12 Legacy PE staff. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes AHIC and its global Aon affiliates.

Following is an organizational chart of the Global Investment Manager Research team, as of September 30, 2018[2]:

[2]Total combined research staff as of 9/30/2018 includes 49 GIC Manager Research Staff (AHIC and Aon affiliates manager research colleagues), 21 operational due diligence colleagues (offshore + onshore), 72 Townsend colleagues from advisory, portfolio management and strategy teams (includes all Legacy Aon RE staff, plus 2 Legacy PE Staff), and 12 Legacy PE staff. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes AHIC and its global Aon affiliates.

1. ***Are your resources internal or external? If any external resources are used, provide a description including the name of vendors providing these resources. How is the information used to inform and advise clients? List investment research reports or studies that you have provided clients in the past 12 months. Describe your capability to carry out special projects requested by PSERS. Provide sample reports that best represent your research capabilities.***

   While 100% of our research is conducted internally, we combine our original research with exhaustive reviews of both professional and academic bodies of literature. We use externally provided data in our analysis. To bolster our internal research efforts, we maintain relationships with prominent academics in the field of finance. We frequently rely on these contacts to review our work, and these researchers often share with us early drafts of their work. These efforts help to ensure that our advice to clients is supported by both sound finance theory and strong empirical evidence. We also participate in a number of industry seminars such as those sponsored by CFA Institute.

AHIC continuously provides proactive advice based on our ongoing research. We conduct topical research that often culminates in recommendations and investment ideas for our clients. We can offer tactical advice (Medium-term Views) based on research conduct by our Global Asset Allocation team.

Below we list the research papers written in 2018. We are happy to provide any of these to PSERS upon request.

2018

- The Real Deal: 2-18 Retirement Income Adequacy at U.S. Plan Sponsors
- Commercial Real Estate Debt Overview
- Global Perspectives on Responsible Investing
- Rethink: Global Pension Risk Governance
- Key Components of Effective Investment Policy Statements for Non-Profit Organizations
- An Overview of the Multiemployer Pension Plan System
- Debating Active vs. Passive - The research is more nuanced than often acknowledged
- Banking on Pensions: Pension Financing in the Banking Industry
- 2018 U.S. Annuity Settlement Market Update
- Key Topics for Non-Profit Organizations in 2018
- Direct Lending: An Investment Opportunity within Private Debt

AHIC has extensive research resources capabilities to assist PSERS in special research projects by leveraging both our manager research and Investment Policy team to evaluate special topics or conduct board education on a number of topics such as the active versus passive management and Making portfolios more fee efficient for example.

Please see the **Appendix** section for copies of the below white papers that demonstrate our research capabilities and ability to help clients formulate investment strategies.

- Alternative Premia
- Alternative Price Bank Capital Relief
- Direct Lending: An Investment Opportunity Within Private Debt

2. Does your firm maintain a secure, client-facing platform that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools?

Aon's client portal provides clients such as PSERS with direct access to Aon's complete investment manager research including manager ratings, operational due diligence reviews and reports, meeting notes, and thought leadership. New features are continuously being developed and tested with users. The information within the platform is interactive is automatically updated with the most recent data available. Aon is continuing to enhance our client portal and has partnered with Pivotal Labs to upgrade our entire global technology platform. The information within the platform is interactive and is automatically updated with the most recent data available.

3. ***Is all firm research, including proprietary research, available to clients regardless of the firm department in which it was created?***

   AHIC's research is available to clients regardless of the firm department in which it was created.

4. ***Is analysis available to clients through firm analysts and software comparing public market managers with their peers? How quickly is this information provided following request?***

   We provide benchmark and peer analysis of managers, which is provided in our performance reports on a quarterly basis.

   Our performance system has peer benchmark information both at the plan level, i.e. Public funds >$1 billion. This plan peer data is available both at the Total Plan and the major asset class level (i.e., Total Equity). In addition, AHIC's performance system has peer manager information for all major asset classes.

   We view benchmarks as a way to understand an individual investment manager's opportunity set and as the context by which we can understand portfolio performance. Beyond this, we also look to peer universes to provide even greater context for manager performance.

   We maintain data on many potential benchmarks in every asset class. We also have the ability to create custom benchmarks for our clients. Our systems and database are very flexible. Our approach generally is focused on identifying the best available benchmark based on the client's objective for the portfolio and the opportunity set used by the investment manager.

   We believe asset-class benchmarks should be the broadest possible measure of that market. For equities, the Dow Jones Total Stock Market Index or Russell 3000 Index is used for U.S. stocks; MSCI All Country World Investable Market Index is used for non-U.S. and global equities. For fixed income, the Bloomberg Barclays Series indices are used, such as the Bloomberg Barclays Aggregate Bond Index, to reflect the appropriate quality and duration parameters of the fixed-income strategy employed.

   We recommend assessing active manager performance over an entire investment cycle, or at least a three-year period.

   - Peer Indices: Long- and short-term returns can be measured against a universe of peers
   - Market Indices: Appropriate for evaluating long-term performance when aligned with the opportunity set

   The finalized peer universe information is typically available 25–30 days after quarter end. Finalized reports with public asset class performance versus benchmarks and peers are available within 25–30 days of quarter end.

5. ***Outline the sources used to obtain data for publication of newsletters or periodicals. Include samples of your publications.***

   We have access to extensive outside research resources which are used for both raw data (such as Bloomberg and Ibbotson) and qualitative research. Data resources are used for proprietary investment research and client education materials. Qualitative research is regularly circulated among consultants, and the findings and impact are evaluated in light of our consultants' experiences. In combining external resources with internal sources, we work to keep abreast of important developments in the financial economies, while avoiding "flavor-of-the-month" investment philosophies and approaches.

We also have access to third-party proprietary software (Style Research) to perform holdings-based style analysis for equity and fixed income portfolios as well as other risk monitoring tools noted below:

- **Style Research Portfolio Analyzer (SRPA).** The Style Research Portfolio Analyzer (SRPA) provides objective holdings-based Style, Structure, Risk, and Performance insights for any domestic or international equity portfolio, fund or fund of funds investment. Covering around 40,000 stocks in 109 equity markets, SRPA provides both fundamental bottom-up Holdings-based *and* top-down Returns-based Style Analysis as well as monthly Performance (attribution) Analysis. Providing flexible Excel-based ready-to-print reports, it is ideally suited for the analysis of dynamically changing, international, equity portfolios.

  Based on the holdings of a portfolio vs. its benchmark (or cash) at one point in time, this detailed analysis reveals the underlying structure (style exposures; style/size distributions, country/sector/stock active positions; risk analysis and risk decomposition; performance attribution; liquidity; currency hedging; etc.) of the portfolio. An analysis may be in a single country, or in a pre-defined or user-defined region.

- **eVestment Alliance.** Used to maintain electronically collected quantitative data from investment managers through detailed questionnaires. eVestment links seamlessly to our InForm system. eVestment Alliance serves as our primary screening tool for managers and strategies across the publicly traded asset class space. Hewitt Investment Group was one of the original clients of the eVestment Alliance database and has helped the firm build its product into a useful data tool.
- **Bloomberg.** Financial database resource that provides market news and data, as well as company analysis.
- **FactSet.** Provider of financial information and analytic applications to investment professionals around the globe.

In the **Appendix** section of this proposal, we include the following samples of our publications:

- Q1 2019 Economic and Investment Views
- Quarterly Investment Outlook - January 2019

6. ***Describe any other service not included in Part IV "Work Statement" that you believe would be beneficial to PSERS and that you are proposing to provide for PSERS.***

We believe that the scope of work outlined in the RFP is comprehensive as it relates to the services that are typically performed by a general consultant. However, the nature of public funds today with complex investment programs is such that other investment-related issues often come up from time-to-time that need to be addressed. We are unique in that we also offer to our major investment consulting clients some resources of our Fiduciary Services and specialized Custodian teams. A list of some of these other services that we can provide to PSERS include:

- Board Self-Assessments
- Executive Director and CIO evaluations
- Master Trustee / Custodian Searches
- Insurance Contract Selection/Negotiation

7. ***State what you believe differentiates your consulting services from your competitors.***

The following areas are our strengths and competitive advantages:

Proactive Advice, Investment Thought Leadership

Thorough research forms the backbone for all our positions and advice. In addition to conducting research on new developments across the capital markets and their ramifications on institutional portfolios, we constantly reassess and challenge our existing positions to ensure that they continue to hold merit. We believe our research, which ultimately forms the basis of our advice on policy and strategies, is well-regarded and widely published and that no other firm produces the quality and quantity of valuable research.

Expertise with Sophisticated Institutional Investors

AHIC has vast expertise in serving as a fiduciary and providing independent advice to clients that range in size from under $3 million to $554 billion in assets (as of June 30, 2018). Our client base is diverse and exposes us to best practices among public funds, corporate funds, endowments and foundations.

Public Sector Knowledge

We currently work with 32 public fund retainer clients with total assets of $1.518 billion as of June 30, 2018. We understand and appreciate the nuances of working in the public sector.

Customized Advice, Client Partnerships

We aim to deliver a high-touch service and engage in the long-lasting partnerships with our clients. Our advice is highly customized and reflects a thorough understanding of each client: their history, their goals and their practical realities. No two clients are alike and so we have no preconceived assumptions about what is best for them. We listen, we learn and we embrace the opportunity to work with forward thinkers on non-traditional approaches to prudent investing. We believe that our decades of experience working with non-standard and forward-thinking clients will serve PSERS well in successfully fulfilling its fiduciary responsibilities.

Alternatives Expertise

Our dedicated team of nearly 100[6] alternatives professionals specializes in private equity, liquid alternatives (i.e., hedge funds) real estate, infrastructure, commodities, timber, and other alternative assets (as of September 30, 2018). We have experience building and overseeing both direct and fund-of-funds-oriented alternatives programs. We also believe we add value to clients' alternative investment even when they employ other firms to act as specialist consultants. We are a valuable "second set of eyes and ears."

Fiduciary Services Practice

Aon has a dedicated team in the Fiduciary Services practice that provides services beyond traditional investment consulting. It's a differentiator for Aon. Much of the work the Fiduciary Services provides is related to an organization's governance, how the fiduciaries exercise their authority as well as how decisions are made, documented and implemented. We focus on assisting clients to enhance their governance framework designed to mitigate fiduciary and governance risk, clearly define and document roles, responsibilities, and reporting requirements, facilitate procedural prudence, aid transparency and accountability, and avoid the unexpected. As part of delivering fiduciary and governance services, we regularly work with defined benefit plans, defined contribution plans, healthcare trusts, various investment trusts, endowments and foundations. We consistently see and advise on industry common and best

[6] Total combined Alts research staff as of 9/30/2018, includes AHIC and its global Aon affiliates.

practices. Our exposure to a wide range of funds makes us well-informed consultants, able to deliver the fiduciary and governance services that PSERS is seeking.

Operational Due Diligence Specialized Team

Our dedicated global Operational Due Diligence team includes 20 persons (as of January 1, 2019) provides in-depth due diligence on all Buy rated managers. Our team has diversified experience with a range of competencies including compliance, operations, governance, and counterparty risk. In addition, our experience not only includes conducting operational due diligence reviews for an internal ODD program but also in a consulting environment, which has unique demands given the range of underwriting standards and deadline/workflow requirements for clients.

Innovative Tools

We have devoted significant resources to our analytical capabilities for maintaining capital market assumptions, asset allocation modeling, asset-liability modeling, risk budgeting, style analysis (both returns-based and holdings-based), and spending model analysis. Many of our models are built in-house and can be custom-tailored to suit individual client needs. We review our processes and tools on an ongoing basis to ensure they are up to date and meeting our needs, as well as our clients' needs.

Talent Depth

In the U.S., we have 365 employees dedicated to investment consulting services as of September 30, 2018. The firm has dedicated resources committed to every critical investment area in which clients may seek advice. Deep professional strength allows us to dedicate resources to research opportunities, conduct due diligence, and develop client-specific solutions to meet individual needs.

Our Culture

Our organization fosters a culture that: 1) challenges conventional thinking, 2) produces original research and analysis, with an orientation toward practicality of advice, 3) synthesizes our best thinking from a diverse set of professionals into a well-reasoned, firm-wide perspective on issues, and 4) puts the clients' interests first, without exception.

8. ***Explain in detail any potential for conflict that would be created by your firm contracting with PSERS, including other client relationships that may inhibit services to PSERS and/or the other clients.***

AHIC does not perceive any actual conflicts of interest in providing investment consulting services to PSERS.

9. ***How does your firm resolve potential conflicts of interest in recommending or making investments in prospective programs among clients?***

In all aspects of our investment consulting practice we seek to avoid any real or potential or even perceived conflicts of interest. We do not accept fees or gratuities from managers. Our ethics policy is very strict in this regard.

Furthermore, AHIC's Conflict of Interest Policy states that the firm's manager recommendations are available to all clients at the same time regardless of scope of our relationships, size of the consulting fee, or size/type of client.

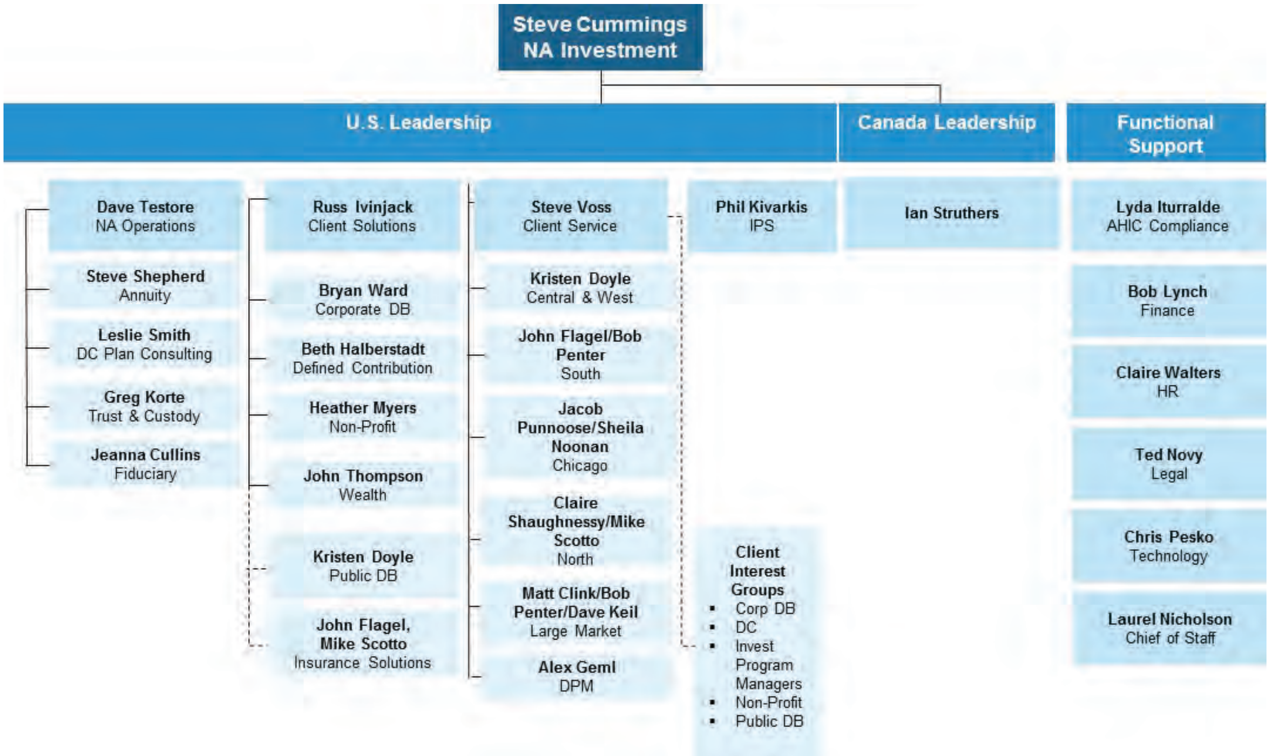
Please see the **Appendix** section for our Code of Ethics. When a change of rating occurs, all of our consultants and their clients receive the updates at the same time.

III-6. Personnel Qualifications

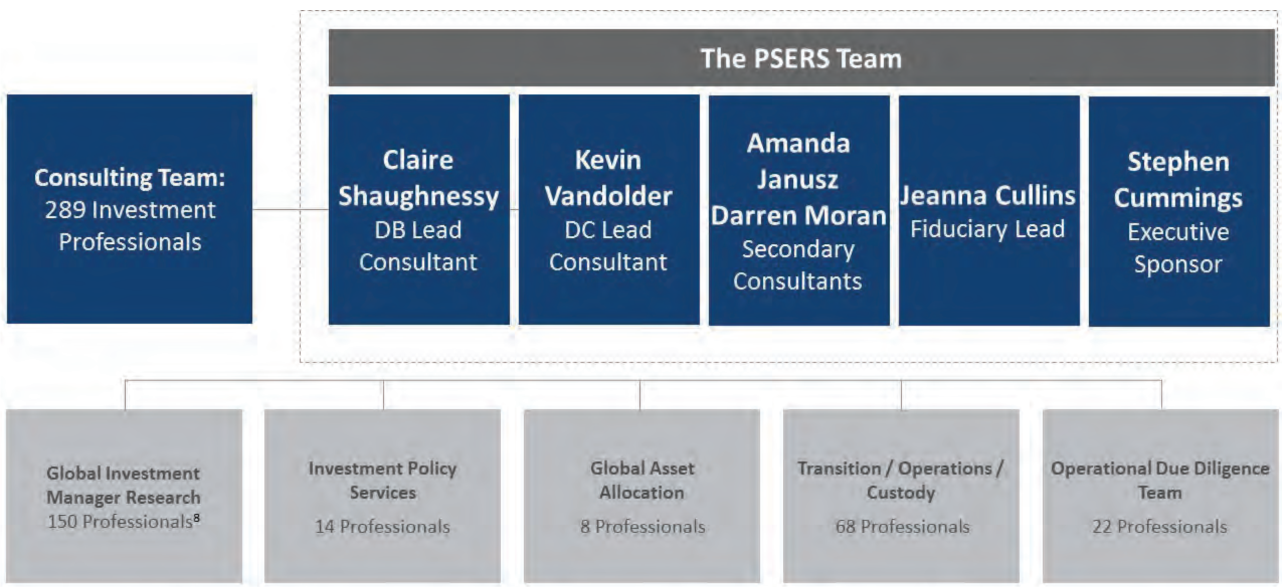
A. Provide an organization chart showing name, title, function, and area of expertise of pension fund consulting professionals and support staff.

Please refer to the below organizational charts:

Data as of June 30, 2018.



Data as of June30, 2018



[1]As of September 30, 2018. Some team members have cross team responsibilities; includes AHIC and its global affiliates through participating affiliate agreements.
[2]As of September 30, 2018, Offshore, Innovation, and Support staff represent an additional 33 colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes AHIC and its global Aon affiliates; does not include The Townsend Group.

B. For proposed primary consultant, principal assistant, and risk professionals, provide the names of all clients and nature of engagement for which these individuals assume a similar role. What are their other duties for the firm?

We have assembled a highly qualified team to help ensure that PSERS will continue to receive a responsive, client centric approach to serve your specific needs. AHIC's goal is to provide PSERS a team of experts with the experience to exceed your expectations. Claire Shaughnessy, Amanda Janusz, and Darren Moran will continue to provide the day-to day investment consulting needs to PSERS. In addition to Claire, Amanda and Darren, Kevin Vandolder will join the team as the lead consultant for the new Defined Contribution Trust. Kevin is AHIC's leader of our DC practice. Other key resources of the PSERS relationship include: Jeanna Cullins, who will continue to serve as PSERS Fiduciary lead consultant, Rian Akey, Global Head of Operational Due Diligence and Operating Monitoring for AHIC will continue to lead operations risk assessments for PSERS investment managers, and Phil Kivarkis, Head of Investment Policy will continue to lead the annual Asset Allocation and Policy review for PSERS. Lastly, Stephen Cummings will be the Executive Sponsor for the PSERS relationship and provide back-up consulting support to the team. The proposed PSERS consulting team will be based out of the Norwalk, Connecticut and Chicago, Illinois offices. We have provided the client lists for Claire, Kevin, Amanda, Darren and Stephen. Rian does not have a specific client list. Data below as of February 01, 2019.

Claire Shaughnessy's Clients			
Name	**Plan Type**	**Length of Relationship**	**Client Account Size**
AIG	Corporate	13 years	$9.5 billion
New York State Teachers' Retirement System	Public	8 years	$120 billion
Pitney Bowes	Corporate	8 years	$1.5 billion
Pennsylvania School Employees' Retirement System	Public	5 years	$55 billion
State of Connecticut	Public	7 years	$3.5 billion
University of Rochester	Non-Profit	8 years	$4.6 billion

It is not known whether clients listed approve or disapprove of AHIC or the advisory services provided.

Kevin Vandolder's Clients			
Name	**Plan Type**	**Length of Relationship**	**Client Account Size**
Massachusetts Deferred Compensation	DC	9 years	$10 billion
Public Employees Benefit Association	DC	3 years	$8 billion
Confidential Client	DC	4 years	$17 billion
City of Jacksonville	DC	Just hired	$1 billion

It is not known whether clients listed approve or disapprove of AHIC or the advisory services provided.

Amanda Janusz's Clients			
Name	**Plan Type**	**Length of Relationship**	**Client Account Size**
Acushnet Company	Corporate	7 years	$591 million
Consumer Reports	Non-Profit	5 years	$285 million
DaVita Inc.	Corporate	8 years	$1.7 billion
GBMC Healthcare	Non- Profit	24 years	$667 million
MassMutual Financial Group	Corporate	5 years	$5.5 billion
Montefiore Health System	Non-Profit	18 years	$1.1 billion
Pennsylvania Public School Employees' Retirement System	Public	5 years	$55 billion
TJX Companies, Inc.	Corporate	13 years	$3.4 billion
Visa International	Corporate/Non-Profit	14 years	$3.4 billion

It is not known whether clients listed approve or disapprove of AHIC or the advisory services provided.

Darren Moran's Clients			
Name	**Plan Type**	**Length of Relationship**	**Client Account Size**
AICPA	DB/DC/Operating	7 years	$126 million/$167 million/$113 million
American Standard	DB	7 years	$40 million
Leonardo DRS, Inc.	DC	7 years	$800 million
Confidential Client	Endowment	5 years	$50 million
Long Island University	DC	5 years	$900 million
Rensselaer Polytechnic Institute	DB	7 years	$270 million
Tufts University	DC	5 years	$1.4 billion
First Energy	DB/NDT	2 years	$7.7 billion/ 2.4 billion
PSERS	DB	5 years	$54 billion
NBA	Other	3 years	$150 million
FujiFilm Dimatix	DC	5 years	$72 million
AEP	DB	1 year	$5.2 billion

It is not known whether clients listed approve or disapprove of AHIC or the advisory services provided.

Stephen Cummings' Clients			
Name	**Plan Type**	**Length of Relationship**	**Client Account Size**
Colorado Public Employees' Retirement Association	Public	15 years	$48 billion
Minnesota State Board of Investments	Public	2 years	$70 billion
New York State Teachers' Retirement System	Public	9 years	$118 billion

Stephen Cummings' Clients			
Name	Plan Type	Length of Relationship	Client Account Size
Pennsylvania Public School Employees' Retirement System	Public	5 years	$55 billion
State Board of Administration of Florida	Public	23 years	$188 billion
Michigan Department of Treasury	Public	4 years	$78 billion

It is not known whether clients listed approve or disapprove of AHIC or the advisory services provided. List is as of June 30, 2018.

C. *Delineate the proposed management of services to PSERS. Provide names of staff who will serve as primary consultants, principal assistants, and other general contacts with your firm. Specify the role and scope of involvement for each individual. Will the primary consultant be available to attend all Board meetings and assist PSERS' Investment Professionals when needed?*

Claire Shaughnessy, CFA, partner, serves as the defined benefit lead consultant with Kevin Vandolder, CFA, partner, serves as the defined contribution lead consultant to PSERS. In addition, Jeanna Cullins will serve as PSERS' fiduciary lead consultant and Stephen Cummings will serve as the Executive Sponsor. Members of the team will continue to be available to attend all PSERS Board/Committee meetings to present research and recommendations. In addition, they will be available for conference calls and ad hoc meetings with Board/Committee members and Staff.

In addition to Claire and Kevin, the team would also consist of Amanda Janusz, senior consultant, and Darren Moran, senior consultant. They will provide day-to-day support and will supervise the production of all research and reports, ensuring the quality of the data provided in our reports. Robert Leal and Andi Papadimitriou will perform much of the data/analytical work on the relationship.

PSERS will also have direct exposure to dedicated resources within our specialized teams—for instance, the Investment Policy Services team, Global Investment Management, and Fiduciary Services. Different clients engage with us in different ways. Our consultants are very collaborative and work well together for the benefit of the clients.

D. *For proposed primary consultant, principal assistant, risk professionals, and other key individuals who will be providing services to PSERS, provide a biographical profile to include education, years and areas of professional investment consulting experience, and years and areas of professional investment consulting experience with your firm.*

Following are brief biographies of the PSERS consulting team (as of January 1, 2019):

Claire P. Shaughnessy, CFA

Partner, Lead Defined Benefit Consultant

Claire is a partner. For the past 18 years, she has worked as a lead consultant with a focused group of institutional clients including public and corporate pension funds, participant directed plans, and foundations to build successful investment programs. She has worked with many of the nation's leading investment programs during her consulting career and is the lead consultant to several large public funds including New York State Teachers Retirement System and Pennsylvania Public School Employee' Retirement System. Claire brings to the team significant experience in asset allocation, investment program design, investment manager selection, and performance and risk analysis. She has implemented investments in all major asset classes across the capital structure (cash, fixed–income, equities, hedge funds, private equity and real estate). During her consulting tenure, she has assisted several clients develop and implement an investment strategy incorporating new asset classes including emerging markets, real estate and hedge funds.

She has over 25 years of institutional investment experience. She has been a speaker at industry conferences on a number of topics including using alternative investments within defined contribution plans, emerging markets and implementing fixed income strategies within a de–risking framework. Prior to joining the firm, Claire was a Managing Director of Investment Consulting at Rogerscasey. Prior to Rogerscasey, she worked with clients at Lazard Asset Management and Scudder Stevens & Clark. She began her investment career at The Equitable.

Claire holds a Masters of business administration degree from The Stern School of Business at New York University and graduated magna cum laude from Georgetown University with a Bachelor of Science in business administration. She is a holder of the CFA Institute's Chartered Financial Analyst (CFA) designation.

Kevin J. Vandolder, CFA

Partner, Lead Defined Contribution Consultant

Kevin, Partner, serves as the firm's DC Client Practice Leader—a position he has held almost two decades, while serving as lead consultant for a couple of projects and retainer clients. Kevin has more than 20 years of experience serving defined contribution plan clients and researching defined contribution issues. Before joining Aon Hewitt Investment Consulting in 1996, Kevin was in the corporate finance group of the $9 billion Westcoast Energy group of companies and had previously served in the Canadian Navy (reserve) and Presbyterian World Service.

Kevin joined the firm in 1996 and has worked with large/mega defined contribution plans throughout his tenure with the firm. He has 24 years of institutional investment consulting experience.

Kevin holds an M.B.A. in strategy and leadership from NYU Stern and Honors B.Comm. degree in finance from the Odette Business School at the University of Windsor. He is a CFA charter holder and active member of the CFA Society of Austin, previously serving as President and Treasurer of the CFA Society of Chicago. Kevin remains active on CFA Institute committees while serving many years as a grader for the Chartered Financial Analyst examination and speaker at local CFA Societies including NYSSA.

Kevin's published research and blog entries includes pieces on innovative investment option structure, how to improve DC participant retirement outcome and wellness and on global DC opportunities and challenges along with presentations at NAGDCA on Alts in a DC Plan.

Kevin has also served as a guest lecturer at DePaul and Northwestern University while serving on industry organizations such as the Executive Committee and founding member of the Defined Contribution Institutional Investment Association and chair of its Global DC investment committee and speaking at industry conferences such as key note speaker at FRA/DCIO DC Conference and the World Bank retirement conference fall.

Amanda Janusz

Senior Consultant

Amanda is a Senior Consultant based in our Norwalk, CT office. She joined AHIC in 2007 and has 11 years of investment experience. Amanda advises clients on their investment policy, asset allocation, investment structure, investment manager evaluation and selection, and performance evaluation. Her clients include public and corporate pensions, endowments, 401(k) and 403(b) plans. While Amanda works with AHIC's client service team, her experience also includes a six-month rotation working with the Global Investment Management (GIM) team in Aon's London office.

Amanda has a B.A. in Economics from Williams College and an M.B.A. in Finance from the University of Connecticut.

Darren Moran

Senior Consultant

Darren is a senior investment consultant based in our Norwalk, Connecticut office. He consults with defined benefit plans, defined contribution plans, endowments, and foundations on investment policies, asset allocation strategies, investment manager evaluation and selection, and performance evaluation.

Darren joined the firm in 2011. He graduated with a B.A. in finance from Bryant University and an M.B.A. from Fairfield University.

Jeanna M. Cullins

Partner, Leader of Fiduciary Services Practice

Jeanna is a recognized institutional investor industry expert with 30+ years of experience across a wide range of fiduciary, governance, and operational processes issues. Jeanna has advised the leadership of some of the largest public funds in the country, corporate funds, endowments and foundations on how to develop effective, efficient, and practical ways to fulfill their fiduciary responsibilities and enhance their governance and investment operations. Her key areas of focus include conducting fiduciary reviews and governance diagnostics, fiduciary and governance training, assisting with strategic planning, conducting board and key staff evaluations, policy and process development and implementation, reviewing compliance and risk controls, and other related issues. She is a frequent speaker at pension industry conferences on various topics, including pension fund administration "best practices."

Prior to joining the AHIC in 2008, Jeanna served as Managing Director and Operational Review Practice Leader at Independent Fiduciary Services ("IFS"). During her 10-year tenure at IFS, Jeanna worked on more than 30 fiduciary/management audits, including audits of Pennsylvania SERS and ERS.

She served as Executive Director to the District of Columbia Retirement Board from 1993 to 1997, and as the Board's General Counsel from 1985 to 1993. She earned her J.D. from Georgetown University Law Center and a B.A., cum laude, from Brooklyn College, City University of New York.

Jeanna serves on the emeritus board and is an active member of the National Association of Public Pension Attorneys. She is also a retired Director of the Hershey Entertainment and Resorts' Board, where she was Chair of the Governance Committee and a member of the Audit Committee. She also currently serves on the Investment Advisory Panel for the Illinois Student Assistance Commission and previously served as Vice President of the YWCA of Metropolitan Chicago Board and a member of the Executive Management Committee for seven years. Jeanna is a National Association of Corporate Directors Governance Fellow, a Chicago United Business Leader of Color, and was named a Top Employee Benefit Consultant by Human Resource Executive and Risk & Insurance magazines.

Steve Cummings, CFA

Global Investments Officer and Head of North America Investment Consulting

Steve Cummings is the Global Investment Officer and Head of North America Aon Hewitt Investment Consulting, one of the largest providers of investment consulting services to institutional investors. He leads over 400 investment consulting professionals with over 470 clients. Cummings serves as the primary consultant for select retainer and project clients. Cummings is ultimately responsible for the success of the North America investment consulting practice.

Cummings' client work has included the coordination and implementation of multiple defined benefit and defined contribution plans into a consolidated structure for a multi-billion dollar corporate client and the oversight of complex alternatives programs for several large public funds. He also served as the team leader for Aon Hewitt Investment Consulting's work with the U.S. Treasury Department during its TARP initiative and served as advisor to the State Treasurer and interim CIO of a multi-billion dollar state retirement system during a transition period between CIOs.

Cummings co-leads the firm's Global Investment Executive Function, the group responsible for setting the strategic direction of the global investment consulting practice and coordinating consulting efforts around the world. Cummings is responsible for thought leadership within the firm and serves in an advisory capacity on research efforts such as those related to derivatives, private equity, and emerging investment opportunities. He is a sought-after industry expert and frequently speaks before industry groups on a broad range of topics including soft dollars, public fund oversight, portfolio construction, and the evolution of the consulting industry.

Cummings joined EnnisKnupp (the predecessor firm to Aon Hewitt Investment Consulting) in 1989 as a consultant and later rejoined in 2000 as the president and Chief Executive Officer. Prior to rejoining EnnisKnupp, Cummings was the president of Marquette Associates from 1997–2000. He holds a B.S. degree from the University of Texas and an M.B.A. degree from the University of Chicago. He is a CFA charterholder and is a member of the CFA Institute and Investment Analyst Society of Chicago (IASC). He is also a member of the Board of Trustees of Kohl Children's Museum of Greater Chicago.

Rian Patrick Akey

Partner, Global Head of Operational Due Diligence and Monitoring

Rian is the Global Head of Operational Due Diligence; he joined Aon Hewitt in 2015. Rian is responsible for developing and implementing operational risk identification and reduction strategies across Aon Hewitt's global client portfolios, which have exposure to thousands of investment managers globally, across all asset classes.

Rian was previously a Principal at Mercer Investments, working within the firm's specialty operational due diligence practice. His role at Mercer offered perspective on financial and operations best practices among some of the world's most well-known and highly regarded asset management firms. He joined Mercer in 2011.

Rian has been working in the financial industry since 1997. Prior to Mercer, he was the COO at Cole Partners, a Chicago-based hedge fund consultancy, and its investment adviser affiliate, Cole Partners Asset Management. He joined the Cole Partners organization in 1999 as the founder's first hire and over twelve years he developed and implemented the firm's research procedures, operations, and compliance. In 2005, he keyed the launch of the firm's first proprietary fund of funds, a specialty product dedicated to alpha-based commodity and natural resource investments.

Rian received a BA *cum laude* from the University of Notre Dame. His research on the relative merits of alpha and beta in commodity investments has been published in a variety of journals and books and has been delivered to conferences and symposiums around the world.

E. Provide name and position of pension fund consulting professionals who were added to the firm during the past three years. Provide name and position of pension fund consulting professionals who left the firm during the past three years. Have any senior executives left or joined the firm in the past

five (5) years? Please describe the circumstances of their departure(s) or their current roles. Please provide a description of your succession and continuity plans for management of the firm.

AHIC's public sector team is co-led by Kristen Doyle and Mike Comstock as our Client Practice Leaders. Kristen and Mike are responsible for new business development and ensuring that AHIC has the right resources, research, and expertise available for the public sector. In addition, AHIC has a Public Fund Interest Group comprised of 37 individuals, which is a subset of consultants who specialize in issues facing public pension funds (as of December 31, 2018). Our Public Fund Interest Group shares news, issues, and best practices from public retirement system and state investment board clients. We regularly rely on this group of consultants for research, internal discussions, and dissemination of important information to our clients. The depth of public fund knowledge and experience at Aon benefits all of our large public pension funds.

In addition, we have 15 lead consultants who focus on public fund clients although they are not fully exclusive. These individuals are also supported by a group of senior consultants in working with public funds.

We do not specifically track the professionals who have joined and left the firm by plan type. However, the following table provides a breakdown of the associate partner and partner level employees who have joined and left the firm over the past three years (January 1, 2016 through December 31, 2018). In the past five years, we have had 2 senior partners depart our firm. No senior partners joined in that same time period (as of December 31, 2018) The senior partners are included in the table below. Due to employee confidentiality reasons, we are unable to provide employee-specific reason for hire or departure information. Furthermore, it is our standard policy to not release the names of our staff.

Year	Hired Professionals	Departed Professionals
2016	10	6
2017	10	11
2018	6	8*

**2 are retirement*
Update dates to be January 1, 2016 – December 31, 2018

Succession planning is important, so that our clients' business needs are not interrupted. While we have a low staff turnover ratio, we understand and are prepared for the fact that some staff turnover is unavoidable. To ensure it is there when needed, we approach continuity from several vantage points to ensure all the bases are covered:

- Deep teams with a strong secondary Investment Program Manager leading day–to–day activities
- A common research platform upon which all of our client recommendations are based—materially reducing the impact of the individual assigned
- Knowledge sharing, with broad understanding of client needs and objectives
- Comprehensive databases with our history of working together
- Senior leadership support and involvement

Our teams further ensure continuity by focusing on continual knowledge sharing among team members, so there is not just one team member who understands your business, the initiatives we have undertaken, and the status of ongoing projects. The entire team is kept apprised of all activities.

Additionally, we maintain a comprehensive database for PSERS that includes every document and key emails that provide a complete history regarding our work with PSERS. In the event of a staffing change, this database allows the new Investment Program Manager access to all relevant historical information. Moreover, the tools and processes we use represent core competencies for our senior Investment Program Managers so there would be a very manageable learning curve should a replacement be needed.

F. How does the firm monitor performance of consultants, analysts, and other investment professionals that it employs?

AHIC is committed to providing high quality deliverables to our clients. Our Practice has instituted a formal sign-off process that documents the fact that peer review has occurred. Our internal review process assures the following:

- All personnel and service offices are conforming to Practice approved procedures and policies, and that our best thinking is being shared with clients in a uniform and consistent manner.
- Consultants are identifying trends.
- Proper images and branding are utilized in our deliverables.

All substantive work products are reviewed by qualified colleagues, and the reviews are sufficiently broad in scope. Qualified individuals acting as peer reviewers must be able to state that they have confidence in the quality of the aspect or portion of work they've been asked to review. Key aspects of the peer review process address the following:

- Results are technically correct in mathematics and processes.
- Results are reasonable, consistent with prior deliverables.
- Assumptions and methods used are reasonable.
- If the deliverable is s special project customized for a particular client, then a member of the specialist team (i.e., asset liability modeling/policy team) should also peer review the deliverable.
- The deliverable fairly and completely provides results, analysis, choices and implications, and is understandable to the intended audience.
- The deliverable effectively responds to the client's business issue.

G. Provide a brief general description of the firm's compensation agreements for professional staff, including bonuses, profit sharing and equity ownership. Is some component of compensation deferred? Does your firm have employment contracts and/or non-compete agreements with investment professionals?

Consultants are compensated through a combination of base salary commensurate with industry standards and bonuses based on individual contributions, as well as success of the group and firm as a whole. The success of our business is driven by providing high quality service to our clients and creating long term relationships. A consultant's future employment is predicated in large part on his or her ability to serve clients well. Our efforts to attract and retain high quality professionals include regular review of our compensation policies to ensure our compensation structure appropriately rewards for work effort, productivity, quality of work, and client retention.

In addition, nonmonetary benefits are provided, including work environment free from conflicts of interest, ability to pursue education (e.g., graduate degree, CFA designation, and relevant coursework), ability to perform a variety of functions, and access to leading edge industry information and technology.

All of our investment consulting staff receives a salary and bonus. Partners (and/or Principals) are also eligible for stock ownership.

AHIC does not maintain employment contracts and non-compete agreements with investment consultants.

H. Describe the job qualifications required by your firm when hiring investment professionals. Are there specific qualifications unique to those involved in investment consulting?

AHIC's recruiting and hiring process focuses on candidates with significant investment-related industry experience, which typically includes three to five years of analytical work in investments and finance. Consultants are expected to have a CFA, FSA, or CERA designation and/or MBA degree, or should be in the process of obtaining a designation/ degree. AHIC financially supports all investment educational programs including MBA degrees, CFA charters, and other certificate programs.

I. Describe your internal training procedures for consultants and research analysts.

Our new associates go through an in-depth training program known as AHIC University. AHIC conducts quarterly associate education sessions in our headquarters office. The two day-long sessions focus on all investment-related aspects of pension plan management including asset/liability analysis, asset allocation modeling, manager selection and retention, risk analysis, etc. The session includes break-out sessions focused on specific fund type (e.g., public pension plans, endowments and foundations).

III-7. Soundness of Approach

A. General Consulting Services (includes all asset classes)

1. What is the overall philosophy of the firm regarding an investment consultant's role with respect to the board of trustees, staff, and investment managers?

AHIC sees itself as being a trusted advisor to the fiduciaries on the Board and staff. Generally, our engagements call for us to work for the Board (as the highest-level fiduciary in the organization) and with the staff (as the ones responsible for the day-to-day management). We handle this role well and believe one of our greatest strengths is that we work effectively with both trustees and staff.

Our role with respect to managers is completely different. We are not a fiduciary to them. We have an arm's length, yet cordial relationship with managers. We strive for a good information flow between us because our job is to evaluate and monitor them fairly. Additionally, investment managers provide us up to date and relevant information on their firm and products, and, we in turn, keep them abreast of our clients' needs. We also provide them full transparency on our ratings of them.

2. State as clearly as possible the firm's investment philosophy. Are there any fundamental beliefs about capital markets which underpin the firm's investment advice to its pension plan clients? Include discussion on your views as they pertain to varying investment environments (e.g., inflationary, recessionary), and on the separation of alpha from beta.

Our investment consulting philosophy is grounded in a few core tenets that we believe have a bearing on the success of an investment program.

- Seek broad diversification and global orientation
- Avoid significant and unintended biases
- Take risk efficiently

- De-emphasize strict reliance on quantitative assumptions and optimization
- Emphasize flexibility and opportunistic approaches to benefit from skill
- Control costs

AHIC's investment beliefs are outlined below.

- The best investment policy is customized to individual client circumstances, goals and risk tolerance
- The most important decision for long term investment results is asset allocation
- The primary method of targeting a level of portfolio risk is the allocation to and among return seeking and risk reducing assets, and structure within those asset categories, taking into consideration exposures to equity, real interest rate, credit, inflation, liquidity and active risks
  - Return seeking assets are those with the primary purpose of generating returns
  - Risk reducing assets are those with the primary purpose of risk reduction
- A disciplined rebalancing process with narrow ranges around policy targets works best.
- Alternative investments can enhance portfolios if a significant commitment is made to them.
  - Alternatives can play a meaningful role for investors with sufficient tolerance for illiquidity, active and other risks;
  - Focus your active risk budget on alternative investments
- Investors benefit from having a global orientation
- Investors should avoid material biases toward particular segments within public market asset classes in their long-term investment policies
- Active management is a difficult endeavor and, therefore, passive management is preferred across publicly traded asset classes.
- Active risk is rewarded if highly skilled managers are used..
- There are significant variations in efficiency among markets, but also variations in trading costs, market size, and other factors that influence investors' ability to exploit those inefficiencies
  - AHIC does not promote active management for any asset category, based solely on a market efficiency argument
  - The client's decision regarding appropriate market exposures should override the implementation decision; that is, asset allocation should not be driven by relative opportunities for active management in various markets
- It is important to understand potential sources of risk in the portfolio and build risk reducing allocations in the portfolio as appropriate
- Reducing investments cost and maintaining sufficient liquidity are also important considerations for investors

While the advice we give clients uniformly reflects these basic beliefs, we do not follow a formulaic approach to the evaluation of investment policies and practices. Instead, we endeavor to understand the particular circumstances of each client and develop our advice accordingly. In short, our focus on developing sound strategy; prudent implementation with a focus on risk control, cost containment and the avoidance of surprises; rigorous monitoring and reporting to ensure performance as planned, results in superior performance for our clients.

We believe optimal investment decisions are made when they are based on a clear understanding of the assets and liabilities of the plan and how they interact. It is because of this conviction that we formed a dedicated team of asset/liability specialists made up of both actuarial and investment consultants, to support pension plans during an asset/liability study. This philosophy has only intensified since the great recession, as the risks and associated mismatch between pension assets and liabilities were magnified, leaving plan sponsors with a significant pension deficit and rising pension costs at the worst possible time.

We have developed tools that allow clients to understand the implications of the chosen investment strategy/asset allocation on key plan financial metrics (such as funded status, level of contributions) in a range of market and economic environments. We have found that this to be a useful tool to allow decision makers to fully understand and appreciate the sensitivity and expected outcomes of a given strategy.

Over the years we have incorporated several features to our asset/liability modeling capabilities that have enhanced its value to decision makers. Some of these include: scenario analysis and stress testing capabilities to study impact of contribution and funded status in varying economic regimes (for instance, low-growth, high-inflation environment), modeling that recognizes that financial markets are not “normally distributed” and that in reality three-standard deviation events occur more frequently than statistics would indicate. These real-world enhancements to our model allow for a more robust and practical set of solutions based on which clients can determine the appropriate risk posture.

3. What are the most critical issues to consider in establishing investment policy for a public sector DB pension plan? DC?

From a high-level perspective, the main objective for a pension plan investment policy is to provide a framework to manage the plan in a sound manner. In essence, it is a roadmap that provides guidance on a variety of key areas touching the retirement program.

With a defined benefit plan, there is a holistic investment perspective as the plan assets in their entirety seek to satisfy the liabilities, and importantly, these liabilities remain regardless of the performance of the assets. The goal of a defined benefit plan’s investment policy is to provide an understanding of the key factors driving the willingness and ability to accept risk, the investment approach for meeting the liability obligations of the plan and measuring the success in doing so.

When establishing or reviewing investment policy, we will address the following key issues for a defined benefit plan:

- What is the role of the Board?
- What is the role of the staff? What has been clearly delegated by the Board?
- Are roles, responsibilities and reporting requirements clearly defined?
- Does the policy reflect best practices in the industry?
- Is there a mechanism for period review of the investment policies?
- How are return and risk related? What is the philosophy and attitude towards risk?
- Is the portfolio efficient?
- Does the portfolio make sense within the context of the plan’s current state?
- What are the strategic asset allocation targets?
- What are the pros and cons of various asset classes?
- How much liquidity is needed in the fund?
- What is the most appropriate investment management structure?

- What are the most appropriate guidelines for each portfolio?
- What are appropriate market index and peer group benchmarks for each portfolio (total fund, asset classes, and individual managers)?
- How will the investment program be monitored over time?
- How will plan costs and investment management fees be monitored?

From a high-level perspective, the main objective a DC plan investment policy is to provide a framework for a plan sponsor and its designees to manage the plan in a sound fiduciary manner. In essence, it is a roadmap that provides guidance on a variety of key areas touching the retirement program. We believe it is crucial for the investment policy of a DC plan to reflect the following factors:

- **Investment option structure is important.** We believe the investment option structure has a significant impact on the behavior of participants. Research has shown that too many options can cause participants to “do nothing” or to make inefficient investment decisions. We also recognize that too few options or a structure that excludes key asset classes can limit the ability to construct an optimal portfolio. A policy should summarize the background on the Plan’s structure and resultant investment menu.
- We tend to favor plans with a limited number of investment options. We believe offering much more than10–12 options can begin to overwhelm the majority of participants. It is important to strike a balance of offering the number and types of options that allow the more investment savvy participants to construct their own portfolios, but without intimidating the average participant with little or no investment knowledge.
- For several years we have recommended our clients consider separating the investment options into tiers in order to better facilitate participants’ decision–making process. For example, tier one would be a suite of lifecycle/target date funds and tier two would be composed of low–cost index funds that would provide broad coverage of the capital markets along with a capital preservation option, such as money market or stable value. If desired, a third tier would be a menu of select actively managed options that can be utilized to construct a diversified portfolio. If additional choice is desired, a fourth tier representing a self–directed brokerage window could be offered.
- **Well-defined responsibilities and process.** In addition to a well–defined structure, it’s critical that a policy statement outline the specific fiduciary duties for those involved in Plan management and the governance process for monitoring product performance and fees. The roles of the Fiduciary Committee, Investment Advisor and Investment Manager, as well as any other party that impacts the Plan, be clearly defined.
- **Well-defined benchmarks**. Clearly defining the objectives and basis for evaluation of the Plan’s investment options is critical. All investment strategies should have a primary benchmark and stated objective. For example, a large cap equity index fund should be expected to reasonably track its index (e.g. S&P 500) over a defined period of time (3–5 years).
- **Every plan is different.** While we have developed our “best thinking” on various issues that affect defined contribution plans, we acknowledge that each plan has a different participant base and that plan–specific demographics and circumstances will largely determine the appropriate services and funds to offer participants.

4. ***Please summarize, in one page or less, the firm’s investment consulting capabilities and expertise. What are the firm’s major strengths and limitations? Do you provide any services which are not provided by other investment consultants? Why should PSERS engage you as its investment consultant?***

AHIC has the following specialties and strengths that we believe differentiate us from our competitors:

- **Culture of Innovation and Thought Leadership:** One of our key distinguishing attributes is the thought leadership we provide. We dedicate significant time and resources to research on emerging topics of interest and of benefit to our clients. This research is the backbone of our investment advice and influences all of our recommendations. We are pleased that our research has received widespread recognition and commendations over the years and is frequently published and referenced in financial industry journals.

  Our research covers a wide variety of topics and has been used to add value to client portfolios across a range of areas. As an example, recent research papers on timely and attractive investment strategies, such as alternative risk premia strategies, reinsurance, and opportunistic credit, have provided clients with attractive and diversifying investment ideas at a time when traditional equity/bond portfolios are not expected to meet the needs of most institutional investors. Our research provides clients with the education and actionable next steps to efficiently implement appropriate ideas.

- **Experience With Sophisticated Institutional Investors:** AHIC has experience in serving as a fiduciary and providing independent advice to clients that range in size from under $3 million to $554 billion in assets (as of June 30, 2018). . Our client base is diverse and exposes us to best practices among public funds, corporate funds, endowments, and foundations.

- **Public Fund Experience:** Having worked with public funds since our founding in 1981, we have an uncommon appreciation of their needs, circumstances, as well as the challenges that they face. The collective insights that we have gained guides our thinking both on policy issues (asset allocation and structure, etc.) as well as implementation issues (types of managers and strategies, etc.). The fact that we have been retained as trusted advisors by 32 public fund clients with $1,518 billion in assets under advisement (as of June 30, 2018) stands as a testament to our commitment to public pension funds.

  This experience enables our consultant base and research groups to speak knowledgably to our client base regarding peer practices and to stay apprised of the most recent issues facing public plans, and importantly how others are addressing them. We are able to act as a source of knowledge for our clients on various investment, governance and plan-specific topics.

- **Comprehensive, Customized Advice, Integrated Approach:** We believe that the depth of knowledge of our investment consulting staff combined with the ability to provide a comprehensive, integrated solution to our clients that is highly customized to their circumstances is a source of significant advantage. Additionally, given that we work with large public funds that often utilize multiple consultants, we are very accustomed to working in conjunction with a fund's other consultants. We serve several relationships where we serve as the generalist consultant and work with the client's other consultants in specialized areas.

  We believe our customized approach to client service allows for the most efficient working relationships between consultant and clients. We strive to understand the needs of our clients and to address in a manner that is suitable for each individual client. Our focus on feedback and communication ensures time is not wasted on relationship or communication issues, but rather on the topics that truly matter.

- **Asset Class Specialists:** Our consultants who are generalists have the advantage of collaborating with asset-class specialists, part of the firm's GIM team, who are seasoned professionals. Many have been practitioners and plan sponsors. They have experience in equities, fixed income, real estate, hedge funds, private equity, and infrastructure. Our clients benefit greatly from having generalists and specialists all in one firm.

- **Our Culture:** Our organization fosters a culture that: (1) challenges conventional thinking, (2) produces original research and analysis with an orientation toward practicality of advice, (3) synthesizes our best thinking from a diverse set of professionals into a well-reasoned, firmwide perspective on issues, and (4) puts the clients' interests first, without exception.

- **Importance of Fiduciary Services:** As consultants operating in the public domain, we are critically aware of the role and importance of fiduciaries. We accept fiduciary responsibility with respect to the scope of our services. Recognizing the importance of the role of fiduciaries, we created a dedicated fiduciary services team that assists our clients on fiduciary and governance reviews, policy development, board and committee structures and roles and responsibilities, among other service. We are, and have been for years, at the forefront of developing and promoting best practices in this area.

We understand the pressures and scrutiny public plan sponsors are under and believe our fiduciary expertise and services can provide clients with knowledge that their policies and practices are in line with best practices, allowing clients to focus more on investment-related issues. This is a significant differentiator for AHIC, and we leverage the knowledge and expertise of this team often when consulting with public funds.

- **Operational Due Diligence Specialized Team:** Our dedicated global Operational Due Diligence team includes 20 persons (as of January 1, 2019) provides in-depth due diligence on all Buy rated managers. Our team has diversified experience with a range of competencies including compliance, operations, governance, and counterparty risk. In addition, our experience not only includes conducting operational due diligence reviews for an internal ODD program but also in a consulting environment, which has unique demands given the range of underwriting standards and deadline/workflow requirements for clients.
- **Innovative Tools:** We have devoted significant resources to our analytical capabilities for maintaining capital market assumptions, asset allocation modeling, asset-liability modeling, risk budgeting, style analysis (both returns-based and holdings-based), and spending model analysis. Many of our models are built in-house and can be custom-tailored to suit individual client needs. We review our processes and tools on an ongoing basis to ensure that they are up to date and meeting our and our clients' needs.

Hiring the right type of talent is always a challenge for us, as we expect it is for many other firms. We expect our consultants to be well educated and have relevant past experience. We expect them to strive for continuous improvement. We also expect them to "go above and beyond" for our clients. This often means working long hours and traveling around the country. Not everyone is cut out for consulting. Our continuing challenge is to hire the right people who will have a passion for the work we do for our clients.

While many of our competitors provide some of the services we offer, we believe we are one of only very few firms that has developed the extent and the depth of capabilities to meet a broad spectrum of investment needs for large, sophisticated investors, such as PSERS. Notably we believe, our Fiduciary Services, Operational Due Diligence and extensive manager research coverage provides services that other investment consulting firms do not provide.

We believe our strict ethical standards, approach to client service, deep practitioner experience, and world-class research across both policy issues and manager experience, make us the right consultant to effectively meet PSERS needs now and as they evolve. Our clients will attest to the value we bring at reasonable costs. Additionally, no one will work harder for you than we will. We can promise that without any hesitation.

5. ***How would you suggest that we measure and evaluate the performance of your firm as an investment consultant?***

We define successful investment performance as helping our clients' meet their goals. Each one of our clients has unique goals, and we treat them that way. We continually monitor our success through direct interaction with clients and by using various client satisfaction surveys and independent industry surveys where our clients measure our success against a variety of criteria. We have found that an assessment of the following factors can serve as an efficient model for evaluating a retirement plan consultant:

- Value added/performance of portfolio over appropriate measurement periods

- Soundness of policy
- Access to and thorough insights on asset allocation, investment opportunities, and managers
- General knowledge and insights into issues that corporate plan sponsors encounter
- Quality of research and analysis
- Clarity and usefulness of written and verbal advice
- Knowledge of applicable rules and statutes
- Timeliness of work
- Dependability
- Responsiveness to requests
- Proactive assistance and advice
- Interaction with committee and staff

We routinely measure the success of our service delivery through formal and independent client surveys. We have a formalized client satisfaction assessment surveys program in which clients are personally contacted by an independent third party on a scheduled basis. Clients are asked to provide specific feedback on the quality of our consulting work and their overall relationship with their AHIC consultants. A mechanism is in place to respond effectively to all feedback received. We also participate in the independent industry wide study conducted annually by Greenwich Associates. Unfortunately, a confidentiality agreement with Greenwich Associates precludes sharing the contents of the survey outside our firm.

6. Describe the process you will use to recommend investment objectives and policies for PSERS. Provide samples of investment objectives and policies you have developed for pension fund clients that demonstrate the types of approaches your firm might recommend to PSERS. Highlight risk management components of the process.

Best practice in setting investment objectives is to begin with the evaluation of the target asset allocation and risk level in the context of a plan's liabilities. In developing and recommending investment policies, objectives, and guidelines for clients, a critical first step is to work with staff and trustees to ensure a thorough understanding of the context in which the organization is setting policy. By context, we refer to the key factors that are the determinants of policy including: characteristics of the plan's liabilities; participant demographics and characteristics; length of the investment horizon; required levels of liquidity; ability and desire of the organization to bear risk; fiduciary responsibility of those overseeing the funds; expertise and experience of Board and Staff.

Once asset allocation is established we help develop reasonable investment objectives in light of capital market expectations and client resources. We encourage our clients to set investment objectives relative to a policy portfolio, where the goal would be to earn returns in excess of this benchmark, within reasonable risk parameters.

Investment Policy Statement

Assisting institutional investors develop investment strategy and clearly documenting such strategy through an Investment Policy Statement ("IPS") is a particular strength of AHIC. We believe our many years of experience working with public funds institutional investors has given us a strong perspective on the issues public funds our clients face and the need for a clearly defined policy document to guide the prudent management and governance of a fund's assets.

Once strategy is established, we believe that it is critical to document the strategy approved by fiduciaries to provide clear, unambiguous guidance to all parties responsible for management and oversight of a fund's assets. A good investment policy document should be concise, yet complete in terms of all aspects governing the investment of fund's assets.

The first step in our review process of an IPS is to facilitate a meeting with the Board and/or Investment Committee to discuss the asset-liability profile and risk level of the current investment program. This will assist in determining whether the IPS accurately reflects the investment objectives and risk tolerances of the Board and/or Investment Committee, the financial and actuarial characteristics of the Plan, and whether the roles and responsibilities are clearly understood. Based on the outcome of the meeting, we will then advise the Board and/or Investment Committee regarding whether amendments are needed to address the purpose, objectives, risk tolerance, and roles and responsibilities stated in the IPS.

We also review whether there are monitoring procedures included in the IPS (i.e., whether compliance with the IPS is monitored internally by staff, or externally by the investment consultant or another service provider). Additionally, a review will identify any gaps or disparities between the current IPS and the list of components we view as critical to a high performance IPS.

We believe a comprehensive policy document should address the following elements: purpose and function of the fund's assets and the policy document; clear definition of a fund's investment objectives/goals; identification of all parties associated with the management (investment) and oversight of a fund's assets, including the fiduciary ability to be contrarian of the parties; total fund asset allocation strategy and associated policy benchmarks; implementation standards—asset class benchmarks and guidelines; risk budgeting policies; permissible or ineligible investments; rules governing the usage of derivatives and leverage; shareholder activities (corporate governance, proxy voting), etc.; and performance measurement, compliance, and reporting criteria.

Lastly, our reviews also focus on how often, and by what process, the Board and/or Investment Committee reviews the IPS. Engaging in a periodic review is important to ensure the policy is current and fully applicable to actual investments, current market environment and ensuing plan circumstances. While it is not expected that an IPS will change frequently, it is a living, breathing document that should to be reviewed periodically to ensure it remains appropriate and relevant.

We take a similar approach towards developing policy statements at the asset class level, working with the appropriate staff and/or committees and boards as appropriate.

Please refer to the **Appendix** section for a sample Investment Policy Statement.

7. ***Describe the process and resources you will use to recommend asset allocations for PSERS. Discuss the possible circumstances and process whereby you might recommend that an asset allocation should be changed. Provide samples of asset allocation plans you have developed for pension fund clients.***

Our theory and methodology for setting asset allocation centers on integrated asset-liability management. We believe optimal decisions regarding pension plan management are made when they are based on a clear understanding of the assets and liabilities of the plan and how they interact. It is because of this conviction that we have a dedicated team of pension risk specialists comprised of professionals that are dually-credentialed with both actuarial and investment consulting backgrounds, to not only support plan sponsors during an asset-liability study, but also on an ongoing basis so that pension risks can be managed effectively over time. This team has conducted, from 2014-2018, 765 paid studies and 1,378 unpaid studies for prospects. (as of December 31, 2018).

The Investment Policy Services Team ("IPS") led by Phil Kivarkis, leverages the experience of more than 14 dedicated individuals in the U.S., with backgrounds in investment management and actuarial science (as of September 30, 2018). It conducts rigorous quantitative analysis to support investment policy recommendations. They assist on our capital market assumptions and asset-liability studies, and advise clients on intermediate and long term asset allocation issues. They are responsible for managing risk in general, including: performing asset-liability analyses, designing custom portfolios, and monitoring portfolio positions from an asset-liability and asset allocation perspective. The team also provides top-down, strategic investment advice and researches new investment strategies.

Our asset-liability studies review how a plan's asset allocation policy can impact the funded status of a plan over the projection period. It is important to recognize that the benefit structure and contribution/funding policy are other relevant factors that determine a plan's funded status. Initially, we typically develop our asset-liability model using the current (or "baseline") benefit structure and funding policy. On several occasions, we have utilized our asset-liability model to analyze the impact of various changes in the benefit structure or funding policy to the future funded status of the plan. In this entire process, we take into account the regulatory requirements for the plan and the actuarial methodologies in place. Any possible changes in these factors can also be incorporated in our model. Thus, we can help our clients understand how different levers that affect the plan's funded status can be adjusted to achieve a fully-funded goal. Further, we are able to customize our model to accommodate any constraints on potential changes, providing our clients with more comfort in understanding the true implications of passed or potential policy decisions on achieving or maintaining fully-funded status.

AHIC's deep capabilities in analyzing asset allocation are able evaluate different time periods. Our analysis typically covers 15, 20, and 30 year periods. For pension funds, we believe asset allocation decisions should be made with a long term view, consistent with the fact that the assets support liabilities that have a very long time horizon. The long-term strategic asset allocation policy is set through asset-liability studies. We recommend periodic changes to the asset allocation to reflect capital market developments, changes in the underlying liabilities, or changes in the financing of the plan (contributions from employers and employees). An important aspect of our asset-liability approach is the use of forward looking capital market assumptions. Currently, many of our clients, including PSERS, are refreshing their asset-liability studies considering the dramatic impact the markets have had not only on forward looking assumptions, but on their current funded status.

We continuously monitor asset allocation strategies in light of current market conditions. For a formal review of the asset-liability modeling, we suggest a three- to five-year time span depending on client specifics, or more frequently should circumstances dictate (e.g., corporate restructuring, lump sum settlements, market dislocations, etc.).

We also employ our medium term views ("MTV") to manage the portfolio asset allocation of plans within predetermined rebalancing ranges. Our MTV represent our assessment of the relative attractiveness of major asset classes over one-to-three year time horizons. We believe this is a unique offering among consulting firms. MTVs provide an additional tool for identifying and assessing opportunities over intermediate time periods and a way to potentially benefit from capital markets volatility. MTVs are prepared monthly by our Global Asset Allocation Team. The Global Asset Allocation Team is also responsible for preparing our long-term capital market assumptions, ensuring consistency between our long-term assumptions and near term views.

Clients have successfully used our MTVs to: determine overweights and underweights to asset classes (within policy ranges) as part of rebalancing; to make investments in new asset classes at opportune times; and to plan for future allocations (e.g., set triggers) based on our assessments.

For PSERS, at a minimum, we will review the asset allocation annually to refresh capital market assumptions, review the investment and liquidity risk of the target asset allocation as well as several alternative asset allocations and consider new potential asset classes as appropriate.

Included in the **Appendix** section is a sample Asset-Liability Study, which includes asset allocation and liquidity analysis.

8. ***Included as Appendix J is the Fund's Asset Allocation Plan as of June 30, 2018. Provide observations, and recommended changes, if any.***

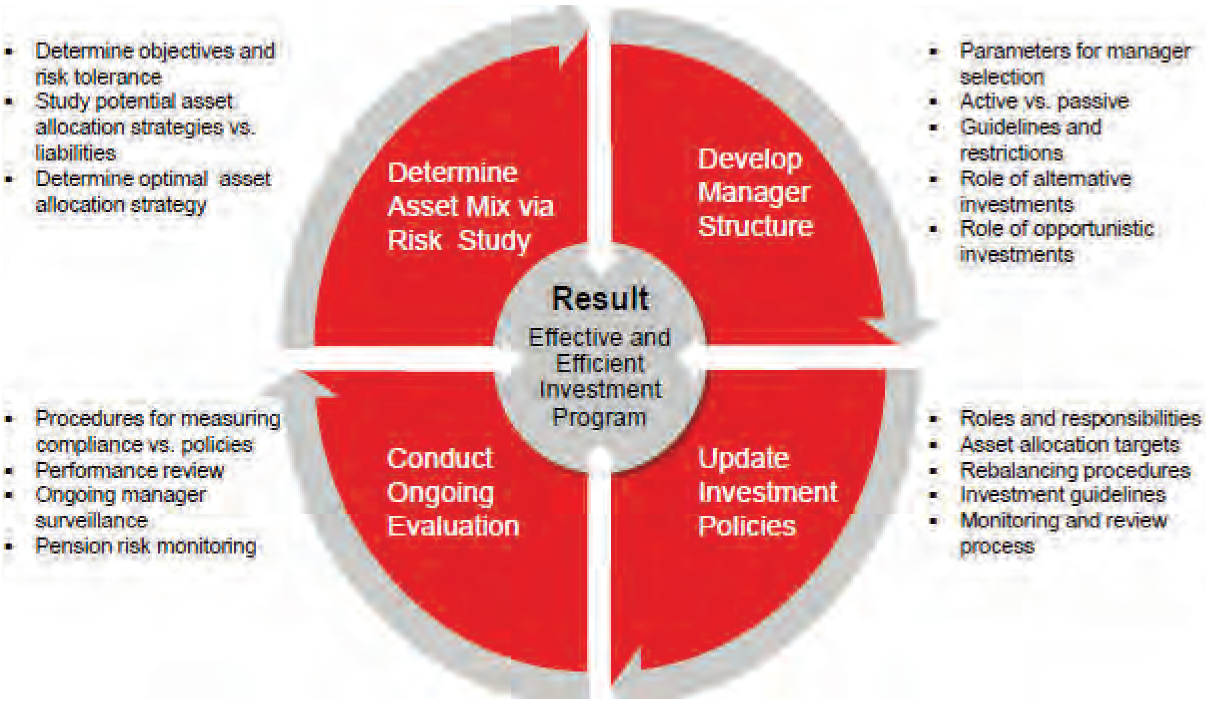
As the incumbent investment consultant, AHIC has assisted PSERS in developing the current Asset Allocation Plan. The asset allocation is well diversified among and within the major asset classes that we believe institutions of PSERS' size should consider and is consistent with AHIC's best thinking.

- Meaningful commitment to alternatives: PSERS' has an allocation to alternative investments of about 44% (private equity, private real estate absolute return, and risk parity). We believe that private markets and unconstrained mandates offer better odds for investors to generate unique streams of returns (or excess returns) as compared to investments in public markets. We find that, on average, investors do not commit meaningfully to alternatives considering the resources that institutions typically expend in conducting due diligence and managing assets in this space. Small allocations to alternatives generally do not have an impact on investors' returns to the point where we believe that expending resources for small commitments to alternatives is not a worthwhile endeavor. We believe that investors that commit to alternatives should do so with meaningful allocations – both in order for such investments to have an impact and to better rationalize the costs associated with these investments. Our white paper titled "Go Big or Go Home" addresses these issues.
- Extensive use of passive management: We favor extensive passive investments across the public markets. Research that we and others have conducted over the years shows that it is extremely challenging for active equity managers to add value on a consistent basis net-of-fees. In a white paper entitled "Conviction in Equity Investing" we find that less than 2% of domestic equity managers have added value net of their fees on a statistically significant basis. It is for this reason that we prefer investors allocate their public market exposure predominantly passively and utilize their active risk budget and fees in areas where we have higher conviction that such active risk and fees will be rewarded—across the alternatives space and strategies that are managed on an unconstrained basis (e.g., hedge funds, absolute return strategies).
- Meaningful commitment to Real Assets: PSERS' has a meaningful allocation to Real Assets (24%) and this allocation is broadly diversified across real estate (10%), Infrastructure (2%), commodities (8%), and MLPs (4%). We favor the use of real assets across client portfolios, especially those with inflation-sensitive liabilities.

Some of the unique aspects of the PSERS policy is its use of leverage at the total plan level (Policy allocation of 17%) and its tail risk hedging characteristics through the extensive use of asset classes such as Long Treasuries, TIPS, and Low Volatility Hedge Funds. PSERS' asset allocation seeks to achieve its expected rate of return (EROA) with less risk than many other public plans through its extensive use of diversifying asset classes and risk parity. The policy successfully reduces the expected contribution of risk from equities, thereby reducing the draw down risk of the plan from significant equity market corrections. The policy decision to utilize leverage is somewhat unique to PSERS. This leverage and the higher allocations to illiquid assets such as private equity and private real estate are risks that need to be thoroughly analyzed when reviewing and setting the asset allocation policy. Aon has thoroughly tested the leverage and liquidity risk to the PSERS plan within an asset/liability framework as well as stress tested the policy in several different market scenario analysis in order to confirm the current asset allocation policy.

9. Describe the process you will use to recommend a structured investment program that includes core versus specialty portfolios, active versus passive portfolios, mix of investment management styles, and number of portfolios. Provide a sample structured investment program.

The approach to portfolio construction differs from client to client as we offer customized solutions based on the goals and objectives set by each client. The following chart presents the steps we use to determine and construct portfolios for pension plans.



Prudent implementation of an asset allocation within each asset class is critical to ensuring that the goals of the asset allocation are met. Our focus on portfolio structure is to achieve cost-conscious and risk-controlled implementation within each asset class, such that the asset class performs the role intended for it in the asset allocation. Key tenets that drive our thinking on portfolio structure include:

- Gain exposure to the broad opportunity set across each asset class
  - Eliminate un-intended structural biases
  - Recognize risks associated with structural biases and be comfortable with such risks
- Use of active and passive management
- Use of core versus specialty management
- Pay little for beta—Use active management for alpha; not diversification
- Eliminate style-box approach to portfolio construction—Style boxes are a rigid and artificial construct
- Focus manager selection efforts on skill and not style
  - Hire active managers that can add value regardless of their style and capitalization orientation
  - Allow managers with identifiable skill broad latitude to add value
- Utilize active risk budgeting as a risk control and allocation tool

- Seek to keep fees low—Pay fees only where expected to add value; higher fees alone do not necessarily translate to higher value-added

In determining how to assemble active managers, we recommend a structure review that evaluates the following characteristics of the set of managers and then optimize among those characteristics:

- Tracking error
- Style distribution
- Market capitalization
- Risk exposures
- Active risk drivers
- Holdings overlap with other managers
- Correlation of returns and excess returns to other managers

A common theme inherent in many legacy public plans is exposure to numerous active equity managers with the goal of capturing diversification benefits, along with alpha. AHIC research suggests that these benefits are often overestimated, and that greater efficiency can be achieved via methodically reducing the number of active managers within a program. Potential benefits of streamlining an investment structure may include; a less complicated investment structure, greater allocations to higher conviction managers, fewer resources, lower governance burden, lower fees, and higher alpha.

We use the following multi-step process as a general guide towards evaluating a plan's investment structure:

- Indexation—start with the most efficient parts of the portfolio such as U.S. Large Cap Equity
- Remove duplication—multiple active managers in the same style box e.g., U.S. Large Cap Value
- Reconsider smaller mandates—from a dollar amount and risk contribution perspective
- Broaden mandates—Global equity is the most efficient 'building block'
- Focus on higher conviction strategies—diversification[7] benefits are greater from higher conviction strategies

While we do not recommend frequent changes to asset allocation or investment structure, we absolutely recommend the ongoing review to ensure the current approach remains appropriate given a client's circumstances (ranging from legislative changes potentially impacting liabilities or investment policies to risk tolerances/preferences) and market conditions. Through ongoing communication with our clients and insights from our Global Asset Allocation team, which closely monitors capital market and economic conditions, AHIC makes structural recommended changes only after thorough review and thoughtful assessment.

As an example of how we may recommend structural changes in light of market conditions, we have developed Medium-Term Views to manage portfolio asset allocation within predetermined rebalancing ranges. AHIC's "Medium-Term Views" address the growing institutional investor need to generate value, control risk, and manage portfolio changes efficiently across a range of market conditions. Using an analytical framework that combines macroeconomic, valuation, growth prospects, and sentiment/technical analyses, our Global Asset Allocation Team constructs, ranks, and communicates market views across asset classes. Our Medium-Term Views guide our opinion on what asset class/strategies will

[7] Diversification cannot ensure a profit or protect against loss in a declining market. It is a strategy used to help mitigate risk.

underperform due to market changes, legislative/tax changes, or supply/demand issues. We believe that medium term asset allocation can take advantage of the observed inefficiency of markets. Markets tend to move through cycles of pronounced overvaluation and undervaluation. Performance is enhanced by having ‘underweight’ positions relative to benchmark for those asset classes which have become too popular, overvalued and whose return prospects are poor and ‘overweight’ positions for asset classes which have become neglected and undervalued.

Such views are reflected in our recommendations when natural opportunities arise. For example, relatively speaking, we currently have a more favorable outlook for non-U.S. equities as compared to U.S. equities. If an instance were to arise where money was to be allocated to equities, we would advise allocating to non-U.S. equities over U.S. equities. Importantly, our Medium-Term Views are designed to complement long-term strategic allocation policies and we emphasize the importance of utilizing these views within the rebalancing and asset allocation guidelines set forth in the investment policy statement.

Due to RFP requirements on Excel submittal format, please refer to the **separate attachment** for PSERS Investment Structure Review Project Timeline.

10. ***A sizeable portion of the Fund is invested internally by PSERS’ Investment Professionals. How will you evaluate the expertise, performance, and consistency of investment approach employed by PSERS’ Investment Professionals?***

AHIC has significant experience working with clients that manage assets internally. We have routinely advised these clients across a broad range of issues relating to their internally managed portfolios, including staffing and resources. Examples of the work we’ve conducted include:

- Provided assessment on each internal investment portfolio at a fund (based on individual interviews with each investor). The assessment included an analysis of the number of resources, the appropriate division of labor between front and back office and adequacy of portfolio procedures, etc. Staff resources were benchmarked versus other internally managed staff resources as well as the type of staff we typically see for externally managed portfolios. This analysis was used to develop a hiring plan for increased bench strength and a needs assessment of gaps within the staffing model. This was used to develop an optimal structure of the investment organization.
- Provided recommendations on optimal structuring of an investment organization to most efficiently and effectively utilize internal and external resources.
- Reviewed each internal management team of a fund in order to allow the Board to determine effectiveness of an internal team. This included comparing internal teams with best-in-class external teams for each of the strategies managed internally.

In conducting our assessment of internal teams, we involve members of our Global Investment Management team, which is comprised of more than 150[8] full-time global research professionals covering traditional, emerging, and alternative strategies, including operational due diligence (as of September 30, 2018), many of whom have practitioner experience. These teams assess internal management teams – including the soundness of investment philosophy, robustness in implementation of strategy, skill and adequacy of resources (technology and people), incentive compensation arrangements, and operational aspects—similar to how we assess an external investment management organization. Our team conducted 3,015 manager meetings in 2017 and has wide coverage of investment

[8] Total combined research staff as of 9/30/2018 includes 49 GIC Manager Research Staff (AHIC and Aon affiliates manager research colleagues), 21 operational due diligence colleagues (offshore + onshore), 72 Townsend colleagues from advisory, portfolio management and strategy teams (includes all Legacy Aon RE staff, plus 2 Legacy PE Staff), and 12 Legacy PE staff. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes AHIC and its global Aon affiliates.

strategies across the asset classes, including knowledge of and experience of internally managed investment teams. This insight helps our teams develop a robust, objective assessment of internal teams. In addition, we involve members of our dedicated Operational Due Diligence team conduct a review of investment operations to ensure appropriate risk and compliance controls. As part of our assessment, we would identify and report on potential gaps in resources and/or staff.

Aon has begun the process of conducting the assessment of internal staff. We have updated our DDQs and are working with PSERS staff to get these DDQs completed. Just as with our assessment of external asset managers, these DDQs provide a baseline of information our research staff utilizes when conducting their on-site interviews. Given the work already in process, Aon is prepared to conduct the necessary on-site interviews as soon as we can schedule the interviews In addition to evaluating the current PSERS investment staff, Aon suggests that in addition it may be beneficial to include an assessment of the current SERS investment staff capabilities in our analysis given the efforts in the legislature to combine the investment resources of PSERS and SERS in response to the recommendations of the Pennsylvania Public Pension Management and Asset Review Commission.

11. ***Describe how you will review the adequacy of PSERS' Investment Professionals and resources available to administer PSERS' investment program and invest the Fund's and/or the Trust's assets. Include in your description how you will assess the appropriateness of PSERS' Investment Professionals Staff size and expertise, and the technological tools available to PSERS' Professional Staff.***

Please refer to our response to question 10 above.

12. ***How will you evaluate investment expenses incurred? Describe the evaluation framework in detail. What sources of industry/peer data will you employ?***

Client fees are reported to AHIC by the investment manager and are taken directly from the client capital account statements. Fees are monitored as part of the quarterly process and any significant changes are noted and investigated further. We utilize industry analysis such as CEM Benchmarking, Greenwich Associates Benchmarking data and our extensive manager research database of investment manager fees for comparison data.

13. ***Describe your process, and the variables included, in preparing a written Asset/Liability Study. Provide a sample Asset/Liability Study you would submit to the Board.***

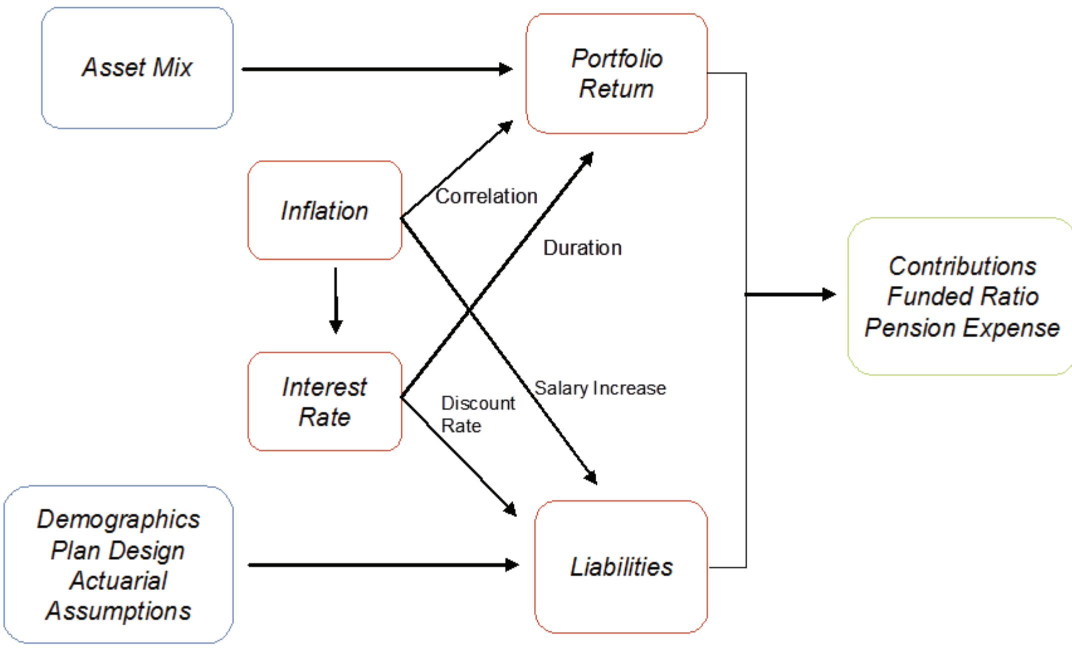
The asset-liability process typically involves a planning phase, a study phase, and a results presentation phase. In the planning phase, we consider the financial goals and objectives, portfolio constraints, liability profile, and assumptions for use in the study. This is also the time we coordinate with the plan actuary to collect the liability profile, and discuss any actuarial items as needed—we have several actuaries on staff that "speak the language." The study phase involves the actual projection analysis, where we evaluate risk/reward tradeoffs of a variety of strategies if so desired. Finally, we will present these results to various decision-making bodies, so that they can make an informed decision regarding their investment policy.

Our proprietary asset-liability model is used to generate up to 5,000 economic scenarios over the next thirty years using a Monte Carlo simulation process. Key variables we will simulate include:

- Inflation;
- Interest rates;
- Pay increases; and

- Asset class returns.

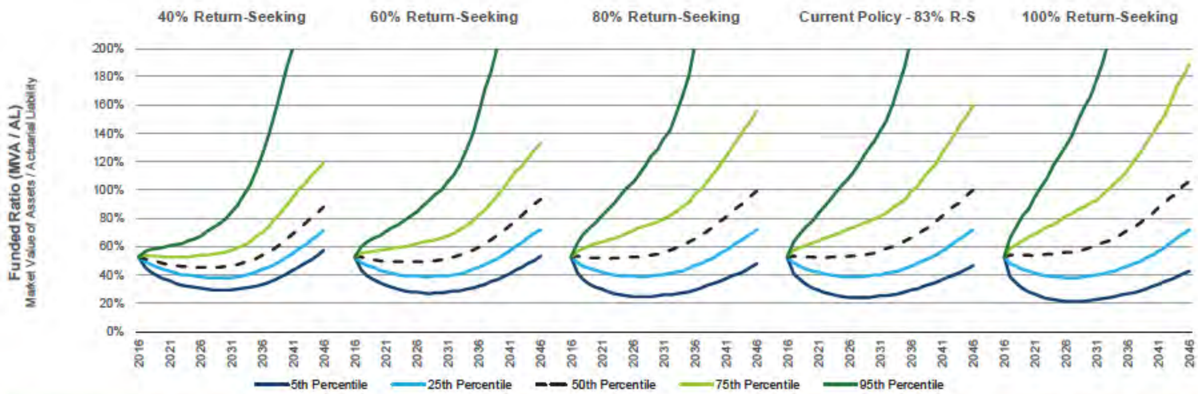
The graphic below shows how pension assets and liabilities are impacted by common factors such as inflation and interest rates. It also depicts the flow chart for asset-liability modeling used for the projections that follow:



These simulations lead to a projection of assets and liabilities under all economic scenarios for the various portfolios, and allow us to show the expected risk-return tradeoff in terms of:

- Investment return;
- Cash contributions;
- Funded status;
- Liquidity profile; and
- "Economic Cost."

Key outputs of the model follow:

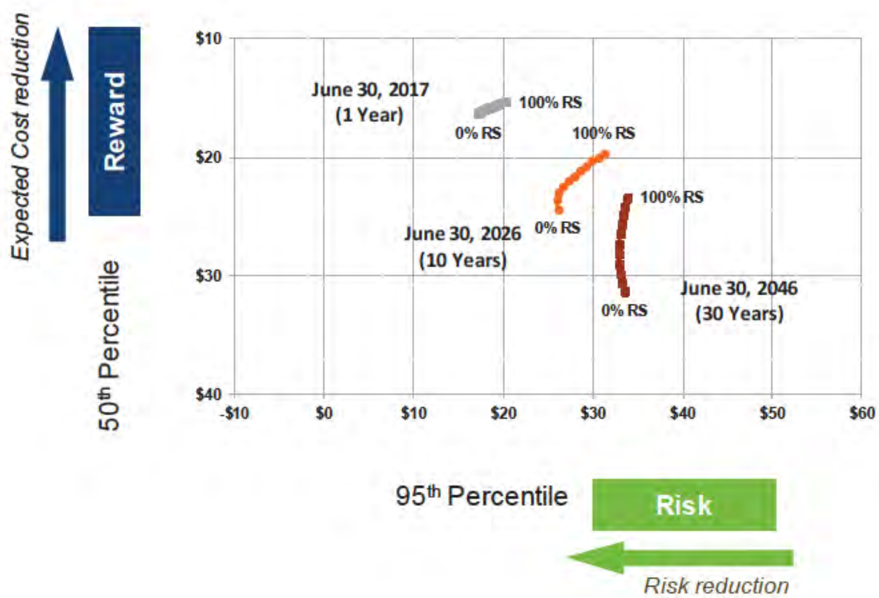


Strategy	40% Return-Seeking			60% Return-Seeking			80% Return-Seeking			Current Policy - 83% R-S			100% Return-Seeking		
Year	2026	2036	2046	2026	2036	2046	2026	2036	2046	2026	2036	2046	2026	2036	2046
5th Percentile	30%	33%	57%	28%	32%	53%	25%	29%	48%	24%	29%	47%	21%	27%	42%
25th Percentile	39%	44%	71%	39%	46%	72%	39%	46%	72%	39%	46%	72%	38%	46%	72%
50th Percentile	46%	54%	88%	49%	59%	94%	53%	65%	99%	53%	66%	100%	56%	71%	106%
75th Percentile	54%	70%	119%	62%	82%	133%	72%	96%	156%	73%	99%	159%	81%	114%	189%
95th Percentile	67%	126%	309%	85%	153%	393%	105%	201%	526%	109%	207%	546%	131%	268%	711%
Probability > 100%	<5%	14%	40%	<5%	20%	46%	8%	24%	50%	10%	25%	50%	17%	33%	54%

Information presented is for illustrative purposes only and should not be considered investment advice. None of the information presented above has been calculated using the recipient's portfolio information.

Economic Cost

Present Value of Contributions plus AL Funding Shortfall/(Surplus)* at 7.50%, $billions



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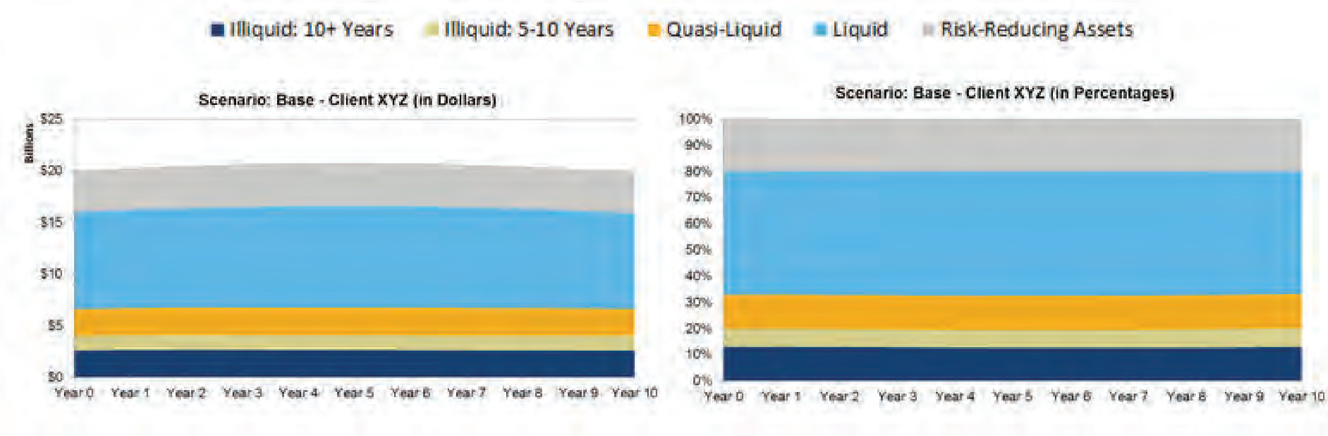

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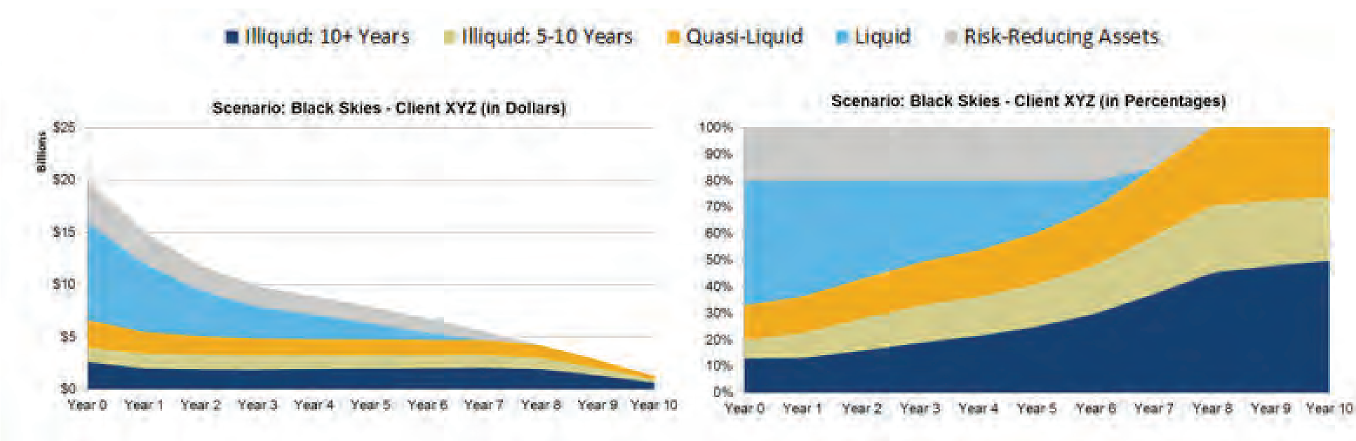

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Instead of focusing on individual variables that provide only a partial view of the expected risk-return tradeoffs, we include a metric called "Economic Cost." This metric combines cash contributions and funded status changes in a single variable, and it can be the most informative variable for making asset allocation decisions. Also, it is important for our clients to know the expected risk-return tradeoffs for each portfolio in scenarios ranging from very optimistic to very pessimistic. We believe AHIC's asset simulation model is a great tool for such risk assessment.

Our analysis will assist in defining an asset allocation policy that attempts to:

- Meets the stated goals;
- Is consistent with its risk tolerance;
- Is likely to meet liabilities effectively in the long run; and
- Allows the client to manage its pension costs to the best extent possible.

We are continuously evaluating and upgrading our approach to make sure it reflects our best thinking, client needs, and changes in financial market conditions and available investment products.

Included in the **Appendix** is a sample Asset-Liability Study.

14. Describe what you will include in the analysis of PSERS' results with the Annual Investment Plan.

All of our work and our reports are highly customized to each of our clients' needs. The annual reviews for each client are customized to include the types of analysis and information that they would like to see and is appropriate given their investment programs. The information provided in annual reviews would also change from year-to-year depending on the changes in the economic and market environment, and the evolving risks that institutional investors face. We would work with PSERS' Board and Staff to identity elements that they would like to see in the annual review, as well as provide our suggestions on important topics that we believe are relevant. That said, at a minimum, we would typically include the following information:

- Overview of economic and capital market environment
- Outlook for capital markets and our medium term views
- Comparison of PSERS' asset allocation to peer public funds
- Discussion on trends in asset allocation among public funds
- Modeling the expected returns and risk profile of PSERS' portfolio based on our most recent capital market expectations
- Detailed review of portfolio performance, including attribution at the total fund and the underlying asset class level
- Progress against established work plans
- Discussion on whether any changes are warranted to PSERS' IPS

15. Describe the variables and methodology you will consider in recommending performance benchmark(s) for PSERS. Provide samples of benchmarks you have recently recommended for current pension fund clients. If risk benchmarks are different than performance benchmarks, describe the differences and provide the same information as performance benchmarks (i.e. variables, methodology and sample benchmarks).

We believe the most critical decision that drives a fund's success is the asset allocation decision and the policy benchmark embodies the asset allocation decision. Comparison of fund returns to the policy benchmark is the best policy-neutral tool to evaluate decisions regarding active managers, program structure, and rebalancing among asset classes.

From time-to-time, we also compare performance of funds compared to peer universes. Each fund's asset allocation is unique to its circumstances, and hence it is critical that peer analysis be viewed in the right context. Peer analysis is useful in understanding how other funds invest their assets (the asset allocation decision), understand differences between a fund's and a peer groups asset allocation decision, which ultimately helps re-affirm the asset allocation decision for a fund.

Key to appropriate and useful peer comparison begins with identifying the appropriate peer universe. In order to garner useful takeaways from peer comparisons, the universe must appropriately reflect similar characteristics to a strategy, asset class, Total Fund, etc. in which it is being compared. We use peer universe information as a supplemental tool and/or data point and not as a primary source for making decisions. At the manager level, peer data can be useful to inform investors whether relative performance of a particular strategy is reasonable relative to a group of similar mandates. Fee information is also another useful peer comparison informing investors if fees paid are in line with industry standards. Some important universe characteristics to consider when evaluating investment strategies include number of constituents, assets under management, mandate style, and vehicle considerations.

Regarding higher level peer comparisons, such as for asset classes and Total Funds, appropriate peer groups become even more important. There are multiple factors that may influence the performance comparisons with peers, such as active/passive allocations, style biases, levels of assets under management, and investment objectives, to name a few. While we believe that peer data can provide information on what others in the industry are doing and can provide some relevant information on how one stacks up to that group, the advice we provide our clients is always first and foremost based on the needs and resources specific to the organizations' circumstances.

In order to provide a fair comparison across the three peer universe providers mentioned above, we would need to complete a more detailed investigation into their specific construction methodologies. Some of the items we would consider include, but are not limited to: data gathering processes, categorization methodologies, handling of partial or vague information, and reach in terms of coverage across the universe being discussed.

That said, we believe TUCS, CEM and BNY Mellon are all institutional quality peer universe providers. They each tend to have a different focus and so can be supplemental to each other when utilizing all three. They each have the advantage of providing a broad universe as well as being able to be narrowed to more size appropriate peer groups which make comparisons more apples-to-apples. Some common challenges of these peer group providers include the lack of transparency into how certain asset classes are defined, primarily related to alternative asset classes (though non-U.S. and global equity definitions can also be opaque), and the lack of transparency into the included peer constituents.

As a global firm, with significant resources, we have access to a wide variety of subscription–based private market data sources. Private equity benchmark data providers have been a recent "hot topic" for many clients. Benchmark provider Thomson exited the business of providing universe data for private market investments and as such, many clients (as well as our firm) needed to select a replacement.

A single data set that includes performance for all funds in the private equity market does not currently exist because these investments are by definition private. It was therefore necessary to determine a vendor whose data best represents the performance of the market. After the withdrawal of the legacy Thomson Reuters VentureXpert product from the market in 2014, Cambridge Associates and Burgiss Group are the most widely–used vendors that meet this criterion. In comparing the leading vendors we considered data collection methodology, universe size and return results. Ultimately, we selected Burgiss as our private market benchmark/universe provider though we believe both to be of high quality.

The challenge with private markets data vendors is no single data set contains the full private markets universe. We believe Burgiss (broad private markets) and NCREIF (real assets) are reasonable representations of their respective universes. By comparing portfolio performance to a peer universe an investor gains two primary insights: (a) an understanding of whether the portfolio manager selected strong performing funds relative to the opportunity set, and (b) an understanding of how well each fund is performing relative to its peers.

16. Describe how you will identify and evaluate new investment opportunities to recommend to PSERS. Provide samples of reports that would be made available to PSERS which detail the results of your firm's analysis.

We believe it is our responsibility to bring forth new investment ideas to our clients for consideration. New investment ideas that we have introduced to our clients recently include global equity investing, increasing non-U.S. equity exposure, infrastructure investment, managed beta or risk parity, credit and dislocation opportunities such as TALF and PPIP and a credit opportunities strategy we introduced to clients.

Two of our dedicated research teams—Global Manager Research and Investment Policy Research – are responsible for developing and evaluating new investment ideas for clients. Moreover, our client teams, in working with clients on a day-to-day basis, also customize and develop advice that specifically addresses our different client types' unique circumstances, such as public pension plans, endowment and foundations, defined contribution plans and corporate defined benefit plans.

17. Discuss your willingness to provide PSERS with information on high conviction new managers at the earliest possible juncture to permit PSERS to secure capacity and negotiate terms with promising emergent managers.

Yes, AHIC will provide PSERS with our assessment of new managers that PSERS requested, as soon as it is available from our Operational Due Diligence team.

18. Discuss your willingness to provide opportunities and expense reimbursement for PSERS to jointly meet and evaluate new managers at industry conferences.

AHIC will provide expense reimbursement for PSERS to jointly meet investment manager and attend AHIC client conferences as required by the PSERS contract up to the limit of $25,000 per annum.

19. Discuss your willingness to provide advance notice to PSERS of in-person meetings with investment managers in PSERS' portfolio.

AHIC will provide advance notice to PSERS of in-person meetings it holds with investment managers in the PSERS' portfolio.

20. Describe your overall approach to manager research and selection, including a list of any specific criteria that must be met in order for a manager to be considered and any characteristics that will automatically exclude a manager from consideration. Please provide an outline of your manager evaluation framework and sample reports.

Our Global Investment Management (GIM) Team's investment manager rating process focuses on both qualitative and quantitative assessment and consists of two main stages: the Initial Rating and Full Diligence.

Initial Rating with the InForm Process

First, the InForm Process, which utilizes a proprietary model, analyzes available investment manager data and rates each product according to seven factors: business, staff, investment process, investment risk, performance, terms/conditions, and operations. The InForm Process applies a quantitative framework around the fundamental insights we believe indicate investment opportunities may be well positioned to ultimately add value going forward. The proprietary model was fully designed and created in-house by the Aon Center for Innovation and Analytics (ACIA). The ACIA is a $350 million analytics research center that is responsible for delivering data-driven insights to client teams.

This initial review process allows our research professionals to quickly identify investment products with strong potential of ultimately obtaining a "Buy" rating. Additional qualitative evaluations can refine the candidates for further consideration.

Full Due Diligence and Rating Discussion

The second phase of our research process is a more expanded evaluation of the seven aforementioned factors including an in-depth assessment of operations. Examples of research topics by factor are listed as follows:

- **Business**: Profitability, stability and spread of ownership, client base, remuneration policy.
- **Staff**: Quality, depth of resource, team dynamic, staff turnover.
- **Investment Process**: Competitive advantage, repeatability, skill, implementation.
- **Risk**: Embedded in process, independent verification, mix of measurements.
- **Performance Analysis**: Consistent with stated process, risk adjusted, persistent.
- **Terms and Conditions**: Client Service, fees, ESG, best practices in documentation.
- **Operational Due Diligence**: Operational controls, valuation of assets, independent directors, third-party vendors.

AHIC's active and ongoing monitoring begins once a manager/fund is rated by our GIM Research Team. This process involves tracking performance information, quarterly phone calls and/or meetings, as well as annual meetings. Site visits will typically occur once per year. Questionnaires are used to collect fund level data and portfolio company–level data, as well as several qualitative fields. These responses are used to monitor performance and more importantly track the fund's execution of its investment objectives. Although changing market conditions at times may dictate some revision to a strategy, it is important to monitor a manager's progress regarding their stated investment philosophy and to make sure they are not pursuing opportunities that are outside of their core competencies. Our InForm process described above is also a tool our team uses for ongoing monitoring of the wider universe of investment managers.

If a concern is raised about a fund, we will immediately speak with the fund manager to gain a better understanding of the issue and how it will affect our clients. When concerns are not fully addressed, we increase our level of monitoring and request more frequent updates from the manager. In addition, when possible, we will seek to assist the manager with the issue and look for ways to help rectify the problem. Our research group has open and ongoing communication with our clients' managers where we freely express concerns stemming from our research group, consultant teams and our clients. In some cases, we interview managers jointly with the client and inform managers of our concerns.

Included in the **Appendix** is our InBrief report and Operational Due Diligence Summary Assessment.

21. Describe the process you will use to conduct investment manager searches and to recommend candidates to PSERS. Identify all criteria that might be taken into account in order to complete your recommendations. Include a description of the size of your manager database and experience negotiating performance-based fees.

A summary of the typical process for investment manager search/due diligence is provided in the table below. The typical manager search process takes 4–6 weeks.

Process Step	Description
Determine selection criteria	Lead consultant would work with the staff and the board to determine selection criteria (e.g., investment style, experience, performance, fees, size, risk, stability of staff). We do not have a standard set of criteria for each search. Rather, we consider the unique circumstances of each opportunity and determine which criteria are most important to emphasize.
Identify preliminary candidates	Lead consultants, in coordination with investment manager research colleagues, would then screen our manager database to identify preliminary candidates that meet the selection criteria. If there are any candidates that the client would like us to consider we include them on our list as well. Thanks to our InForm process, we have the ability to efficiently obtain a quantitative scoring of each preliminary candidate.
Update information/ visit managers	We review the information in our databases regarding candidate managers, update the information, and visit the managers, as needed. While we typically have much of the quantitative data we require to screen managers and assign an initial score, we recognize the importance of a qualitative assessment. It is during this step in a search that we introduce our qualitative assessment. This includes meeting face-to-face with portfolio managers, analysts, traders, and executive management. We also conduct operational due diligence (ODD) on-site visits, which are led by our dedicated team of ODD professionals.
Select and profile finalist candidates	Based on the preceding analysis, the lead consultant, in conjunction with investment manager research, would review the candidates and propose finalists to the client. We typically narrow the field of candidates to three or four firms. For the finalist candidates, we provide a rating and a comparative search report.
Discuss finalist candidates/ interview finalists	We discuss the finalist candidates with the client and answer any questions. Additionally, we can help organize presentations by finalist candidates at our client's offices and participate in the interview process.
Select managers	Following the finalist interviews, the client is in a position to select the manager(s) that best fits its investment structure.

InView Database

Our proprietary database, InView, covers over 10,000 investment managers and over 23,000 products. We use eVestment Alliance as our primary screening tool. As information on new strategies is updated in eVestment, it is captured during our quarterly screening, added to our database, and brought to our researchers' attention. The latest search and navigation tools are built into InView, and the home page is customizable, bringing the information most relevant to researchers to the front and center. Managers are not charged for inclusion in our database. The attached table shows the number of managers and products by asset class (*as of September 30, 2018*).

The table below shows the number of managers and products by asset class in our proprietary system, InView (as of September 30, 2018):

	InView Database as of 9/30/2018	
	Products	Managers
Equities	6,518	1,383
Fixed Income	2,588	646
Hedge Funds	1,388	735
Private Equity	7,026	2,599
Infrastructure	251	144
Real Estate	4,211	1,317
Multi Asset/DGF/TTAA	722	313
Cash	124	56
Currency	83	59
Commodities	51	30
Other	419	200
Unclassified	208	4,792
Total	**23,619**	**10,239***

**Totals will be less than the sum of asset classes as managers will have products in more than one asset class.*

**Includes Buy & Buy (Closed) Ratings*

The model, based on a myriad of factors, scans and assesses the global universe of equity, fixed income, and hedge fund managers. Each quarter, a complete investment product dataset is loaded into the model, which then analyzes data across several key categories and individual factors. This initial rating process, called the InForm process, described in our response to the previous question, III-7.20, helps our research professionals to quickly identify investment products with the potential of ultimately obtaining a "Buy" rating after our extensive due diligence and rating process takes place. Leveraging the InForm process helps us to spend valuable client hours performing in-depth research on candidates that better serve our clients' needs.

22. *Describe your process of reviewing investment manager performance and consistency of investment approach.*

We evaluate manager performance over long periods, typically encompassing a market cycle, for purposes of retention, probation, or termination. In instances of manager underperformance, our first step is to gain an understanding of the causes for the underperformance and use our knowledge of the strategy to determine if the underperformance is reasonable in the context of the market environment that has been experienced. A critical component of our manager research is gaining a strong understanding of the investment strategies and how we should expect them to perform in different market environments and under different circumstances. For instance, a strategy that has a systematic bias to certain areas of the opportunity set relative to its benchmark will at times out- and under-perform, as those areas are in and out of favor. We use this knowledge to decipher if the strategy is performing as we would expect it to under the given circumstances and to act accordingly. In instances when underperformance does not align with expectations given our knowledge of the strategy, or we see a change in the manager's strategy or process, we take a proactive approach to gaining further information.

Our research group has open and ongoing communication with our clients' managers where we freely express concerns stemming from our research group, consultant teams and our clients. In some cases, we interview managers jointly with the client and inform managers of our concerns.

In addition to performance issues, we have recommended manager changes due to issues such as:

- Organizational structure changes (e.g., acquisition by another organization)
- Deviation from stated investment approach
- Lack of internal controls (leading to dispersion problems across accounts, for example)
- Professional turnover
- Rapid growth in assets that inhibits the manager from effectively implementing its investment style
- Style duplication with other client managers.

In addition, AHIC continues to monitor the appropriateness of the strategic asset allocation, the investment manager line up, and policy/guideline compliance using quantitative and qualitative measures as part of our ongoing retainer relationship. We recommend changes as necessary, however, we suggest that clients formally review each of these important issues as part of a regular review process (typically, we update asset allocation studies every three to five years or more frequently in the event of a material change in a client's risk tolerance or risk preference).

AHIC often incorporates a summary of the client's policy statement into the quarterly performance report so that compliance can be checked during quarterly reviews. In addition, we can produce a compliance checklist each quarter.

23. Describe your process of performing due diligence review and analysis on the professional staff and operations of investment managers. Provide samples of reports that would be made available to PSERS which detail the results of your firm's analysis.

Please see our response to Question 24 which details our operational due diligence process of investment managers. Please refer to the **Appendix** section for a sample InBrief report.

Our investment due diligence process reviews the investment staffing of investment managers. Items like quality of staff, depth of resource, team dynamic, and staff turnover are reviewed. A sample InBrief report is included with this submission to provide an example. All newly buy-rated strategies require a review from our global operational due diligence team, regardless of asset class. The review includes an assessment of the investment manager's operations across eight core categories, as follows:

- Corporate and Organizational Structure
- Trade/Transaction Execution
- Middle/Back Office and Valuation
- Compliance and Audit/Testing
- Investment and Counterparty Risk Oversight
- Technology and BC/DR
- Key Service Providers
- Fund Structure and Administration (when the investment is a pooled vehicle)

Information that informs this assessment is gathered through a combination of sources, which may include but are not limited to the following:

- Written responses from the manager to questionnaires or individual questions;

- Review of supporting documentation provided by Manager;
- Interviews with manager personnel, whether in person or via teleconference;
- Interviews with manager's key service providers, whether in person or via teleconference; and
- Demonstrations of select operational processes.

Our methodology is adaptive to allow for an assessment of a manager's capabilities on both an absolute basis (i.e., as an investment manager regardless of strategy) and a relative basis (i.e., with consideration of market constructs related to the manager's asset class).

Our operational due diligence assessment is written up in a report outlining key findings, and any concerns. We consider these reports proprietary and for client distribution only. However, upon an in person visit we would be happy to share some examples for viewing.

24. Do you have dedicated individuals or teams separately responsible for investment, operational, and legal/compliance due diligence? If so, does each group have authority to "veto" a prospective investment before a recommendation is made to a client or at any time thereafter?

Yes, our dedicated global Operational Due Diligence team includes 20 persons (as of January 1, 2019). Our team has diversified experience with a range of competencies including compliance, operations, governance, and counterparty risk. In addition, our experience includes conducting operational due diligence reviews for an internal ODD program but also in a consulting environment, which has unique demands given the range of underwriting standards and deadline/workflow requirements for clients.

All newly buy-rated strategies require a review from our global operational due diligence team. The review includes an assessment of the investment manager's operations across eight core categories, as follows:

- Corporate and Organizational Structure
- Trade/Transaction Execution
- Middle/Back Office and Valuation
- Compliance and Audit/Testing
- Investment and Counterparty Risk Oversight
- Technology and BC/DR
- Key Service Providers
- Fund Structure and Administration (when the investment is a pooled vehicle)

Information that informs this assessment is gathered through a combination of sources, which may include but are not limited to the following:

- Written responses from the manager to questionnaires or individual questions;
- Review of supporting documentation provided by manager;
- Interviews with manager personnel, whether in person or via teleconference;
- Interviews with manager's key service providers, whether in person or via teleconference; and
- Demonstrations of select operational processes.

We assign each firm an overall rating; firms can receive one of four ratings: "A1 Pass", "A2 Pass", "F", or Conditional Pass ("CP"), as follows:

Rating	Definition
"A1 Pass"	We noted no material operational concerns and considers the firm's operations largely align with a well-controlled operating environment.
"A2 Pass"	The firm's operations largely align with a well-controlled operating environment, with limited exceptions. Managers may be rated within this category due to resource limitations or where isolated areas do not align with best practice.
"CP"	We noted specific operational concerns that the firm has agreed to address in a reasonable timeframe; upon resolution, we will review the firm's rating.
"F"	We noted material operational concerns that introduce the potential for economic or reputational exposure; we recommend that investors do not invest and/or divest current holdings.

Product ratings are discussed and vetted with the entire research team before an official rating is determined. These "official" ratings are shared with our clients in the form of our InBrief, InProfile, and InTotal reports.

Some of the factors we look for in downgrading and recommending replacement include but are not limited to: personnel turnover on the investment team, change of ownership, change of compensation structure, and deviation from mandate (style, capitalization, etc.)

Depending on the specific strategy and investment vehicle that we are reviewing, our ODD program considers well over 100 different control points across an investment managers operating and control environment. Each of these points has its own range of targeted controls. When there are deficiencies, we consider the gap and its impact on a singular basis but also how it may layer or combine with other gaps.

Important factors include the following:

- A material deviation from both best practice and market practice (such as a hedge fund that does not use an external administrator)
- A material deviation from best practice that creates a single point of failure within an organization (such as an individual with multiple roles that limits segregation between investment/operations/control responsibilities)
- Deviations which combine in a manner that increases risk (such as considering cash controls and frequency of cash account reconciliation in the aggregate)
- Deviations which demonstrate lack of aptitude or market awareness (selecting sub-par service providers

25. Do you perform background checks on the key individuals of all prospective managers? What roles/titles are typically included in this group (i.e. CIO, portfolio managers, CEO, CFO, etc.)? What specific red flags are you looking for? What service provider(s) do you utilize for background checks?

Our operational due diligence process does include background checks for key individuals. In terms of background check subjects, the specific individuals vary from firm to firm, depending largely on the concentration of authority and responsibility within the firm, and most typically for senior level firm personnel. We consider both significant historical matters related to criminal, regulatory, or civil litigation, or bankruptcy issues as well as pattern behavior which may indicate risk-taking behavior even if individual incidents are not necessarily material on a stand-alone basis.

26. Describe your approach to performing reference checks on prospective managers, including both named and informal references.

Please see our response to the previous question.

27. Do you examine and contact the third-party service providers of all prospective managers? If so, describe the key diligence components and areas of focus with respect to: 1) Administrators, 2) Custodians and Prime Brokers, 3) Auditors, and 4) Legal Advisors.

We conduct interviews with manager's key service providers as part of our due diligence process. We consistently focus on fund administrators as a key third party relationship to verify; in addition, we also collect information on the administrator which may include DDQ responses, interviews, or on-site visits. We take a risk-based approach to additional service provider checks and may independently verify relationships and service levels for custodians/prime brokers, auditors, and legal advisors. We typically conduct more of these reviews for smaller or emerging managers than we do for larger more established firms. In any case we request contact information for each and or diligence level may vary. For example, for emerging hedge fund managers we might conduct an independent asset verification by requesting balance information from prime brokers and custodians but we typically would not do this for an established long-only equity manager (particularly for managed accounts).

28. Please discuss the firm's database of investment managers. How many single-strategy and how many fund of funds managers are in the database? What are some key factors the firm uses to rate managers in the database? Can the database be accessed by clients online?

Our proprietary database, InView, covers over 10,000 investment managers and over 23,000 products. We use eVestment Alliance as our primary screening tool. As information on new strategies is updated in eVestment, it is captured during our quarterly screening, added to our database, and brought to our researchers' attention. The latest search and navigation tools are built into InView, and the home page is customizable, bringing the information most relevant to researchers to the front and center. Managers are not charged for inclusion in our database. The attached table shows the number of managers and products by asset class (*as of September 30, 2018*).

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	Products	Managers
Currency	83	59
Commodities	51	30
Other	419	200
Unclassified	208	4,792
Total	**23,619**	**10,239***

**Totals will be less than the sum of asset classes as managers will have products in more than one asset class.*

**Includes Buy & Buy (Closed) Ratings*

Our database includes a very wide number of investment managers and strategies. While we do not track specifically the number of single-strategy and fund-of-fund managers are in the database, both are included.

The model, based on a myriad of factors, scans and assesses the global universe of equity, fixed income, and hedge fund managers. Each quarter, a complete investment product dataset is loaded into the model, which then analyzes data across several key categories and individual factors. This initial rating process, called the InForm process, described in our response to the question in III-7.20, helps our research professionals to quickly identify investment products with the potential of ultimately obtaining a "Buy" rating after our extensive due diligence and rating process takes place. Leveraging the InForm process helps us to spend valuable client hours performing in-depth research on candidates that better serve our clients' needs.

Some of the most common general evaluation criteria that we analyze are shown below, broken out into relevant categories.

General Criteria

U.S. Equity	International Equity	U.S. Fixed Income	Real Estate
Sector allocation decisions/rationale	Country allocation decisions/rationale	Duration decisions/rationale	Property allocation decisions/rationale
Security selection decisions/rationale	Asset allocation decisions/rationale	Yield curve decisions/rationale	Geographic allocation decisions/rationale
Portfolio deviation from index	Security selection decisions/rationale	Sector allocation decisions/rationale	Financing methods
Portfolio biases due to investment approach	Currency hedging decisions/rationale	Security selection decisions/rationale	Legal structure of fund
Portfolio characteristics	Portfolio deviation from index	Portfolio deviation from benchmark	Portfolio biases due to investment approach
Market capitalization emphasis	Portfolio biases due to investment approach	Portfolio biases due to investment approach	Acquisition decision making
Performance attribution	Portfolio characteristics	Portfolio characteristics	Property management decision making
Cash reserves	Sector allocation decisions/rationale	Cash reserves	Divestiture decision making
	Use of emerging markets	Maturity distribution/emphasis	Portfolio characteristics
	Performance attribution	Use of high-yield bonds	Performance attribution
	Cash reserves	Use of international fixed income	
		Performance attribution	

For illustrative purposes only

Clients can view manager research information on the strategies in which they invest via our InView for Clients database. Through InView for Clients, our clients are able to see how their portfolios are positioned, work with interactive analytics, and view GIM deliverables including ratings, assessments, how those assessments have changed over time, as well as all manager meeting notes.

29. How willing is the firm to perform due diligence on managers that are not in the database but that the Board would like reviewed? Is there an extra charge for that type of research?

We reach out to managers, attend industry conferences and events, and employ our robust network of contacts to source new investment manager ideas. As we have a significant number of clients and assets under advisement, we are also frequently sought out by investment managers (either newly formed entities or existing managers with new products). We maintain an “open door” policy for all managers, regardless of firm size, tenure, track record, or strategy. We believe that this policy keeps our firm apprised of all available opportunities while also providing critical access for all fund managers. AHIC has and will conduct due diligence on mangers that are not currently in the database at the request of the PSERS Board. There is no extra charge for this research.

30. Each year, on average, how many managers do you: 1) Meet with, 2) Subject to full due diligence, 3) Update prior full due diligence, and 4) Approve for investment?

Our research professionals meet with our buy-rated managers at least once in every 12 to 18 months, typically on-site at their office. We generally meet these managers several times a year at our offices and/or via conference calls as necessary, but at a minimum on a quarterly basis. We also meet with additional managers that are not on our buy list to keep apprised of the industry, as well as to identify strategies that might be candidates for a buy-rating. In 2017, our research team conducted 3,015 manager meetings. We typically do full due diligence on 200 strategies a year.

A significant percentage of strategies that go through our full due diligence are approved for investment, as if we see any red flags in the strategy or approach, we will not progress them through the full due diligence process. An operational due diligence fail will prevent the strategy from receiving a buy rating.

31. Do you host any client events or conferences? If so, please describe them. Are managers invited to attend?

Our U.S. investment consulting division hosts a client conference every 24 months covering a variety of retirement and investment topics. Our most recent conference was held in Chicago on May 17–18, 2017. The program consisted of a number of break-out sessions that allowed plan sponsors to engage with their peers as well as gain education. Consistent with our policy of not accepting any revenues from managers, Aon Hewitt fully pays for this conference. Attendance is exclusive to our clients and no asset managers attend. AHIC will be hosting our next Client Conference on September 25-26, 2019 in Chicago.

32. Discuss your willingness to establish a knowledge transfer relationship with PSERS and describe the activities and information that this would entail including data sharing and analytics.

One of our primary functions is to educate and inform clients on the full spectrum of topics applicable to them in their role with the investment program. We offer multiple communication channels for clients to receive our research and to keep them apprised of changes in the regulatory environment and the investment landscape, as well as to keep clients abreast of new opportunities and trends. Following are details of our educational and training resources, all of which are provided at no charge. **Please note that all of the individuals proposed to work on the team supporting PSERS have experience participating in, contributing to, and bringing these education venues to clients.**

- **Aon Retirement and Investment Blog:** In 2014, we launched https://retirementandinvestmentblog.aon.com/, which now boasts over 2,672 subscribers globally as of 12/31/2018. Researchers and consultants typically publish two to three posts a week on various topics, including research, market events, legislative changes, and more.
- **Client Conference:** Our U.S. investment consulting division hosts a client conference every 24 months covering a variety of retirement and investment topics. Our most recent conference was held in Chicago on May 17–18, 2017. The program consisted of a number of break-out sessions that allowed plan sponsors to engage with their peers as well as gain education. In 2019, AHIC will be hosting Client Conference in Chicago on September 25-26th.
- **Webcasts.** From time to time, Aon hosts educational webcasts on key issues impacting clients. These will vary in topic but are open to all clients who have interest.
- **Medium-Term Views.** Traditionally, much attention has been paid to short-term (tactical) and long-term (strategic) issues, leaving the medium-term (12-36 months) opportunities largely unexploited at times. These views are issued monthly and provide plan sponsors an opportunity to capitalize on market dislocations by complementing strategic allocations with targeted opportunities for return enhancement or risk mitigation.
- **Quarterly Investment Outlook Publication.** This quarterly publication produced by our Global Investment Consulting Practice addresses the near term risks and opportunities each quarter.
- **Fiduciary Training.** Understanding fiduciary responsibility is of utmost importance to anyone who is a fiduciary of a retirement plan (defined benefit or defined contribution) or other type of trust. The fiduciary standard is the highest standard imposed by law. We believe that training on fiduciary responsibility should be a regular occurrence for a board of trustees.
- **Chief Investment Officer Newsletter**. This quarterly newsletter covers the market environment and our positioning. Our first Retirement Newsletter ("Pathways"), which focuses on investment issues for retirement plans, was released in March 2018.
- **White Papers.** The research team publishes a series of white papers, which address a variety of topics and cover the broad interests of the firm's diverse client base. Recent papers, including papers applicable to asset management, asset allocation, or benchmarking.

33. Describe the access and interaction PSERS would have with members of your staff, other than the assigned consultant and backup.

Consulting services will be delivered to PSERS by five experienced investment consultants, Claire Shaughnessy, Kevin Vandolder, Amanda Janusz, Darren Moran and Jeanna Cullins. It is expected that one of the two lead consultants will attend the regular meetings, as well as any necessary "off-cycle" meetings/calls with the Committee and staff. As scheduling changes are inevitable given the demands on members of the Committee, at least one member of the consulting team will attend every meeting in person. In addition to the lead consultants, the secondary consultants (Amanda and Darren) will be assigned to the relationship. These individuals are responsible for managing the day to day coordination between AHIC and the PSERS staff, as well as the interaction with the other vendors to the plans, such as custodians, recordkeepers and investment managers. Claire, Kevin, Amanda and Darren will be the primary day-to-day points of contact for PSERS.

AHIC will bring the full capabilities of the organization, which are described throughout this RFP response, to the PSERS relationship. This includes our investment policy services, global investment management, and global asset allocation teams. Members of these teams will attend Board meetings and calls with PSERS often depending on the topic. For example, Phil Kivarkis is an active participant in the annual asset/liability reviews and attends the Board meeting to review the Asset allocation meeting. AHIC's GIM and Operational Due Diligence staff is always available to PSERS staff for conference calls regarding investment managers and asset class specific discussions.

34. Briefly summarize your philosophy regarding the consultant's relationships with boards, internal investment professionals, and investment managers.

For four decades, we have worked with public retirement systems. Our philosophy is to live up to the terms of our agreement and never forget we serve in a fiduciary capacity.

We see ourselves as a trusted advisor to the fiduciaries on the board and investment staff. With regard to the board, we will partner to provide a view of best practices in various areas, including reporting, benchmarking, asset allocation, investment structure, and investment policy. Our primary goal will be to assist the board in making decisions that are in the best interests of plan participants and whose main purpose is to achieve the investment objectives set forth in policy. We will report performance and other performance-related metrics objectively at regularly scheduled board meetings as well as other topics that require our input and analysis. We will also make available our firm's research to board members both topical and manager-related.

With respect to the investment staff, we will work collaboratively and act as a resource for any issues that may come up related to the investment program. We work with investment staffs in many different capacities and customize our working relationship based on the different circumstances of each client. For example, some investment staffs rely heavily on our manager due-diligence efforts, outsource to us most steps in the search process, and ask us to provide written documentation of our due-diligence efforts; other clients simply rely on us as an advisor to augment and provide a broad industry view on issues related to manager search projects. The lead consultants are always accessible to the investment staff, but some clients also prefer to contact our specialists directly, and we are comfortable with this arrangement. We encourage our clients to build other relationships around the firm outside of the lead consulting team.

Our role with regard to investment managers is to be an independent evaluator of their capabilities, fees, and services, and communicate these views to PSERS.

35. List all standard services provided in a typical pension plan consulting assignment. List the specialized services that you have provided to meet other needs of your clients.

Our knowledge of the retirement arena is extensive. We are a full-service investment consulting firm that provides independent and objective advice with extensive global resources and proprietary trends data. AHIC provides the following investment consulting services depending on the client's specifications:

- Investment Policy
- Investment Structure
- Investment Program Evaluation
- Performance Calculation
- Cost and Transition Management
- Manager Selection
- Manager Monitoring
- Master Trustee/Custodian Selection and Oversight
- Board/Committee Governance
- Fiduciary Audits and Operational Reviews
- Subadvisory
- Asset-Liability Studies
- Strategic Planning
- Client and Fiduciary Education
- Proxy Voting and Shareholder Activities
- Program Oversight
- Private Equity Advisory Services*
- Real Estate Advisory Services*
- Hedge Fund Managed Account Services*
- Opportunistic Strategies Advisory Services
- Expert Witness Testimony
- Delegated Services*
- Operational Due Diligence

The services marked with an asterisk are services not typically provided in our standard non-discretionary general consulting relationship but are services we do provide to other clients based on their needs.

B. Performance Measurement, Risk, and Attribution Reporting

1. ***Describe the content, format, and method of delivery of the <u>quarterly</u> performance reports you will prepare for PSERS. Performance reports are deemed to be inclusive of ex-post risk reporting and analysis. Describe instances where performance and risk indices and benchmarks are different. Include:***

Our quarterly performance reports great detail on our clients' investment programs. The report includes an overview of the major capital markets, an executive summary with a high-level overview of the total plan and a detailed body including sections on each asset class and multiple pages on each investment manager. Our reports contain key information in easy to read exhibits that will be meaningful to laypersons and investment professionals alike.

Quarterly performance reports with our full analysis are normally available 45–50 days after the quarter's end, depending on data availability. The report includes an Executive Summary for a high-level overview of the plan, as well as a more detailed body that includes asset detail, investment manager performance, risk statistics, and a variety of other customizable items. The investment consulting team will review the report in conjunction with clients at regularly scheduled meetings. We can deliver the report in both hard copy and electronic copy formats to maximize flexibility for clients.

We are able to tailor our performance reports to meet the specific needs of PSERS by removing from, adding to or modifying to our standard reports. Below we have listed the contents of our standard quarterly performance report:

Executive Summary

- Capital market overview
- Total fund performance relative to policy and other designated benchmarks
- Performance compared to appropriate peer plans
- Asset allocation relative policy
- Total fund risk statistics
- Attribution analysis (graphical representation of plan performance drivers), including:
  - Asset allocation effect: Impact of allocation differences relative to policy
  - Selection effect: Impact of asset class performance relative to asset class specific benchmark
  - Other: Impact of intra-month cash flows

Asset Class and Investment Manager Performance and Portfolio Statistics

- Asset class level review, including:
  - Manager allocation
  - Performance compared to appropriate benchmarks
  - Performance compared to appropriate peer universe
  - Risk vs. return analysis
- Investment manager detail pages, including

- Performance compared to appropriate benchmarks and peer groups
- Portfolio risk statistics

Detailed Capital Market Environment

- Broad asset class performance results (displayed graphically) including major traditional and alternative asset classes and underlying sub-asset class performance and details.

AHIC has established a formal performance reporting manual for the PSERS relationship, which documents our methodologies for performance calculation, sourcing of data for different segments of the portfolio, reconciliation processes in place (with investment managers, custodian, specialty consultants, and PSERS staff), and outlines acceptable tolerance ranges for variance of returns vs. manager reported returns (typically 15bps, with some exceptions, such as currency hedging portfolios, which are 5bps).

a. Data and method used to calculate total return before and after fees. Please identify which criteria in your methodology can be customized by client preference. PSERS, PSERS' custodian bank, investment managers, and/or fund administrators will supply a monthly portfolio asset list with accrual market values for marketable securities. PSERS' will supply quarterly portfolio market values and cash flow data for real estate, venture capital, and private equity investments.

Please indicate whether you use your own pricing sources and describe how you will investigate/resolve pricing errors in the custodian bank's asset list. Describe how you handle pricing for derivative investments. Identify your pricing sources and hierarchy by asset class.

We do not use our own pricing sources for any type of security. We use custodial statements for portfolio's market values, prices, and transactions. If our return differs from that of the investment manager because of a pricing difference, we notify the investment manager of the potential custodial error and request that they resolve the issue with the custodian. We maintain contact with the investment manager on the issue until it has been confirmed as resolved.

Our performance measurement system is flexible and gathers data from the source directed by the client (including from managers, custodian or client) and provides multiple verification checks. The system also has the ability to export into Excel which further enhances our ability to verify and reconcile manager returns.

Manager returns are compared against calculated returns over the relevant period (month/quarter). Returns are calculated as described above using actual cash flows (contributions and distributions) during the reporting period, along with beginning and ending market values. Cash flow data and beginning/ending market values are usually obtained from both the custodian (if applicable) and each relevant manager, and any discrepancies found in the data between the two sources is investigated to determine the cause (i.e., inclusion/exclusion of cash flows occurring near quarter-end, difference in accounting for impact of cash flows on market value, etc.). Once data has been reconciled, time-weighted returns are calculated as described above and are compared against the corresponding manager-reported returns. Any discrepancies are investigated in much the same way as described for cash flow and market value discrepancies, where the manager is contacted in an effort to determine the source. If it is found that the manager uses a different methodology for calculating returns that accounts for discrepancies in reported returns, their methodology is noted and verified. If the discrepancy emerged from another source (cash flow(s), valuation difference, etc.), it must be uncovered and worked out with the manager in order to determine the proper performance figures for the period.

In computing individual manager returns, we need cash flows and Net Asset Values at Fair Value aggregated at the individual manager level. Cash flows would need to be segregated at least between the following four categories: Contributions, Income Distributions, Gain Distributions, and Return of Capital Distributions. In terms of types of returns, we can provide both dollar and time weighted returns.

AHIC uses the Modified Dietz methodology to estimate time-weighted returns for investments that have periodic cash flows but are not valued daily. The total return (R_t) for each period (generally one quarter) is calculated as:

$$R_t = \left(\frac{(NAV_1 - NAV_0 - CF)}{NAV_0 + WCF} \right)$$

Where:

NAV₁	= Ending net asset value

NAV₀	= Beginning net asset value

CF	= Net contributions in the period (net distributions are added)

WCF	= Total weighted net contributions in the period (net distributions are subtracted)

The weighted contributions/distributions are determined based on the date in the period in which each cash flow occurs. Cash flows that occur earlier in the period receive a greater weight than those that occur later in the period and thus have a greater impact on the period return. For each cash flow, the weighted cash flow is calculated as:

$$WCF = \frac{D - d}{D} * CF$$

Where:

D	= Number of days in the period

d	= Day in the period on which the cash flow occurs

CF	= Cash flow

The returns for each period are then linked geometrically to determine the return over the entire time horizon using the following equation:

$$R = [(1 + R_1) * (1 + R_2) * (1 + R_3) \ldots * (1 + R_N)] - 1$$

where *N* is the number of periods in the horizon. For time horizons over one year, the return is annualized as follows:

$$R_{annualized} = \left((1+R)^{\left(\frac{1}{Y}\right)} \right) - 1$$

where Y is the number of years in the time horizon.

b. *Time periods for which total returns can be calculated.*

All returns are calculated on a monthly basis provided custodial data is available. As long as we have monthly total rates of return loaded into our performance measurement system, we can calculate and display total rates of return for any time period as long as the end date is the last day of a month.

c. *Standard indices, custom indices, and benchmarks you will use for comparison.*

Our performance measurement system has a vast selection of standard market indices from which to choose. Custom index blends or splices can be created within the system as long as the data for the individual indices are available.

d. *Total population of funds and public pension funds (including a large fund subset) you will use for universe comparisons.*

Below are the public plan universes available within our performance measurement system (as of December 31, 2018).

Peer Group Name	Peer Group ID
All Public Plans-US Equity Segment	395
All Public Plans-US Fixed Income Segment	396
All Public Plans-Intl. Equity Segment	399
All Public Plans-Intl. Fixed Income Segment	400
All Public Plans-Real Estate Segment	401
All Public Plans-Total Fund	402
All Public Plans > $1B-US Equity Segment	387
All Public Plans > $1B-US Fixed Income Segment	388
All Public Plans > $1B-Intl. Equity Segment	390
All Public Plans > $1B-Intl. Fixed Income Segment	391
All Public Plans > $1B-Real Estate Segment	392
All Public Plans > $1B-Total Fund	393
All Public Plans < $1B-Total Fund	398

e. *Characteristics you will compare.*

Our system can run numerous risk/return stats, including standard deviation, tracking error, information ratio, downside risk, correlation, beta, up/down market capture, Sharpe ratio, etc. We also can run holdings-based portfolio characteristics for equities (assuming holdings are available) at the portfolio and composite level, including sector weightings, top holdings, country weights for non-US portfolios.

f. *Breakdown of PSERS' fund market value.*

AHIC's monthly and quarterly report provides a detailed breakdown of PSERS' fund market value by investment manager and a number of custom composites to reflect the asset allocation to meet the needs of PSERS' staff. For example, we break out market values in both levered and non-levered composites and provide composites with and without currency hedging. AHIC sources the market value of assets from PSERS custodian and the individual asset managers.

g. Market conditions.

Please comment on your ability to provide draft quarterly performance reports within 3 business days following receipt of final quarter-end market values from our custodian and partnerships. Will you be able to issue final reports within 3 business days after receiving comments from PSERS on the draft? What quality control systems and procedures do you use to ensure that reports are prepared accurately and delivered on time?

Once final quarter-end market values are received from the custodian, as well as the investment managers, we can produce a draft quarterly performance report within 3 business days. Generally, we can also provide a final quarterly report within 3 business days after receiving comments from PSERS staff on the draft. Exceptions to that timing may include instances where new custom reporting needs to be built out, additional data needs to be sourced, or discrepancies with account history are being investigated.

We reconcile returns with investment managers, the custodian, specialty consultants, and client's staff, where appropriate. If unacceptable differences are noted, we contact the investment manager and work with them to resolve discrepancies. When all data is final and reports are produced in draft we have a very elaborate and detailed quality control checklist that is required to be completed by the analyst who produced the report and the consultant reviewing the report. Consulting team and analysts are in close contact with each other on progress of report and timing of all steps along the way in order to ensure reports are delivered on time.

Please see our response to Question M.8 for a description of our quality control procedures.

Provide sample quarterly pension fund performance reports.

Please refer to the **Appendix** section for a copy of the current PSERS' quarterly performance report AHIC prepares.

h. Describe in detail the performance measurement attribution and analysis service you propose to provide for PSERS. Note its usefulness for PSERS. Provide sample reports.

AHIC uses a third-party performance system, PARis, which allows for our performance attribution capabilities to be quite broad. We are able to use returns-based and holdings-based style analysis to attribute manager performance to combinations of market factors and security selection.

We also have the capability to design custom returns-based attribution (Excel-based) for clients looking for additional reporting that isn't supported by the PARis system. Using Excel-based attribution, we can isolate Selection Effect, Attribution Effect, and Timing & Interaction Effect at the composite-level, using either levered or unlevered NAVs and returns.

2. ***Describe the content, format, and method of delivery of the monthly performance reports you will prepare for PSERS and its advisors. Performance reports are deemed to be inclusive of ex-post risk reporting and analysis. Describe instances where performance and risk indices and benchmarks are different. The monthly reports will include only the public market portfolios and composites and will exclude the private market portfolios.***

We can produce monthly "flash" reports with preliminary performance results and index comparisons for public markets. Depending on how quickly we get information from the trustee and managers, monthly flash reports can be available 35–45 days following each month's end. Our typical monthly report contains a performance summary table of the full public market investment program, asset allocation and attribution at the total public markets level; however, these reports can be fully customized to meet the needs of PSERS.

a. ***Data and method used to calculate total return before and after fees. Please identify which criteria in your methodology can be customized by client preference. PSERS' custodian bank, investment managers and/or fund administrators will supply a monthly portfolio asset list with accrual market values for marketable securities.***

Please indicate whether you use your own pricing sources and describe how you will investigate/resolve pricing errors in the custodian bank's asset list. Describe how you handle pricing for derivative investments.

Our methodology for calculating investment performance in the PARis system is based on the modified Dietz method, as detailed in our response to Question a above, and our primary sources of data are custodial statements (defined benefit plans) and recordkeeper documentation and mutual fund data sources (defined contribution plans).

Please also see our response to Question a above for a description of our performance calculations and how we handle any discrepancies that may occur.

b. ***Time periods for which total returns can be calculated.***

We calculate time-weighted returns on a monthly basis for public markets, and a quarterly basis for private markets.

c. ***Standard indices, custom indices, and benchmarks you will use for comparison.***

Our performance measurement system has a vast selection of standard market indices from which to choose. Custom index blends or splices can be created within the system as long as the data for the individual indices are available.

d. ***Total population of funds and public pension funds (including a large fund subset) you will use for universe comparisons.***

Below are the public plan universes available within our performance measurement system (as of December 31, 2018).

Peer Group Name	Peer Group ID
All Public Plans-US Equity Segment	395
All Public Plans-US Fixed Income Segment	396
All Public Plans-Intl. Equity Segment	399
All Public Plans-Intl. Fixed Income Segment	400
All Public Plans-Real Estate Segment	401
All Public Plans-Total Fund	402
All Public Plans > $1B-US Equity Segment	387
All Public Plans > $1B-US Fixed Income Segment	388
All Public Plans > $1B-Intl. Equity Segment	390
All Public Plans > $1B-Intl. Fixed Income Segment	391
All Public Plans > $1B-Real Estate Segment	392
All Public Plans > $1B-Total Fund	393
All Public Plans < $1B-Total Fund	398

e. Characteristics you will compare.

Our system can run numerous risk/return stats, including standard deviation, tracking error, information ratio, downside risk, correlation, beta, up/down market capture, Sharpe ratio, etc. We also can run holdings-based portfolio characteristics for equities (assuming holdings are available) at the portfolio and composite level, including sector weightings, top holdings, country weights for non-US portfolios.

Please comment on your ability to provide draft monthly performance reports within 3 business days following receipt of final month-end market values from our custodian. Will you be able to issue final reports within 3 business days after receiving comments from PSERS on the draft? What quality control systems and procedures do you use to ensure that reports are prepared accurately and delivered on time?

Once final month-end market values are received from the custodian, as well as the investment managers, we can produce a draft monthly performance report within 3 business days. Generally, we can also provide a monthly quarterly report within 3 business days after receiving comments from PSERS staff on the draft. Exceptions to that timing may include instances where new custom reporting needs to be built out, additional data needs to be sourced, or discrepancies with account history are being investigated.

We reconcile returns with investment managers, the custodian, specialty consultants, and client's staff, where appropriate. If unacceptable differences are noted, we contact the investment manager and work with them to resolve discrepancies. When all data is final and reports are produced in draft we have a very elaborate and detailed quality control checklist that is required to be completed by the analyst who produced the report and the consultant reviewing the report. Consulting team and analysts are in close contact with each other on progress of report and timing of all steps along the way in order to ensure reports are delivered on time.

Please see our response to Question M.8 for a description of our quality control procedures.

Provide sample monthly pension fund performance reports by asset class.

Included in the **Appendix** section is a copy of a sample Monthly Flash Report.

3. ***Describe in detail the PC-based or Internet-based fund management and consulting tools to which your firm will provide the Board and PSERS' Investment Professionals access. Provide sample reports. NOTE: PSERS may require a demonstration of such tools.***

Client Portal

Aon has partnered with Pivotal Labs to upgrade our entire global technology platform. The new portal is offered to all Aon clients with direct access to Aon's investment manager research including manager ratings, meeting notes, and thought leadership. New features are continuously being developed and tested with users. This secure channel will be Aon's primary distribution point for all client documents and deliverables. The information within the platform is interactive and will be automatically updated with the most recent data available.

Included in the **Appendix** section is the PSERS' Client Portal presentation.

4. ***Provide sample reports by asset class depicting investment and risk exposures, and note their usefulness for PSERS.***

Included in the **Appendix** section is the Asset Allocation by Manager report.

C. Defined Contribution Plan Experience

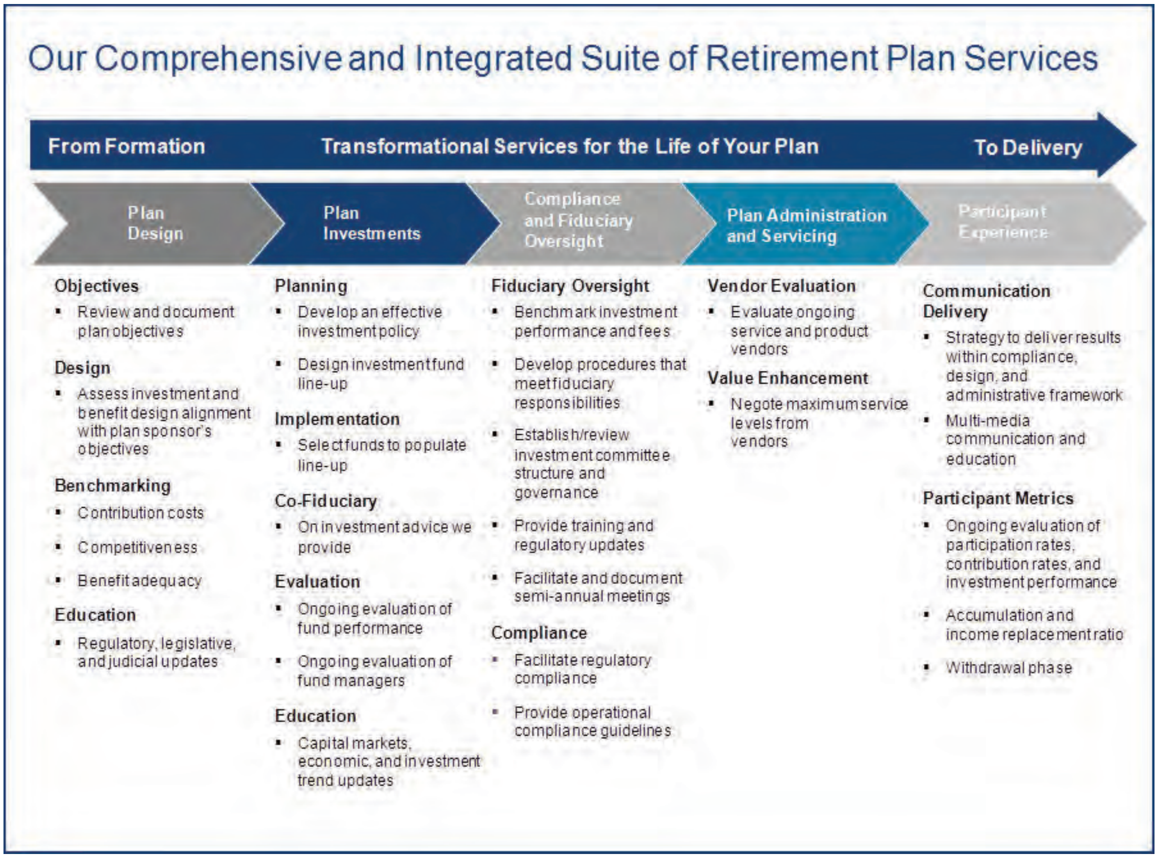
1. ***Describe the firm's experience in working with defined contribution plan sponsors.***

We have significant resources devoted to our defined contribution plan services, including such areas as administrative, total plan cost analysis, communication strategies, and other areas specific to defined contribution plans. We can provide significant resources to PSERS in this area.

AHIC has 306 defined contribution U.S. retainer clients with $1,027 billion in assets under advisement (as of June 30, 2018, represents U.S. retainer clients).

2. ***List all of the firm's standard services provided in a typical defined contribution plan advisory and investment consulting relationship.***

AHIC has the ability to provide comprehensive investment consulting services to defined contribution plans. Our services provide the full spectrum from formation to delivery as outlined in the graphic below:



A summary of services that we provide clients includes the following:

- ***Investment Policy Development***

  Assisting institutional investors develop investment strategy and clearly documenting such strategy through an investment policy statement is a particular strength of AHIC. Our many years of experience working with public funds has given us a unique perspective on the issues public funds face and the need for a clearly defined policy document to guide the prudent management and governance of a fund's assets.

- ***Investment Manager Evaluation and Monitoring***

  Globally, our researchers work collaboratively with our investment consultancy affiliates to form our global manager research team that consists of more than 150 full-time global research professionals covering traditional, emerging, and alternative strategies, including operational due diligence (as of September 30, 2018) and is dedicated to researching and evaluating investment managers worldwide. Our manager researchers are based in the U.K., U.S., Canada, and Continental Europe and cover global markets and products. The team includes a number of former fund managers, providing valuable insights for analyzing investment firms. GIM continually monitors and rates managers' products—whether they currently manage client assets or they are being considered for a new mandate.

- ***Performance Measurement***

  Performance reports provide the basis for close portfolio-level monitoring, a crucial fiduciary duty. In recognition of this fact, we have spent considerable resources developing reporting capabilities. Our analysts help ensure our clients receive timely and accurate performance reports. Our reports are customized based on client needs; however they always include key metrics such as results compared to appropriate benchmarks, risk-adjusted results, key portfolio characteristics, and peer group analysis. We also provide custom, password-protected online portals for clients. These portals allow access to AHIC research and client-specific reporting, both current and archived.

- ***Fiduciary and Investment Education for Board and Staff***

  We have a dedicated Fiduciary Services practice each with many years of experience working with state investment boards, governmental entities, and public retirement systems, as well as corporations. This allows us to provide services such as governance advice, fiduciary training, fiduciary audits, operational reviews, policy development, board member orientation, and facilitation of board self-assessments.

- ***Custom Target Date Funds***

  AHIC has a wealth of experience working with defined contribution clients to create custom solutions rather than solely relying on off the shelf pre-packaged investment products. Our custom target date funds employ an open architecture investment platform and distinctive investment managers for its underlying investments, rather than being wholly reliant on one investment platform that is more typical for the target date funds offered by bundled investment providers. In addition, AHIC evaluates the demographic profile of our clients in order to determine the appropriate asset allocation glide path appropriate for client's plans, rather than utilizing a one-size fits all approach to asset allocation.

3. List all of the firm's standard services provided in a typical defined contribution plan manager search and evaluation program.

AHIC will assist PSERS in conducting investment manager searches; our services are detailed below. In addition, we are providing an outline of the steps taken during a manager search.

- Provide the following investment manager evaluation and selection services:
- Identify preliminary candidates favorably evaluated by AHIC researchers
- Evaluate preliminary candidates based upon PSERS' objectives and selection criteria
- Identify most appropriate investment management candidates
- Prepare materials reviewing suggested candidates (i.e., organization, staff, investment approach, performance, portfolio characteristics, etc.)
- Meet with PSERS to discuss suggested investment manager candidates
- Assist PSERS in selecting the most appropriate investment manager(s) for the Plan
- Assist PSERS in evaluating and selecting new or replacement investment managers on an ongoing basis, as necessary

AHIC's investment manager search process is designed to meet the needs of our clients. In the table below, we provide a summary of the typical investment manager search/due diligence process.

Process Step	Description
Determine selection criteria	Lead consultant would work with the staff and the Committee to determine selection criteria (e.g., investment style, experience, performance, fees, size, risk, stability of staff). We do not have a standard set of criteria for each search. Rather, we consider the

Process Step	Description
	circumstances of each opportunity and determine which criteria are most important to emphasize.
Identify preliminary candidates	Lead consultants, in coordination with investment manager research colleagues, would then screen our manager database to identify preliminary candidates that meet the selection criteria. If there are any candidates that the client would like us to consider, we can include them on our list as well. Using our InForm process, described below, we have the ability to efficiently obtain a quantitative scoring of each preliminary candidate. The benefits of this, including predicative modeling based on historical data, are described in depth below.
Update information/ visit managers	We review the information in our databases regarding candidate managers, update the information, and visit the managers, as needed. While we typically have much of the quantitative data we require to screen managers and assign an initial score, we recognize the importance of a qualitative assessment. It is during this step in a search that we introduce our qualitative assessment. This includes meeting face to face with portfolio managers, analysts, traders, and executive management. We also conduct operational due diligence (ODD) on-site visits, which are led by our dedicated team of ODD professionals.
Select and profile finalist candidates	Based on the preceding analysis, the lead consultant, in conjunction with investment manager research, would review the candidates and propose finalists to the client. We typically narrow the field of candidates to three or four firms. For the finalist candidates, we provide a rating (described in detail below) and a comparative search report.
Discuss finalist candidates/ interview finalists	We discuss the finalist candidates with the client and answer any questions. Additionally, we can help organize presentations by finalist candidates at our client's offices and participate in the interview process.
Select managers	Following the finalist interviews, the client is in a position to select the manager(s) that best fits its investment structure.

4. ***What are the firm's capabilities in the area of providing performance monitoring and evaluation of defined contribution annuity products?***

Annuity products have unique characteristics distinct from traditional mutual fund products which need to be considered when evaluating these funds. We have extensive knowledge and experience monitoring annuity products. We evaluate both quantitative and qualitative aspects of investment managers and their organizations, including personnel, investment process, and performance. Many third-party record-keepers offer an option to annuitize the participant balances, but the usage of this option is low.

In addition to the criteria and factors we utilize for monitoring all investment products, we consider certain factors and details which are more relevant when evaluating annuity products. For example, the creditworthiness of an annuity provider is more important to an annuity's evaluation than the creditworthiness of a traditional mutual fund manager. Also, the guaranteed rate and crediting rate on the annuity varies by contract-type, so the evaluation must account for this detail. We consider the unique attributes of each contract in determining its ratings.

We have devoted considerable resources to the evaluation of annuity and retirement income solution providers. These include in-plan and out-of-plan solutions for managed payouts, annuity purchase options, deferred annuity options, guaranteed minimum income benefit (GMIB) options, guaranteed minimum withdrawal benefit (GMWB) options, and rollover options.

Our analysis typically includes an evaluation of the income guarantee, inflation protection, credit risk, underlying investments, fees, portability, flexibility, transparency, and ease of communication of the annuity or other retirement income solution.

5. ***Describe the firm's methodology for determining types of funds in the investment line-up.***

For several years, we have recommended our clients consider separating the investment options into tiers in order to better facilitate participants' decision-making process. A typical investment structure that we believe reflects industry best practices is shown below:

Possible Tier	Characteristics
Target Retirement Date Funds	Simple packaged solution requires less time and expertise Built-in asset allocation that becomes more conservative as a participant gets closer to retirement
Core Funds	Limited number of active and passive options covering the key asset classes Requires asset allocation decision Committee monitors investments offered
Self-Directed Brokerage Account (as Permitted by Vendor)	Includes all mutual funds available through recordkeeper's brokerage account Participant has greater flexibility but also full responsibility for asset allocation and investment manager decisions

Within the Core Funds tier, our preference is to limit the number of funds, while still allowing participants the opportunity to build diversified portfolios that span the range of objectives typically used. This is because research[9] shows that DC participants tend to make sub-optimal decisions when presented with too many options. We believe Core Fund lineups can be as few as four to seven options (when using white-label multi-manager options that are asset-class or objective-based). To the extent a plan sponsor does not want to streamline their menu this far, we generally favor fewer options and having a broad purview (e.g., offering an "All Cap or All Cap Global" portfolio instead of having individual style box options for value, growth, and blend of large, mid, and small cap. We also believe it is important to include low-cost index fund options with broad market coverage.

The plan sponsor decision on how many and what types of investment choices to offer to participants is addressed by considering several factors, as follows:

Philosophical Issues	Investment Issues	Administrative Issues	Compliance Issues
▪ What do plan participants want? ▪ Brand name importance/ recognition ▪ Payment of expenses by participants ▪ Level of paternalism ▪ Investment education ▪ Automatic enrollment	▪ Number and type of funds ▪ Role of lifestyle/ lifecycle funds ▪ Active versus passive management ▪ Retail funds versus institutional funds ▪ Window/self-directed option	▪ Bundled versus unbundled arrangement ▪ Daily valuation ▪ Total plan cost ▪ Number of recordkeepers	▪ 404(c) requirements ▪ Investment communication/ education ▪ Fiduciary checklist

6. *Describe the firm's methodology for determining the asset classes to be recommended to a defined contribution plan sponsor.*

An important first step in our engagements is conducting a thorough review of the plan's current investment structure, which encompasses the methodology for asset class recommendation. This Investment Program Review includes the following steps:

Step 1: Determine of Overall Investment Structure: The investment structure review portion includes analysis of the existing plans as a starting point, industry trends and practices, and key investment issues. Investment issues includes the types of investment options to offer participants, the number of offerings to include, the role of passively-managed products, QDIA (qualified default investment option), growth versus value-oriented products, white label funds and the use of target retirement date products (including custom).

The most important plan sponsor decision is how many and what types of investment choices to offer to participants. This decision is addressed by considering several factors, as follows:

Philosophical Issues
- What do plan participants want?
- Brand name importance/recognition
- Payment of expenses by participants
- Level of paternalism
- Investment education
- Automatic enrollment

Investment Issues
- Number and type of funds
- Role of lifestyle/lifecycle funds
- Active versus passive management
- Retail funds versus institutional funds
- Window/self-directed option

Administrative Issues
- Bundled versus unbundled arrangement
- Daily valuation
- Total plan cost
- Number of recordkeepers

Compliance Issues
- 404(c) requirements
- Investment communication/education
- Fiduciary checklist

Step 2: Review Investment Options: We will review the investment options currently offered in the plan. We will examine the investment results of each option versus appropriate benchmarks and peer groups. AHIC maintains extensive databases of funds and more than 300 market benchmarks for comparative purposes. In addition to traditional performance analysis, we include risk/return analysis relative to appropriate benchmarks. We will provide an assessment of the portfolio characteristics of each investment option versus an appropriate benchmark to determine if a fund's characteristics are consistent with its stated approach. Lastly, we include an evaluation of fund fees and compare these fees to industry standards. We will suggest less expensive fund share classes, where appropriate.

Step 3: Suggest Investment Changes: We will propose new investment options for the committee's consideration if:

- Funds currently offered are inappropriate for the plan's participants.
- The plan investment structure (as determined in Step 1 above) has changed.
- Current funds have performance or qualitative issues.

After a comprehensive discussion on plan objectives and sponsor needs, the client's specific objectives determine the asset classes to be included.

7. ***What is the firm's philosophy on default investment options?***

The majority of our clients employ target date funds as the Qualified Default Investment Account ("QDIA"). We have experience with Managed Accounts and believe that Managed Accounts are also an acceptable QDIA for a DC Plan. As with any solution, there are pros and cons, and we work with each client on a customized basis to determine the best solution for the organization and its participants. Most of our clients utilize target date funds as their QDIA.

8. ***What is the firm's philosophy on tiered investment options (i.e., target date funds, core array, brokerage account, etc.)?***

AHIC believes DC investment options should be constructed in tiers to help a wide range of participants with varying investment knowledge and different "comfort zones" making asset allocation decisions. We recommend communicating the lineup within a tiered structure to accomplish this objective.

The tiered structure objective is to help participants build portfolios that span the risk and return spectrum. In general, we favor fewer options with a bias towards broadly diversified options that provide comprehensive major asset class coverage. Typically, it would be a two tier structure with a QDIA Tier (e.g. TDF), a Passive Tier with 3-4 broad market index funds and a Core Fund Tier with 4-6 options. AHIC believes a smaller number of core options with broader mandates allow participants to be more successful building their own asset allocations.

The central ingredient for the active tier is to focus on skill and the identification of this skill in advance.

Please also see our response to Question 5 above.

9. ***What is the firm's philosophy on the number of participant directed investment options that the Defined Contribution Plan should provide?***

   We tend to favor plans with 15 or fewer investment options (target date series counts as one option).

10. ***What is the firm's philosophy regarding active versus passive participant directed investment options?***

   We believe DC plans should include both passive and active fund options within the investment line ups. Many of our current clients include a "tier" approach that includes both a passive and active tier. The passive tier includes standalone index funds in the major asset categories: fixed income, U.S. equity, and non-U.S. equity. The active tier is based on the desired lineup structure (i.e., Asset Style, Asset Class, or Objectives).

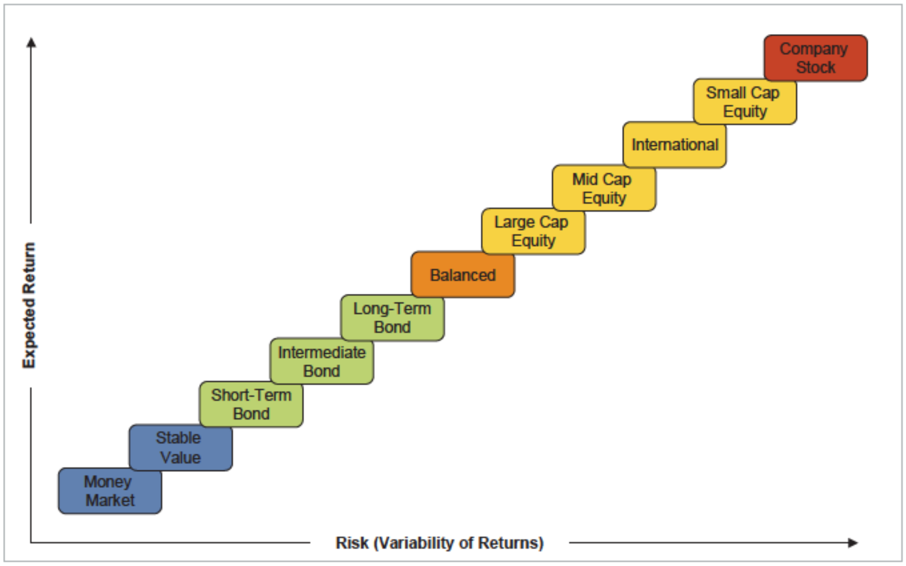
   Our tiered approach is designed to give participants choice between active and passive options. Many investors have strong views and beliefs as to the relative merits of active and passive management. Communication of tiered approach is key to this approach. The communication should be designed so that participants can determine a path based on their investment preference. This is based on our analysis of the behavior of decision making of participants. If a participant can determine if they want broad investment in a low fee vehicle, then the passive tier is their best suite of options. If a participant understands the use of any active management within an investment program introduces benchmark risk, then he or she can focus on options within the active tier.

   The active and passive decision within a DC plan is another example of how we look to improve participant outcomes by focusing on behavioral elements of a participant.

11. ***How would the firm evaluate the types of risk associated with the Trust investments you would recommend for the Defined Contribution Plan?***

   We believe that the most important issue to be evaluated in determining the fund structure in a defined contribution plan is coverage of the risk–return spectrum. Plan sponsors should offer a wide range of investment options (covering multiple asset classes) to allow participants exposure to low risk options as well as aggressive options.

The graph below depicts a sampling of asset classes in a risk–return spectrum.



Within asset classes, style diversification should be sought. For instance, large cap could include large cap value, large cap core, and large cap growth options. We believe that style is an important variable to consider and understand. At different points in time, a particular style may be in favor (e.g., value outperformed growth from 2000–2006), and it is important for the plan to not make unintended style bets.

Our goal will be to determine whether any additional asset classes should be offered to plan participants that are not currently available under the plan.

12. Does the firm have experience in evaluating third party administrator services? If yes, please describe.

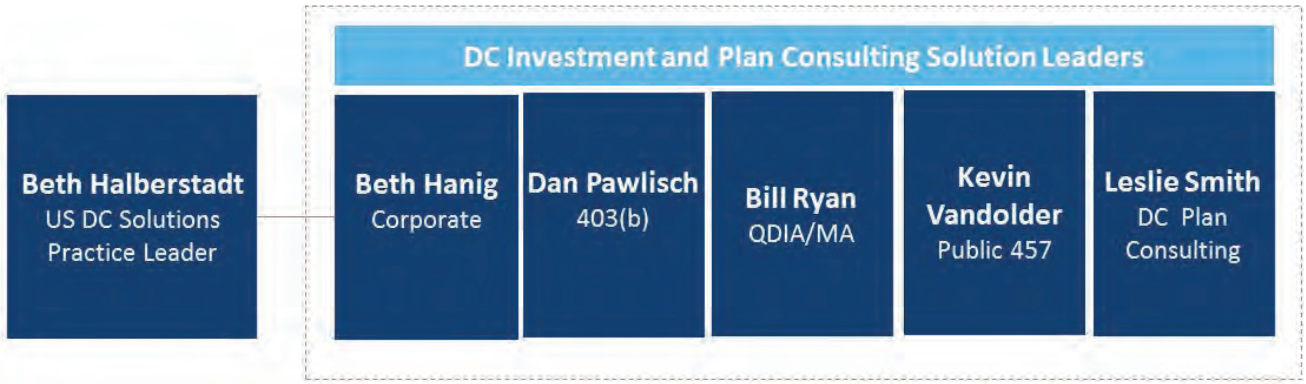
We have a proprietary retirement plan vendor database and work with over 46 vendor service models (as of September 30, 2018); these include insurance companies, banks, investment management companies, third-party administrators that provide unbundled and bundled recordkeeping/administration, investment management, custodial/trustee, and communication/education services for employer-sponsored plans.

Our knowledge of the third party administrator / vendors was developed through numerous recordkeeping searches that include due diligence on all facets of the vendor services, including administrative and compliance procedures. AHIC also works with vendors for numerous clients on an ongoing basis to continue to monitor their performance to ensure our clients' fiduciary requirements are fulfilled.

The scope of a procedures review for a defined contribution recordkeeper can vary greatly depending on the level of detail. It can range from an extensive compliance and operational review, where all transactions are sampled and tested, along with all of the corresponding procedures are reviewed and documented, to a straightforward review of administration manuals and materials that are prepared and provided by each vendor.

13. Does the firm have resources dedicated to defined contribution consulting and/or research? If yes, please describe and provide organizational charts and biographies as appropriate.

Following is a list of the appropriate resources beyond your account team is made available to meet your defined contribution needs (as of January 01, 2019).



Key Areas of DC Concentration					
403(b) Consulting	Stable Value	Qualified Default Investments Managed Accounts, Custom Core and Target Date Funds		Fee Benchmarking	Plan Design
Retirement Income	Investment Strategists	Investment Policy	Compliance & Operations	Recordkeeper/ Vendor Search	Fiduciary Governance

As of 1/1/2019

14. List other special or unique services that the firm has provided to other clients, particularly defined contribution plan clients.

As mentioned earlier, two unique services that AHIC can provide include:

- ***Fiduciary and Investment Education for Board and Staff***

  We have a dedicated Fiduciary Services practice each with many years of experience working with state investment boards, governmental entities, and public retirement systems, as well as corporations. This allows us to provide services such as governance advice, fiduciary training, fiduciary audits, operational reviews, policy development, board member orientation, and facilitation of board self-assessments.

- ***Custom Target Date Funds***

  AHIC has a wealth of experience working with defined contribution clients to create custom solutions rather than solely relying on off the shelf pre-packaged investment products. Our custom target date funds employ an open architecture investment platform and distinctive investment managers for its underlying investments, rather than being wholly reliant on one investment platform that is more typical for the target date funds offered by bundled investment providers. In addition, AHIC evaluates the demographic profile of our clients in order to determine the appropriate asset allocation glide path appropriate for client's plans, rather than utilizing a one-size fits all approach to asset allocation.

- ***Managed Account Services***

  We believe participants need tools. Specifically, investment advice and managed accounts are of great interest to our clients. We have composed a DC specific research group focused on investment advice and managed accounts providers. Our dedicated managed accounts team conducts ongoing due diligence on providers. The focus of our reviews is to analyze a provider's managed account product from a methodology and service model perspective for general suitability and fee reasonableness. We will review protocols at the provider to ensure they adhere to DOL rules relating to Managed Accounts, including verifying that staff members have appropriate qualifications and designations; systems and procedures are audited, documented, and certified; fees are appropriate; and fiduciary protections are clear and sufficient. On a periodic basis, we issue questionnaires, which act as a basis for our ongoing due diligence, to the providers in order which provide updates on aspects such as:

  – Organizational information
  – Investment & technology professionals
  – Product description
    - Robustness of analysis
    - Option level analysis
    - Risk
  – Auto-rebalancing
  – Asset allocation methodology
  – Summary of model specifics
  – Fund option analysis
  – Other: e.g., data feeds available from providers; advice provided re: participant distributions
  – Interaction with participants
  – Fees and timing

We do have a lot of experience with Managed Accounts, and as with any solution, there are pros and cons, and we work with our clients to determine the best solution for your organization and participants. We generally have a favorable view of managed accounts and do support offering them to participants. Additionally, we believe managed accounts can be beneficial because research shows that the majority of participants do not adequately address retirement financial goal planning and do not form efficient portfolios. Even when participants are advised appropriately, a large number of participants do not implement the recommendations. The primary reasons include lack of interest, knowledge, or time, as participants need all three to be successful in forming their own efficient portfolio.

Managed accounts also help participants understand the impact of their deferral rate and plan for taking distributions during retirement. Our research and experience indicates that managed accounts are generally more compelling for participants between the ages of 40 and 55 which represents an inflection point when many participants have meaningful account balances, diverse risk profiles, and more unique individual circumstances that would otherwise warrant a customized approach.

The main considerations of managed accounts are the higher costs, as managed account providers generally charge a basis point fee on top of the underlying fund fees. In addition, offering managed accounts requires additional oversight and review of the service provider. Our DC teams have extensive experience in conducting managed account reviews and maintain a deep knowledge of the managed accounts market.

- ***Mutual Fund and Brokerage Windows***

  In July of 2012, the Department of Labor (DOL) released a Field Assistance Bulletin (FAB) which stated that plan sponsors have an obligation to monitor the "nature and quality" of brokerage services provided in a window, but underlying investments within the window would not be treated as "designated investment alternatives."

  In an attempt to monitor the "nature and quality" of SDBA providers, AHIC has developed a proprietary dashboard which reviews key factors of 15 of the largest providers in the industry. Some factors the dashboard includes are fees, breadth of offerings, and administrative features such as automation and platform compatibility. For those clients who currently offer a SDBA, the dashboard is intended to highlight the strengths and weaknesses of the current offering to determine if participant communication should be revised or whether the SDBA should be a plan feature moving forward. Each dashboard is updated on an ongoing basis and typically reviewed with clients every 12–18 months.

III-8. Miscellaneous

A. *Please discuss the appropriate role(s) of risk management in administration of investments for a public pension plan such as PSERS. Specify criteria that should be measured and analyzed, and the appropriate role(s) of the Board, PSERS' Professional Staff, and consultant in measuring and analyzing the risk criteria. How does this relate to your definition of beta? How does this relate to your views on the separation of alpha from beta? Do you think of risk using a risk factor approach?*

A strong risk management philosophy permeates all advice we provide our clients. We divide the issue of risk management within an investment organization between investment risk and non-investment risk.

AHIC has a Global Investment Policy Services team focused on risk management. This team leverages the expertise of individuals worldwide with backgrounds in investment management, actuarial science, and investment banking.

With respect to investment risk, we focus on various risks over the short-term, medium-term and the long-term. We have found it is important to take risks to generate returns. Risk is primarily addressed through the asset allocation process to help ensure that the right level of risk (fund's overall risk posture) and that the right types of risks (investment strategy, risk budgeting and contribution of risk from various asset classes) are taken which may be rewarded and potentially help the plan meet its objectives.

With respect to shorter term investment risks, we refer to issues relating to portfolio structure and implementation. These risks are addressed by the design of the investment strategy within each asset class, the active risk budgeting exercise, asset allocation compliance, etc.

The following table lists key risks and ways to measure, manage and address these risks.

Types of Risk	Time Horizon	Risk Management Tools and Controls
Return shortfall ▪ Assets do not grow with liabilities	Long-term (10+ years)	▪ Investment policy

Types of Risk	Time Horizon	Risk Management Tools and Controls
▪ Investment return and contribution less than liability growth		
Liquidity ▪ Cannot liquidate assets efficiently to meet needs ▪ Lose control of asset allocation	Short- to medium-term (<5 years)	▪ Funding policy ▪ Benefit accruals ▪ Use of illiquid investments ▪ Scenario analysis ▪ Monitoring
Investment ▪ Asset allocation (policy) ▪ Investment structure ▪ Manager selection ▪ Rebalancing ▪ Scenario (or path risk) ▪ Factor	Short- to medium-term (<5 years)	▪ Investment policy statement – Static/dynamic – Asset allocation – Rebalancing – Manager guidelines – Monitoring/roles and responsibilities ▪ Risk budgeting ▪ Monitoring/dashboards ▪ Medium term views ▪ Regression and scenario analysis

With respect to non-investment risks, we focus on aspects such as fiduciary and governance processes. AHIC has a dedicated Fiduciary Services practice that assists our clients on fiduciary audits and governance reviews and has experience with state investment boards, public retirement systems, and sovereign wealth funds in the U.S. and abroad.

Our proprietary AHIC risk budgeting model may be an effective way to evaluate the sources of beta and alpha risks present in the investment program. A defining feature of our risk budgeting model is that it includes both beta (policy) risk attribution and alpha (active/implementation) risk attribution components at the total fund, asset class, and manager levels. The model also incorporates mean variance optimization with risk budgeting. The assertion is that whenever there is a tradeoff between expected risk and expected return, there is an opportunity for optimization—whether of asset allocation in total return space or of manager roster in active return space. Clients may perform optimization by maximizing expected alpha for a given level of active risk across all manager candidates in an asset class.

With respect to non-investment risks, we focus on aspects such as fiduciary and governance processes. AHIC is the only investment consulting firm with a dedicated Fiduciary Services practice. The Fiduciary Services practice is led by Jeanna Cullins, who is an attorney. Our dedicated fiduciary services team assists our clients on fiduciary audits and governance reviews and has experience with state investment boards, public retirement systems, and sovereign wealth funds in the U.S. and abroad.

B. *Please discuss your views on the appropriateness of either passively managed portfolios, actively managed portfolios, or a combination of both actively and passively managed portfolios, by asset class. What important factors must be considered by a pension fund such as PSERS in order to determine which of these approaches is likely to be most beneficial?*

The choice between active and passive depends on market efficiency. The relative efficiency of markets and risk control considerations should determine the role of passive management in an investment program. The use of any active management in an investment program introduces benchmark risk, which is the risk of earning a return different from that of the policy benchmark. The degree of benchmark risk that investors assume, within a given asset class, should be directly proportional to the level of confidence that the risk will be compensated by excess returns, relative to the benchmark. Risk control is important in all aspects of an investment program, but especially so in those markets that exhibit a high degree of operational and informational efficiency. Operational efficiency refers to information inefficiencies that may exist that investment managers cannot collectively capture and deliver to investors as performance, due to the presence of transaction costs and management fees.

Developed market equities are an efficient asset class so a passive or smart beta approach may be attractive. Over the years, commonly-used, publicly-traded asset classes, such as equities and investment grade bonds, have become more informationally efficient, meaning that it has become increasingly more difficult for active managers to outperform their benchmark indices persistently over time. There are several reasons for these changes, including the advent of information technology that has made investment information more broadly and readily available, the integration of global financial markets, and the information flow between markets.

AHIC favors a higher degree of indexation, or passive management, in markets that are highly efficient. A classic example of this is the U.S. large cap equity market, which offers perhaps the most striking example of an operationally-efficient market. This does not preclude the hiring of active managers in U.S. large cap equities, but it can raise additional complications.

We look across the whole portfolio to decide how and where to employ active management. But accurate assessment of the value of active management should occur at the portfolio level, not just at the manager level. By careful selection of complementary managers with low or negative correlations in their active management returns, the portfolio of active managers can actually exhibit better downside protection than a purely passive approach, with potential expectations of outperformance through a complete market cycle. It may be that it is more efficient to hold passive developed market equities, but to allocate to a number of equity long-short hedge funds.

Ultimately, the decision of how much to invest actively and passively in each asset class is highly client-specific. The optimal mix for a particular client depends on factors such as risk control preferences, desired number of managers, level of confidence in active management, propensity to deal with active manager underperformance over short-term periods, and sensitivity to investment manager fees. AHIC works closely with clients to determine the approach that will maximize the success of the investment program.

C. In which circumstances might ETFs be appropriate for PSERS? What risks, benefits, and other factors must be considered? Please be specific.

We advise on the use of ETFs on a limited basis, for example, to gain short term exposure during a portfolio transition. We have found that institutional mutual fund and commingled fund vehicles are typically more cost effective long-term investments than ETFs for broad asset class exposures. We have avoided exchange traded notes (ETNs) due to lack of transparency and added issuer credit risk.

ETFs may be appropriate for PSERS if they seek to make some tactical allocations changes within the portfolio over a shorter time horizon. ETFs are also helpful in filling in potential gaps in exposure of a particular industry or sector.

D. For each asset class specified below, identify the role you see it playing in a large pension fund today and in the future, and identify form (e.g., separate account, derivative) of investments (if any) you feel are prudent.

1. Real Estate

The real estate market is transitioning from recovery to expansion after five years of above average performance for stabilized core assets. Capital markets have gained strength each year following the Global Financial Crisis which affected the real estate markets in 2008–2009. Transaction volumes have increased in each subsequent year and risk premiums (cap rates and discount rates) have compressed significantly, largely in part to a low interest rate environment brought on by quantitative easing in the U.S. and around the globe.

Modest economic growth combined with historically low levels of new supply have created a positive environment for fundamentals (occupancies and rental rate growth) which have driven cash flow growth and aided to the above average returns. Certain sectors have benefited from additional tailwinds that have pushed returns even further. Apartments have been the prime example with significant weakness in the housing market due to tighter lending standards and a material reversal in the home ownership rate. Such strength has attracted capital for development of new assets which will prove to slow the pace of fundamentals and soften overall returns. New supply is now showing signs of returning to other sectors; however, there are no projections of overbuilding as lenders are still showing relatively good discipline.

Over the near term, we expect to see a more normalized return environment for real estate. As the cycle continues to age, we believe that investors should consider adding in some layered protection to moderate against the next down-cycle.

We recommend allocating real estate across both public and private markets and within the private markets across both core and non-core investments. In addition to the ability for core real estate to provide a degree of inflation hedging, it typically serves as a diversifier to other major asset classes within the growth or return-seeking portfolio. Core real estate provides the beta of the real estate asset class. We consider non-core real estate investments, including opportunistic real estate, as a long-term, skill-based investment focused on generating excess return. The vehicle type ultimately depends on the size of the allocation. Given the size of PSERS' portfolio and the allocation to real estate, we believe that real estate could be implemented through a combination of separate accounts and funds.

We have been a strong public advocate for using private real estate in defined contribution plans for several years, dating back to our 2013 white paper "Alternative Assets: The Next Frontier for Defined Contribution Plans." Alternative investments were once considered inappropriate for DC plans, but the landscape has changed significantly. AHIC believes there is strong applicability for incorporating alternatives into DC plans, which can enhance diversification and return potential.

Along with our enthusiasm for this approach, we also believe it is important to maintain a skeptical eye. There will always be a smaller universe of strategies and funds that are appropriate for DC plans relative to other types of investors, so high quality portfolios of alternatives will be inherently less diversified. But not all funds will suffer—some strategies can be ported into the DC arena without a significant loss in quality, and it is these strategies that will be most attractive. Investors must critically evaluate each investment option.

2. Commodities

Commodities have historically had a low correlation of returns as compared to stocks and bonds and offer a hedge against inflation. We utilize commodities as a diversifying allocation within the return-seeking/growth portion of the portfolio. We tend to favor unconstrained strategies that have the ability to take long and short positions across the broad commodities complex. A vast majority of managers that we utilize tend to utilize derivatives to implement their strategies, although a select few will opportunistically also hold/trade physical commodities. A vast majority of commodity strategies are offered in commingled fund formats, although separate accounts can be utilized for larger mandates.

3. *Infrastructure*

AHIC believes infrastructure can provide additional portfolio diversification with its return profile (provided below) coupled with a mid-teens standard deviation of risk. We have been assisting clients deploy capital to infrastructure since 2005. As such, AHIC tends to work with infra managers who avoid auction processes and have demonstrated the ability to create investment opportunities or joint ventures with strong strategic partners/operators. We believe there are investment opportunities in North American infrastructure due to recent volatile commodity prices as well as Western Europe energy and utility assets as regulations force divestitures. We recommend clients utilize LP fund structures which provide clients access to private infrastructure investments.

4. *Hedge Funds*

Hedge fund performance has been generally disappointing since the 2007-2009 financial crisis. Structural factors have brought challenges for the average fund in the much-coveted objective of delivering returns that do not depend on market movements. These factors will likely persist, in our view. This has recently driven a lowering of our skill-based (commonly termed ‘alpha’) return expectations in our capital market assumptions. However, some of the disappointment over performance in recent years also reflects the effect of artificially dampened volatility and heightened cross-asset class correlation. This has arisen as a result of monetary policy by the major central banks. We think that these drags are not a permanent feature of markets and will gradually lift.

Additionally, fund selection needs to be a central focus of making hedge funds ‘worth it’. Average hedge fund performance is not enough. Costs are too high for this average level of alpha. Without high conviction managers that deliver genuine alpha, hedge funds will not enhance portfolios. Even with our lowered return assumptions, hedge funds continue to look attractive strategically in risk-return terms. Allocations to hedge fund strategies continue to be portfolio enhancing and may help portfolios to deliver returns at lower risk.

Our medium-term views remain supportive of hedge fund allocations at this time. Bond yields are low and the equity return environment is likely to stay challenged. Volatility is likely to edge higher. In such a low return and more testing market return environment, hedge funds continue to look attractive. We believe clients should use long-short hedge funds with lower correlation to equities alongside long-only equities to diversify risk and dampen volatility. The opportunity costs of reducing equity beta are still not high, and our view remains that hedge fund approaches in portfolios are appropriate in this market environment—discretionary and systematic macro strategies could be considered alongside long-short.

5. *Alternative (e.g., venture capital, private equity, private debt)*

Our firm has advised clients on the use of private equity for over 40 years. Our firm supports the use of private equity and private debt in client portfolios, particularly for clients that have a long-time horizon, with the caveat that the client needs to have the resources and perspective to accommodate an alternative allocation.

Geographic diversification is a key component of alternative assets portfolio construction. As such, our team researches and recommends both domestic and international funds in a broad range of geographic regions. Our team customizes client recommendations based on each program's specific goals and risk tolerance. Each client is unique in terms of international exposure—some clients may allocate only a small percentage whereas other programs may allocate up to 40% to international opportunities. Our team utilizes a similar evaluation process for both U.S. and international partnerships. Aside from utilizing core due diligence evaluation techniques, we also consider additional items such as geopolitical, macroeconomic, and regulatory issues while evaluating international private equity funds. Our fund coverage includes both developed and emerging regions, as our team evaluates country-specific, regional, and pan-regional opportunities worldwide.

We consider the broad spectrum of private investments—across venture capital, growth capital, private equity, and debt—to be long-term, skill-based asset classes focused on generating an attractive return profile to help meet a fund's long-term objectives.

6. Risk Parity

Risk Parity strategies offer a potential diversifier to a traditional portfolio, to the extent that their performance is driven mostly by factors that are less emphasized in the remainder of a fund's total asset allocation strategy. Their equity risk-light approach may appeal to those skeptical about stocks. They offer a way to access skill in risk analysis and forecasting from some leading investment managers—and increasingly, they simply offer those firms' traditional active management skill. And they are generally still available at reasonable fee levels.

For those who desire a Risk Parity allocation, the strategy fits most neatly in an opportunistic or alternatives allocation, designed for strategies that do not fit well in a traditional asset allocation framework. Given the substantially increased benefits to leveraged strategies at higher risk levels, we generally recommend that clients consider Risk Parity products offered at relatively high levels of volatility, with a more modest allocation if needed to control risk.

7. Energy Master Limited Partnerships

We consider Energy MLPs to be a diversifying asset within the return-seeking portfolio that offers inflation hedging and an attractive return stream with a high degree of current income. The allocation can be implemented utilizing both separate accounts and fund vehicles.

8. Leverage

We believe leverage amplifies returns positively in up markets and negatively in down markets. We believe that investors should identify a comfort level on leverage and seek to build a portfolio that stays within those bounds. Leverage can and should be monitored as an ongoing risk management metric and should be reduced to moderate levels as the cycle progresses.

9. Smart Beta

In equity markets, the traditional passive market capitalization approach seeks to be well-diversified, and close to the efficient frontier. To the extent it does not achieve these aims, other approaches can be seen as more attractive (e.g., factor-based investing). Alternative indexation or "smart beta" is used to describe alternative ways of accessing "the market" in a systematic way.

AHIC believes that these strategies have the potential to offer better risk adjusted returns than market-cap passive strategies, but:

- This may not occur for protracted periods—the price of capturing the benefit of the factor is patience and often the ability to be contrarian.
- They are best used in combinations of uncorrelated factors such as Value and Low Volatility or Quality.
- Smart beta is not a replacement for high conviction skilled active managers.

Smart beta is not as cheap as the "bulk beta" solution offered by market-cap indexing, which will remain the "comfort" low governance choice for many investors and to which smart beta is likely to be compared.

Please note: The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

10. Cyber Currencies (i.e., bitcoin)

Aon does not consider Cyber Currencies an asset class appropriate for institutional investors such as public pension plans.

E. Please discuss your firm's ability and experience in performing detailed investment or operational due diligence reviews on public pension plans with internal investment management.

We have made a significant commitment to expand our operational due diligence (ODD) program, including hiring a Global Head of Operational Due Diligence and building a dedicated ODD team from a team of two to a global team of 20 (as of January 1, 2019).

The current dedicated operational due diligence team of 20 includes team members based in North America, London, and Bangalore, India. Collectively, the group has reviewed hundreds of investment managers across all asset classes, including both public and private market strategies. It is important to note that our team has diversified experience with a range of competencies including compliance, operations, governance, and counterparty risk. In addition, experience includes conducting operational due diligence reviews for an internal ODD program but also in a consulting environment, which has individual demands given the range of underwriting standards and deadline/workflow requirements for clients.

Recently, Aon has launched its ODD IQ program to service its internal operational due diligence requirements, along with those of select clients. The ODD IQ program is an initiative to supplement our traditional qualitative ODD process with an empirical framework to help identify and quantify non-investment risks among the investment managers that we review. We believe this approach is unique within the operational due diligence space and that it will help to improve the efficiency of our reviews, help to create objective reporting, and improve our ability to create risk reduction strategies for Aon and its clients.

F. What do you see as being the most significant changes that will be occurring in asset allocation for pension funds over the next 10 years? Please comment.

With increased pressure for public funds to achieve their expected asset return assumptions there is some pressure for some plans to "chase" returns to improve funded ratios. This has resulted in a trend to expand allocation to alternative/opportunistic asset classes which will likely to modestly continue over the next 10 years. Combatting this trend, is pressure among many public pension plans to reduce their investment management fees and increase their allocation to passive public market investments. We have seen some plans, in particular, reduce their allocation to hedge funds. AHIC believes that it is imperative that public pension plans set their asset allocation without any undue increase in risk and we continue to believe hedge funds and other alternative asset classes play an important role within a plan's asset allocation as potential diversifiers, risk reducers and return enhancing strategies. The next 10 years are likely to be a period of increased volatility given the rising rate environment, late credit cycle and the late economic cycle we are currently in. During periods of market correction, active management tends to outperform passive management. Therefore, a continued focus on identifying strong active managers across both the public and private asset classes will do well. As interest rates increase over the next few years and funded status improves due to the increased contributions many pension funds are making, public pension funds will likely shift to higher fixed-income assets to take advantage of increased yields to match cash-flow needs. As global markets become more mainstream, the expansion to international investing (in both bonds and equity) is also likely to continue.

Please note: The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

G. Disclose all services provided and compensation received (including the sources of such compensation, whether direct or indirect) between your firm and investment managers, plan officials, beneficiaries, sponsors, and/or others as required by Standard 2b of the Investment Management Consultants Association Standards of Practice.

AHIC does not receive any compensation from investment manager firms. We do provide fiduciary consultant services for the pension plans of some financial institutions that as part of their business provide investment management services. AHIC will disclose all services provided and compensation between AHIC and investment managers, plan officials, beneficiaries, sponsors, and/or others.

H. Describe any business relationships that you or any of your affiliates have had within the past two years with the Commonwealth of Pennsylvania or with members of PSERS' Professional Staff or Board.

AHIC serves as the current retainer consultant with the Commonwealth of Pennsylvania for the Pennsylvania Public School Employees' Retirement System since 2013. Through this relationship, we have also provided asset-liability studies and we are currently providing fiduciary training and governance work for PSERS' Board and staff.

In addition, AHIC works with Pennsylvania State Education Association (PSEA) and PSEA currently has a PSERS Board member that sits on the PSEA's Pension committee. Approximately two years ago, another PSERS Board member was a member of the PSEA's Budget committee.

I. State whether you, any of your principals, or any other affiliates have any business involvements that could be viewed as potential conflicts of interest.

To the best of our knowledge, there would be no conflicts of interest with our firm or principals serving PSERS.

J Provide a copy of your current Code of Ethics adopted pursuant to 204A-1 of the Advisers Act.

Please refer to the **Appendix** for AHIC's Code of Ethics.

K. What procedures and written policies do you have to reduce/eliminate any conflict of interest that could occur between investment managers and plan sponsors?

Our process for identifying and managing conflicts of interests begins with the diligence and awareness of our senior management team.

Second, AHIC has built into its corporate organization and affiliate relationships certain structural elements (separately created financial statements, independent research and manager review functions and other items) that allow it to evaluate investment managers and other investment service providers with a strong degree of impartiality.

Third, in areas where we have determined that potential conflicts may arise more often than in other areas, the senior management and compliance teams have drafted policies that are designed to mitigate potential conflicts. These policies and procedures, as well as our corporate structure, prohibit any form of payments or other financial considerations from influencing in any way the advice we give our clients.

Fourth, the firm requires all employees to subscribe to our code of ethics, which meets our fiduciary, legal, and regulatory standards. AHIC's code of business conduct sets the standard for all of our employees and governs the fundamental requirements for how we conduct business. Our code is subject to review by the Securities Exchange Commission. Further, the failure to adhere to the code could subject AHIC and its personnel to formal enforcement actions by the SEC. The code of ethics addresses conflicts of interest and actions that are contrary to the interests of clients and AHIC. All consultants must attest to that they have read and are compliance with the code of ethics on an annual basis. All monitoring is performed by compliance, and any exceptions are reported to AHIC's senior leadership. AHIC also adheres to, and receives training on, Aon's standards of conduct, which include client data confidentiality policies and trading restrictions.

L. Please state clearly whether your firm has any current tax issues or disputes with the Commonwealth of Pennsylvania (PSERS would be unable to execute a contract with your firm until these circumstances were resolved).

To the best of our knowledge, there are no current tax issues or disputes with the Commonwealth of Pennsylvania.

III-9. References

List five current pension fund clients as references. For each reference, include client name, name of contact person, address, telephone number, asset value of client, services the client uses, and number of years the client retained the firm. The client should have funds of similar size and complexity to PSERS and you should be providing services similar to those proposed for PSERS. PSERS intends to contact the references.

In addition, identify the five (5) largest clients lost within the last 5 years and indicate the reason(s) for termination. Include client name, name of contact person with title, address (both building and email), telephone number, services the client used, and number of years the client retained the firm.

Reference 1

New York State Teachers Retirement System	
Client Name:	New York State Teachers Retirement System
Name of Contact Person:	Thomas Lee
Mailing Address:	10 Corporate Woods Drive Albany, NY 12211-2395
Telephone Number:	+1.518.447.2940
Asset Value of Client	$120 Billion
Services the Client uses	General DB Pension Consulting
Number of years the client retained the firm	8 Years

Reference 2

State of Connecticut	
Client Name:	State of Connecticut
Name of Contact Person:	Laurie Martin
Mailing Address:	55 Elm Street Hartford, CT 06106
Telephone Number:	+1.860.702.3195
Asset Value of Client	$3.5 Billion
Services the Client uses	Defined Contribution Consulting
Number of years the client retained the firm	7 years

Reference 3

Colorado Public Employees' Retirement Association	
Client Name:	Colorado Public Employees' Retirement Association
Name of Contact Person:	Amy C. McGarrity, CFA Chief Investment Officer
Mailing Address:	1301 Pennsylvania Street Denver, CO 80203
Telephone Number:	+1.303.863.3709
Asset Value of Client	$47.0 billion
Services the Client uses	DB General Consulting
Number of years the client retained the firm	15 years

Reference 4

The Commonwealth of Massachusetts	
Client Name:	The Commonwealth of Massachusetts
Name of Contact Person:	David Lynch
Mailing Address:	Office of the State Treasurer One Ashburton Place Boston, MA 02108-1608
Telephone Number:	+1.617.367.3900
Asset Value of Client	$8.6 billion
Services the Client uses	DC General Consulting
Number of years the client retained the firm	9 years

Reference 5

Minnesota State Board of Investments	
Client Name:	Minnesota State Board of Investments
Name of Contact Person:	Mansco Perry III , CFA, CAIA, CIPM
Mailing Address:	60 Empire Drive # 355, St Paul, MN 55103
Telephone Number:	+1.651.296.3328
Asset Value of Client	$66.6 billion
Services the Client uses	DB General Consulting
Number of years the client retained the firm	1 year

Inclusion in this list does not represent a recommendation or endorsement of Firm's products and/or services, nor are they exclusively representative of the product(s) discussed herein. Clients included in this list are the institutional clients which have provided written consent to Firm to be named in marketing materials. It is not known whether all clients listed above approve or disapprove of AHIC or the advisory services provided.

Client departures occur for a variety of reasons. In some instances, AHIC has declined to renew its contract, while in other instances the client has ended the relationship. Some causes of relationship terminations may include: a client's budgetary constraints, a difference in investment philosophy, and mergers and acquisitions. It is our standard policy not to release the contact information of terminated clients. (We are not sure if former clients would want us releasing this information.) If AHIC were to make it to the finalist round, we would be happy to discuss specific terminated relationships with PSERS in more detail at that time. However, we have provided our five (5) largest public sector clients lost over the last five years (as of June 30, 2018).

Client Name
Maryland State Retirement and Pension System
New York State Common Retirement Fund
South Carolina Retirement System
Florida Department of Financial Services
Ventura County Employees' Retirement Association

It is not known whether all clients listed above approve or disapprove of AHIC or the advisory services provided.

III-10. Work Plan

Describe in narrative form your technical plan for accomplishing the work. Use the task descriptions in Part IV of this RFP as your reference point. Modifications of the task descriptions are permitted; however, reasons for changes should be fully explained. Indicate the number of person hours allocated to each task. Include a Program Evaluation and Review Technique (PERT) or similar type display, time related, showing each event. If more than one approach is apparent, comment on why you chose this approach.

AHIC will provide all the consulting services outlined in Part III of the RFP. Below is a description of the tasks we anticipate completing as part of the engagement. We have also included a Gant chart depicting all of the tasks outlined in Part III which is included after our narrative response.

A. In providing Consulting Services for the Fund, and for all major asset classes, the consultant will:

1) Conduct a comprehensive review and analysis of investment objectives, policies, asset allocation, and portfolio structure, inclusive of defining an investable risk beta portfolio, and recommend changes, if appropriate.

At the beginning of our engagement, AHIC will conduct an investment policy and structure review of the PSERS program. This analysis is separate from an evaluation of the asset allocation policy which will be evaluated as part of the asset liability study outlined below in item 3. As part of this analysis we will review each major public asset class investment structure with a focus on asset class coverage, overlap of investment managers, active risk employed in each composite. As part of this analysis we will conduct holdings-based analysis on all public equity portions of the portfolio as well as an analysis of the portfolio risk of each composite and the total PSERS portfolio.

As part of this review we will identify any potential manager issues that may need further evaluation as well as evaluate the active/passive allocation and provide a thorough benchmark evaluation for each policy allocation.

An estimate of the total person hours is 400 hours.

2) Review the adequacy of PSERS' Investment Professionals and resources, and make recommendations on PSERS' Investment Professionals and resource changes, if any.

We have already begun our review of the Board's investment staff and resources by updating and issuing our DDQs. Once these DDQs are complete, Aon's research team will conduct a series of in person interview of all the staff to determine their roles, responsibilities and processes. We will leverage members of both our Fiduciary Services team and Global Investment Manger Research team (GIM) to conduct these interviews and evaluations. Once these interviews are complete, we will prepare our report with recommendations that will highlight any potential areas of potential risk in such areas as the size of staff, skill of staff, and strength of processes. In addition to evaluating the current PSERS investment staff, Aon suggests that in addition it may be beneficial to include an assessment of the current SERS investment staff capabilities in our analysis given the efforts in the legislature to combine the investment resources of PSERS and SERS in response to the recommendations of the Pennsylvania Public Pension Management and Asset Review Commission.

An estimate of the total person hours is 160 hours.

3) ***Work with* PSERS' Investment Professionals *and the actuary to conduct an asset/liability study annually for each calendar year and present the results to the Board in March of the following year.***

At the outset of our engagement with PSERS, we will undergo a thorough review of the asset allocation policy as part of a full asset liability study. As part of this study we will work with PSERS' actuary Conduent to obtain all of the necessary actuarial information utilized in their annual valuation. We will load this information into our actuarial modeling soft-ware and conduct a complete asset/liability study as described in our technical proposal. Annually, Aon will update our asset/liability study and present to the Board consistent with our current annual asset/liability study.

An estimate of the total person hours is 200 hours.

4) ***Work with PSERS' Investment Professionals to develop an appropriate investment management structure for the Fund and each asset class that considers the role of active versus passive strategies, investment management styles, and separation of alpha from beta under different market conditions.***

This analysis will be conducted as part of the investment structure review outlined in item 1.

5) ***Recommend appropriate performance benchmarks for individual portfolios, each asset class, and for the total Fund.***

This analysis will be conducted as part of the investment structure review outlined in item 1.

6) ***Review and make recommendations regarding individual portfolio guidelines at least annually.***

AHIC will conduct a review of all the individual portfolio guidelines as part of our initial review of the PSERS investment structure. We will complete this first review by August 2019. As part of this review, we will review the appropriateness of benchmarks, investment expectations and specific guideline constraints to ensure consistency with the investment mandate, our understanding of the manger's capabilities, risk tolerance and industry standards. This review will exclude all alternative (hedge fund, private equity and real estate) investment mandates.

An estimate of the total person hours is 180 hours.

7) ***Recommend suitable investment opportunities and practical implementation methods; research supporting such recommendations must have been completed within the prior 12 months.***

8) ***Recommend appropriate investment strategies, tactics, procedures, and practices.***

9) ***Provide research reports on asset allocation, investment issues, and provide description and evaluation of alternative approaches.***

Please see item 10 below for a description of our services.

10) Provide information on market conditions and explain their impact on the Fund's investments.

Items 7–10 listed above are included as part of on-going retainer relationship. AHIC will provide staff and the Board with our best thinking on new investment opportunities as they are identified as well as provide advice on the best way to implement these investment ideas.

PSERS will receive all of our research reports on asset allocation, capital market assumptions, new investment ideas, etc. In addition, AHIC provides insights regarding the current market conditions on a regular basis. PSERS will receive all AHIC's research pieces on the market environment.

Access to this research is continuous and ongoing, therefore we are unable to provide an estimate as to the person hours associated with these items.

11) Provide PSERS with information on high conviction new managers at the earliest possible juncture to permit PSERS to secure capacity and negotiate terms with promising emergent managers.

Please see item 12 below for our description of our services.

12) Assist PSERS' Investment Professionals in conducting public market investment manager searches and facilitate the hiring of suitable institutional quality managers; including:

a. providing opportunities and expense reimbursement for PSERS to jointly meet and evaluate new managers at industry conferences;

b. providing a list of potential institutional quality managers appropriate for the mandate being considered;

c. conducting interviews with potential managers at PSERS;

d. conducting on-site due diligence meetings with potential managers prior to their selection; and

e. providing assistance with the contract/fee negotiations.

AHIC will provide the PSERS' staff with assistance in conducting public market investment manager searches as outlined above in items 11 and 12. As part of our search process we the investment consulting team with work with AHIC's GIM team to identify potential investment manager candidates for either new public market investment mandates or as replacements to existing investment mandates. As part of our manager research and rating process, GIM conducts on-site due diligence meetings. Our GIM and investment consulting team will assist PSERS staff with the interviewing and contract/fee negotiations of the firms identifies as finalist candidates for a search.

Manager searches are an on-going service AHIC anticipates conducting with PSERS staff throughout the term of the investment consulting contract. An estimate of the total person hours associated with a typical investment manager search is 50–75 hours.

13) Provide on-going monitoring and oversight reports for all of PSERS' public market investment managers, including:

a. advance notice to PSERS of in-person meeting with investment managers in the Fund's portfolios;

- ***b.*** ***analysis of the manager's absolute and relative performance in relation to benchmarks, investment objectives, and peer groups, including analysis of ex-post risk-adjusted performance;***
- **c.** **an analysis of attribution, holdings, style, and risk;**
- ***d.*** ***updated research on each investment manager in the Fund's portfolio updated at least once every 18 months to include a review of investment performance, process, and the manager's organization;***
- ***e.*** ***conduct on-site investment and operational due diligence meetings with current investment managers a minimum of every three years;***
- ***f.*** ***advice on manager retention/termination; and***
- ***g.*** ***assist in developing a formal manger review process***.

AHIC will provide on-going monitoring and manager due diligence on all of PSERS public market investment managers. On a quarterly basis, AHIC conducts performance analysis of all current investment managers which includes performance comparisons versus peers and benchmarks. As part of our manager due diligence process we do conduct performance attribution analysis and holdings based analytics. AHIC will provide PSERS with our manager due diligence InForm/InBrief report on all investment managers. These reports are updated every 18 months and include AHIC's research opinions of the investment product on the following factors (organization, investment team, investment process, operational due diligence, performance and terms and conditions). Meetings with the investment team are conducted as part of this In-Brief report and on-site meetings are conducted at least every three years.

We are constantly updating our ratings of investment products based on our evaluations and any changes to the firm, team or investment process. The PSERS investment team will provide advice on retention/termination of a particular investment manager as part of our retainer and our on-going manager due diligence.

Investment manager due-diligence is continuous and ongoing, therefore we are unable to provide an estimate as to the person hours associated with these items.

14) Advise PSERS' Investment Professionals and the Board about new developments in investment management techniques and portfolio management strategies. Analyze how new techniques might improve the investment program and whether they should be considered for implementation.

Please see item 15 for a description of our services.

15) Make available all firm research, including proprietary research, regardless of the firm department in which it was created. Research must be made available by electronic system.

Items 14 and 15 listed above are included as part of on-going retainer relationship. AHIC will provide PSERS' Investment Professionals and the Board with our best thinking on new investment management techniques and portfolio management strategies as they are identifies as well as provide advice on the best way to implement these investment ideas.

PSERS will receive all of our research reports including access to proprietary research via the client portal. PSERS will continue to have access to our complete proprietary manager research InView platform where all of our manger research on all investment managers is housed. PSERS will continue to receive all AHIC's research pieces including our many white papers.

Access to this research is continuous and ongoing, therefore we are unable to provide an estimate as to the person hours associated with these items.

16) Provide access and consultation with the firm's research staff.

PSERS will have access to all of AHIC's GIM staff for conference calls and meetings as needed.

17) Meet with the Board to report on investment matters. Generally, there are six regularly scheduled Board meetings annually. Special meetings may be scheduled as needed.

The consulting team led by Claire will meet with the Board to report on investment managers at all regularly scheduled Board meetings. Kevin will be available to review the DC Plan with the Board as needed at any of the six scheduled Board meetings.

18) Report the performance results to the Board quarterly, including relative results versus established benchmarks, results versus other public defined benefit pension plans, and the returns relative to the risks taken.

AHIC will present the performance reports at the quarterly Board meetings.

19) Maintain and provide access to a database of U.S. and non-U.S. investment managers, including their philosophies, processes, organizations, performance, fees, and clients.

AHIC utilizes eVestment Alliance investment manager database for this data.

20) Provide and maintain a secure, client-facing, web-based platform that is frequently updated and continuously available to PSERS that contains investment due diligence and operational due diligence reviews and reports, quantitative reports, activity notes related to managers, industry research, portfolio builder analytics, monitoring tools, customizable manager searches, and interactive risk exposure tools, allowing PSERS to:

a. formulate investment policy and implement strategies;

b. monitor and evaluate individual portfolio, asset class, and total fund performance, risk, and attribution analytics;

c. formulate investment policy and implement strategies;

d. develop asset allocation and rebalancing recommendations;

e. select and evaluate public market investment managers, including public market manager research and consultant ratings;

f. analyze and optimize manager teams; and,

g. compare the Fund performance, including ex-post risk-adjusted performance, at the asset class and total fund levels to various peer groups.

It is expected that at least 20 years of the Fund's historical performance data, by investment portfolio, asset class, and at the total fund level will be included and that the database will be updated on a monthly basis. The foregoing services shall be made available directly to PSERS through CONSULTANT's proprietary tools or indirectly through licensed third party applications.

AHIC will provide PSERS access to several PC-Based investment tools which can assist the PSERs Investment Professionals with the evaluation of the portfolio as well as access to a client portal as described in our technical proposal.

The access to these tools will be on-going as part of our full retainer relationship.

21. ***Provide (a) two, one-day, or (b) one, two-day, on-site, Fiduciary and Governance training sessions per year, which can be new Board member training, Board member training, PSERS' Investment Professional training, or some combination thereof. PSERS reserves the right to videotape any training sessions for educational purposes.***

Our Fiduciary Services team, led by Jeanna Cullins, will provide training to the Board and staff as necessary. In addition, AHIC offers several opportunities for Board and staff training including our client conference which is held in Chicago every two years.

22. Advise the Board and PSERS' Investment Professionals on risk-related subjects (e.g., risk measurement, risk mitigation).

Our Investment Policy Services team, led by Phil Kivarkis, will advise the Board and staff on risk-related subjects through a combination of asset-liability studies, liquidity analysis, stress testing analysis, risk budgeting, risk factor decomposition, and manager style analysis.

23. Advise the Board and PSERS' Investment Professionals on fiduciary and governance related subjects as requested by PSERS, including the following items:

(a) Provide advice and insights, as may be requested by PSERS, on public pension fund industry common and best practices;

(b) Assist as may be requested by PSERS with the development of new Board member orientation materials and conduct orientation sessions;

(c) Review and make recommendations, consistent with industry best practices, regarding clarity and documentation of the Board's governance framework, including the Investment Policy Statement ("IPS"), Board and Committee Charters, Delegations of Authority, investment implementation policies and procedures, etc.;

(d) Assist as may be requested with the development of a Board authority and delegation matrix, including:

(i) Clarification of what authority the Board has retained, what authority has been delegated, and to whom, and

(ii) Delegations to PSERS' Investment Professionals from the Board and/or CIO.

(e) Assist, as may be requested by PSERS, with strategic planning;

(f) Develop and administer, as may be requested by PSERS, a Board annual self-evaluation process.

Our Fiduciary Services team, led by Jeanna Cullins, will provide fiduciary and governance advice as needed.

24. Carry out other assignments that may be specified by the Board and PSERS' Investment Professionals, as required.

As part of our retainer relationship, AHIC will provide the Board and staff with advice on risk management as well as access to our many risk tools. We would be happy to conduct any other projects the Board and/or PSERS' Investment Professionals would like to discuss.

25. Conduct an operational risk gap analysis which will include an evaluation of the quality of the operational policies and procedures governing PSERS' Investment Professionals. The written report will include observations, comparisons to peers and recommendations in the following areas:

(a) Investment Framework (Front, Middle, and Back Office)

(b) Trade/Transaction Execution Policies and Procedures

(d) Investment and Counterparty Risk Oversight

(e) Compliance and Audit Testing

(f) Data Governance, Technology and Business Continuity and Disaster Recovery Plans

(g) Key service provider selection and monitoring procedures.

1) We would start by requesting information from the client. This would take the form of a DDQ and Document Request. This step does require a resource commitment from the client. Depending on the scope and the client's needs we might request that some sections (strategy-level items) are completed multiple times (For example, once for the internally managed fixed income mandates, once for the internally managed equity mandates, and once for the manager of manager portion of the portfolio).
   a. We have two ways to handle the DDQ/Information Request at this time:
      i. Word version (attached as Pension DDQ and Pension Document Request): This version/approach would likely be a bit easier administratively for PSERS to complete. NOTE: In regard to the question below about compliance/risk items, this set of information request documents does include some compliance and risk management items, but I would want to get some additional guidance on the interest in this (particularly in regard to compliance) as our focus on compliance is typically regulatory compliance (for example, SEC) which would not be applicable in a pension plan setting. The downside here is that with this approach our feedback would be primarily qualitative.
      ii. Online version (samples attached here in Word as Aon DDQ AP/AlphaPipe).: This version/approach covers substantially similar areas and topics but with a different level of granularity; however, a good portion of the questions would be N/A for a pension client. This would probably require a bit more administrative burden from PSERS. The advantage to this approach is that for a range of operational factors we would be able to supplement our qualitative feedback with additional empirical support in comparing how a range of the client's

operational processes compare to what we see to commercial asset managers. Obviously this is not entirely an apples/apples comparison environment, but given that many pensions aspire to operate comparably to a best-in-class asset manager, having more concrete metric-based support may be of interest and value to PSERS.

   b. We can accommodate either approach based on the your interest and need.

2) Our project team would review the information in detail in advance of a series of onsite interviews and meetings.
   a. These meetings would generally involve 1:1 discussions with a range of select client employees, primarily senior level but also some production level personnel.
   b. We would propose a project team of 3 from Aon (including One Partner, One Associate Partner, and One Senior Consultant) and 1.5 days of interviews
   c. The meetings may include some demonstrations of processes but **this is not an Audit**. **We are not comprehensively testing the implementation of policies and procedures, but rather working to form an opinion of the quality of the policies and procedures to begin with.**
   d. We may also seek to interview and/or otherwise interface with select client service providers (cannot establish the need / range of this until we have the information request back, as it's dynamic).
3) Our project team would then collate our information from the written response, conduct any follow-ups, and assess the client's policies and procedures across the range of Core Topics/Areas of Review noted in the table below:

Core Topics	Areas of Review	
Corporate and Organizational Structure	▪ Corporate Structure – control, decision making, and oversight ▪ Organizational Structure – segregation of duties and staffing adequacy/competency	▪ Key person exposure and succession planning ▪ Employee Retention and Turnover ▪ Background checks
Trade/Transaction Execution	▪ Broker/counterparty selection ▪ Pre-trade compliance	▪ Trade controls ▪ Allocations
Middle/Back Office and Valuation	▪ Trade confirmation ▪ Reconciliation ▪ Cash controls	▪ Collateral administration ▪ Valuation ▪ Book of record and shadow accounting
Investment and Counterparty Risk Oversight	▪ Investment Risk Program – oversight and control ▪ Counterparty Risk – oversight and control	▪ Leverage Use – oversight and control
Compliance and Audit/Testing	▪ Compliance program – Adequacy and staffing ▪ Policies and procedures ▪ Conflicts of interest ▪ Operational Risk – Oversight of non-investment risks	▪ Controls testing program – Range and implementation
Technology and BC/DR	▪ Technology Infrastructure – Hardware and application ▪ Technology and Physical Security ▪ Change Management – New installs and upgrades	▪ Disaster Recovery – Technology capabilities ▪ Business Continuity – Employee training

Key Service Providers	▪ Selection and Monitoring processes and procedures	▪ Administrator, Audit, Legal, IT, Custodian, Compliance Consultant, Valuation Agents

4) The project team would generate a Gap Analysis Summary Report (or similar) which will present the following:
   a. Range of policies and procedures we assessed
   b. Whether we find that each policy and procedure assessed aligns with best practice or whether a "gap" exists
      i. NOTE: It is in this area that PSERS' choice of approach (Word or Online questionnaire) would impact what analysis we can apply. In the case of the Word approach, our assessment here would rely on our subject matter expertise and judgment; in the case of the online approach, we should be able to supplement our analysis for select items with more objective/empirical information (for example, if PSERS had a specific gap in cyber security we would be in a position to note not only the gap, but provide context such as "X % of investment managers we have collected this information about do NOT have this gap; PSERS would fall in the 3rd quartile.")
   c. In the case of a gap, makes recommendations for how the client may amend or mitigate the gap.
   d. In the case of multiple gaps, provide additional guidance as to severity/prioritization for addressing gaps

While the project team would be available after the delivery of results for additional questions or consultation, **implementation of the changes recommended, i.e. draft policies/procedures, etc. is NOT included in the scope of the proposed project.**

An estimate of the total person hours associated with the operational gap analysis is 175 hours.

B. In providing Performance Measurement Services for the Fund, including all major asset classes recognized by PSERS as well as individual portfolios, the consultant will:

1. ***Prepare a written monthly report containing the calculated total return (gross and net of fees) for asset class, portfolio management styles, and individual portfolios, and compare PSERS' calculated data with benchmarks determined by PSERS and with data for a similar population of funds by asset class and portfolio management styles for all of the public market portfolios and composites. Returns should be calculated for the following time periods: one-month, three-months, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 20-year, 25-year, 30-year, and since inception.***

2. ***Prepare a quarterly written report containing performance measurement attribution and analysis for each asset class and individual portfolio. The report should include a historical return analysis, dollar oriented analysis, return oriented (wealth relative) analysis, excess return analysis, and risk/return analysis. Returns should be calculated for the following time periods: quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, 10-year, 20-year, 25-year, 30-year, and since inception.***

3. ***Reconcile performance with both individual portfolio managers as well as the custodian bank on a monthly basis.***

4. ***Calculate PSERS' money weighted rate of return as required by GASB 75.***

5. ***Create additional composites with historical returns for those composites as requested by PSERS.***

6. ***Provide quarter, fiscal and calendar year-to-date, 1-year, 3-year, 5-year, and 10-year quartile ranking report of composite returns by fund (i.e. total fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes).***

7. ***Provide consecutive year quartile ranking reports of composite returns by fund (i.e. total fund, U.S. Equity Composite, etc.) as well as manager composite returns (for all asset classes) for the past five years.***

8. ***Conduct performance attribution analysis to determine the value added by investment policy, asset allocation, and security selection.***

9. ***Provide reasonable assistance to PSERS in uploading the consultant's performance data to PSERS' own investment system(s).***

10. ***Prepare ex-post risk statistics and analytics for the same time periods, to the degree of depth, including benchmark comparatives, and use the same performance data from the above. Ex-post risk statistics and analytics should be robust and inclusive of industry best practices risk information.***

    AHIC will provide performance reporting including monthly performance flash reports and detailed quarterly performance reports. We have included samples of our performance reports in the **Appendix** section. Our performance reporting system and reports can provide all of the functionality outlined in Item B. 1–10.

    An estimate of the person hours required to conduct the monthly and quarterly performance reports outlined above is 75–150 hours per quarter.

III-2. Requested Services: Trust

The contractor will provide consulting services for the Trust including:

1. ***Review each plan's existing investment options.***

2. ***Determine if the investment options offered by each plan are optimum choices given the considerations for diversification, risk and return.***

3. ***Recommend additions or deletions to investment options as needed.***

4. ***Provide a recommended transition plan and timeline incorporating any proposed changes in investment options.***

   AHIC will review the proposed investment structure for the new Trust and we seek to ensure that there are no investment gaps. We will also review the proposed mutual fund line-up and provide our ratings on these funds and provide recommendations on any proposed additions or deletions.

   An estimate of the total person hours is 150 hours.

5. ***Conduct a review of each plan's pricing structure including fund management fees and terms between the plans and the third party administrator (TPA).***

   Once the Trust becomes live on July 1, 2019, AHIC will evaluate the Total Plan Cost of the Trust (both investment and administrative costs) and benchmark these costs versus relevant peer benchmarks. We have suggested doing this analysis in January of 2020 once the Plan has been live at least 6 months. This analysis will be updated every other year.

   An estimate of the total person hours is 50 hours.

6. ***Work with the TPA to review specific plan metrics, provide best practices and recommendations, and address issues that arise each quarter.***

   AHIC will coordinate with the TPA regarding plan usage and assist in addressing any issues that may rise throughout the engagement.

7. ***Assist in the development of investment policies for the plan.***

   AHIC will assist PSERS develop the Investment Policy Statement for the new DC Trust.

   An estimate of the total hours is 50 hours.

8. ***Annually review general investment policy documents.***

   AHIC will review the Investment Policy Statement annually and will recommend any changes as needed.

9. ***Periodically review goals, objectives and best practices with PSERS' investment committee.***

   AHIC will review best practices for DC Plans with the PSERS investment committee on a regular basis as needed.

10. ***Recommend enhancements to PSERS' investment committee governance processes.***

11. ***Perform periodic fiduciary training.***

12. ***Monitor, review, and provide advice on legislative and regulatory issues.***

13. ***Monitor, review, and provide advice regarding best practices.***

14. ***Monitor, review, and provide advice regarding fiduciary obligations.***

    AHIC's Fiduciary team will provide advice on best practices and updates on legislative and regulatory issues. The team will also conduct fiduciary training to the PSERS Board as needed.

15. ***Provide ongoing review of strengths and vulnerabilities in current practices.***

16. ***Serve as the liaison between the record-keeper and PSERS to maximize the vendor relationship, resolve issues with the record-keeper, and ensure contractual commitments are met.***

17. ***Lead and otherwise assist in any requisite RFP, RFQ, or RFI processes.***

    AHIC will provide ongoing advice and assistance to PSERS' Investment Professionals and the Board on the strengths of the DC plan, evolving best practices and will act as a liaison with the recordkeeper and PSERS. AHIC has a specialized DC team knowledgeable of vendor administrative topics.

III-11. Objectives and Additions to Standard Terms and Conditions

The Offeror will identify which, if any, of the terms and conditions contained in **Part VI and Appendix A** it would like to negotiate and what additional terms and conditions the Offeror would like to add to the standard contract terms and conditions. The Offeror's failure to make a submission under this paragraph will result in its waiving its right to do so later, but the Issuing Office may consider late objections and requests for additions if to do so, in the Issuing Office's sole discretion, would be in the best interest of the Commonwealth. The Issuing Office may, in its sole discretion, accept or reject any requested changes to the standard contract terms and conditions. The Offeror shall not request changes to the other provisions of the RFP, nor shall the Offeror request to completely substitute its own terms and conditions for **Part VI and Appendix A**. All terms and conditions must appear in one integrated contract. The Issuing Office will not accept references to the Offeror's, or any other, online guides or online terms and conditions contained in any proposal.

Regardless of any objections set out in its proposal, the Offeror must submit its proposal, including the cost proposal, on the basis of the terms and conditions set out in **Part VI and Appendix A**. The Issuing Office will reject any proposal that is conditioned on the negotiation of the terms and conditions set out in **Part VI and Appendix A or to other provisions of the RFP as specifically identified above**. The Board will not consider proposals that contain any limitations of Offeror liability for services provided. Any proposal containing such a limitation shall be rejected.

Response:

Aon and PSERS underwent extensive contract negotiations in the fall of 2018 after Aon was initially selected to move to contract negotiations in August 2018. Aon and PSERS fully negotiated in good faith all contract matters to a mutually-agreed conclusion, and as such the parties resolved all exceptions. Aon stands behind the draft agreement dated November 27, 2018. We are confident that Aon and PSERS can move quickly to fully execute a contract based on the work conducted in the Fall/Winter of 2018.

APPENDIX C

DOMESTIC WORKFORCE UTILIZATION CERTIFICATION

To the extent permitted by the laws and treaties of the United States, each proposal will be scored for its commitment to use the domestic workforce in the fulfillment of the contract. Maximum consideration will be given to those offerors who will perform the contracted direct labor exclusively within the geographical boundaries of the United States or within the geographical boundaries of a country that is a party to the World Trade Organization Government Procurement Agreement. Those who propose to perform a portion of the direct labor outside of the United States and not within the geographical boundaries of a party to the World Trade Organization Government Procurement Agreement will receive a correspondingly smaller score for this criterion. In order to be eligible for any consideration for this criterion, offerors must complete and sign the following certification. This certification will be included as a contractual obligation when the contract is executed. Failure to complete and sign this certification will result in no consideration being given to the offeror for this criterion.

I, Steve Cummings, NA Chief Executive Officer [title] of Aon Hewitt Investment Consulting, Inc. [name of Contractor] a Illinois [place of incorporation] corporation or other legal entity, ("Contractor") located at 200 E. Randolph St., Suite 1500, Chicago, IL 60601 [address], having a Social Security or Federal Identification Number of 36-3109431, do hereby certify and represent to the Commonwealth of Pennsylvania ("Commonwealth") (Check one of the boxes below):

☒ All of the direct labor performed within the scope of services under the contract will be performed exclusively within the geographical boundaries of the United States or one of the following countries that is a party to the World Trade Organization Government Procurement Agreement: Aruba, Austria, Belgium, Bulgaria, Canada, Chinese Taipei, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Liechtenstein, Lithuania, Luxemburg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom

OR

☐ ____________________ percent (_____ %) [Contractor must specify the percentage] of the direct labor performed within the scope of services under the contract will be performed within the geographical boundaries of the United States or within the geographical boundaries of one of the countries listed above that is a party to the World Trade Organization Government Procurement Agreement. Please identify the direct labor performed under the contract that will be performed outside the United States and not within the geographical boundaries of a party to the World Trade Organization Government Procurement Agreement and identify the country where the direct labor will be performed: ____________

____

[Use additional sheets if necessary]

The Department of General Services [or other purchasing agency] shall treat any misstatement as fraudulent concealment of the true facts punishable under Section 4904 of the Pennsylvania Crimes Code, Title 18, of Pa. Consolidated Statutes.

Attest or Witness:

____
Signature/Date

____
Printed Name/Title

Aon Hewitt Investment Consulting, Inc.
Corporate or Legal Entity's Name

Stephen C. [signature] 2/14/19
Signature/Date

Steve Cummings, NA Chief Executive Officer
Printed Name/Title

APPENDIX D

IRAN FREE PROCUREMENT CERTIFICATION

http://www.dgs.pa.gov/Documents/Procurement%20Forms/IranFreeProcurementCertificationForm.pdf

http://www.dgs.pa.gov/Documents/Procurement%20Forms/ProposedIranFreeProcurementList.pdf

pennsylvania
DEPARTMENT OF GENERAL SERVICES
BUREAU OF PROCUREMENT

IRAN FREE PROCUREMENT CERTIFICATION FORM

(Pennsylvania's Procurement Code Sections 3501-3506, 62 Pa.C.S. §§ 3501-3506)

To be eligible for an award of a contract with a Commonwealth entity for goods or services worth at least $1,000,000 or more, a vendor must either: a) certify it is **not** on the current list of persons engaged in investment activities in Iran created by the Pennsylvania Department of General Services ("DGS") pursuant to Section 3503 of the Procurement Code and is eligible to contract with the Commonwealth under Sections 3501-3506 of the Procurement Code; or b) demonstrate it has received an exception from the certification requirement for that solicitation or contract pursuant to Section 3503(e).

To comply with this requirement, please insert your vendor or financial institution name and complete **one** of the options below. Please note: Pennsylvania law establishes penalties for providing false certifications, including civil penalties equal to the greater of $250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (Section 3503 of the Procurement Code.)

OPTION #1 - CERTIFICATION
I, the official named below, certify I am duly authorized to execute this certification on behalf of the vendor/financial institution identified below, and the vendor/financial institution identified below is **not** on the current list of persons engaged in investment activities in Iran created by DGS and is eligible to contract with the Commonwealth of Pennsylvania Sections 3501-3506 of the Procurement Code.

Vendor Name/Financial Institution (Printed) Aon Hewitt Investment Consulting, Inc.	
By (Authorized Signature)	
Printed Name and Title of Person Signing Steve Cummings, NA Chief Executive Officer	*Date Executed* 2/14/19

OPTION #2 – EXEMPTION
Pursuant to Procurement Code Section 3503(e), DGS may permit a vendor/financial institution engaged in investment activities in Iran, on a case-by-case basis, to enter into a contract for goods and services.

If you have obtained a written exemption from the certification requirement, please fill out the information below, and attach the written documentation demonstrating the exemption approval.

Vendor Name/Financial Institution (Printed)	
By (Authorized Signature)	
Printed Name and Title of Person Signing	*Date Executed*

APPENDIX E

Trade Secret Confidential Proprietary Information Notice Form

http://www.dgs.pa.gov/Documents/Procurement%20Forms/TradeSecret_ConfidentialPropertyInfoNotice.pdf

Trade Secret/Confidential Proprietary Information Notice

Instructions:

The Commonwealth will not assert on behalf of a third party an exception to the public release of materials containing information believed to be exempt from public disclosure, including trade secrets or confidential proprietary information, unless the materials are accompanied, at the time they are submitted, by this form or a document containing similar information. In addition, in order to protect the safety and security of individuals, infrastructure, and information technology systems, the Commonwealth requires third parties to designate as confidential any information submitted by the third parties that, if disclosed, would be reasonably likely to jeopardize safety or security.

It is the responsibility of the party submitting this form to ensure that all statements and assertions made below are legally defensible and accurate. The Commonwealth will not provide a submitting party any advice with regard to Pennsylvania's *Right-to-Know Law*, 65 P.S. §§ 67.101—67.3104, or laws relating to trade secret or confidential proprietary information.

Name of submitting party: Aon Hewitt Investment Consulting, Inc.

Contact information for submitting party:

Claire Shaughnessy
Partner
Merritt 7 Corporate Park, Building 201
Norwalk, CT 06851
+1 203 523 8163
claire shaughnessy@aon com

Please provide a brief overview of the materials that you are submitting (e.g. bid proposal, quote, grant application, statement of work, technical schematics):

Aon Hewitt Investment Consulting, Inc. is submitting our response to the Commonwealth of Pennsylvania Public School Employees' Retirement System RFP #PSERS RFP 2018-6 for the bid for Investment Consulting Services. Our response includes the technical and cost proposals which includes the applicable forms and appendix items.

Please provide a brief explanation of why the materials are being submitted to the Commonwealth (e.g. response to bid, RFP or RFQ #12345, application for grant XYZ being offered by the Department of Health, documents required to be submitted under law ABC):

Aon Hewitt Investment Consulting, Inc. is submitting our response to the Commonwealth of Pennsylvania Public School Employees' Retirement System RFP #PSERS RFP 2018-6 for the bid for Investment Consulting Services.

Please indicate if any information has been included that you believe is exempt from public disclosure by checking the appropriate box below: (*Note: Financial information submitted in response to an RFP or IFB to demonstrate economic capability is exempt from public disclosure in accordance with Section* 708(b)(26) *of the* *Right-to-Know Law*, 65 P.S. 67.708(b)(26)).

☐ **No information has been included that I believe is exempt from public disclosure.**

☑ **Information has been included that I believe is exempt from public disclosure.**

Please provide a list detailing which portions of the material being submitted you believe are exempt from public disclosure. This includes trade secret, confidential or proprietary information, or information that if disclosed would be reasonably likely to jeopardize the safety or security of an individual, infrastructure, or information technology system. Please provide an explanation of why you think those materials constitute a trade secret, confidential or proprietary information, or why disclosure of those materials would be reasonably likely to jeopardize safety or security. Also, please mark the submitted material in such a way to allow a reviewer to easily distinguish between the parts referenced below. (You may attach additional pages if needed)

Note: Without substantial justification, the following information will not be considered a trade secret or confidential proprietary information:

- Any information submitted as part of a vendor's cost response.
- Information submitted as part of a vendor's technical response or statement of work that does not implicate safety and security, or pertain to specific business practices or product specification.
- Information submitted as part of a vendor's technical or small diverse business and small business response that is otherwise publicly available or otherwise easily obtained.
- Information detailing the name, quantity, and price paid for any product or service being purchased by the Commonwealth.

Page Number	Description	Explanation
21	2. Special Audit Reports	This is proprietary information that is privileged or confidential, the disclosure of which would cause substantial harm to Aon's ability to compete in the market.
25	I. Litigation	This is proprietary information that is privileged or confidential, the disclosure of which would cause substantial harm to Aon's ability to compete in the market.
27	J. Regarding Fiduciary Responsibilities	This is proprietary information that is privileged or confidential, the disclosure of which would cause substantial harm to Aon's ability to compete in the market.
27	K. Recent Review by Government Agency	This is proprietary information that is privileged or confidential, the disclosure of which would cause substantial harm to Aon's ability to compete in the market.
Appendix Item	Sample Operational Due Diligence Summary Assessment	This is information that includes our proprietary research that is, in part, the basis of our value to clients. It is not generally known to and is not readily ascertainable by proper means by Aon competitors or other persons who can obtain economic value from its disclosure or use; and this information is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Appendix Item	Sample InBrief Report	This is information that includes our proprietary research that is, in part, the basis of our value to clients. It is not generally known to and is not readily ascertainable by proper means by Aon competitors or other persons who can obtain economic value from its disclosure or use; and this information is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Appendix Items Disclosure: This is information that includes our proprietary research that is, in part, the basis of our value to clients. It is not generally known to and is not readily ascertainable by proper means by Aon competitors or other persons who can obtain economic value from its disclosure or use; and this information is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Acknowledgment

The undersigned party hereby agrees that it has read and completed this form, and has marked the material being submitted in accordance with the instructions above. The undersigned party acknowledges that the Commonwealth is not liable for the use or disclosure of trade secret, confidential or proprietary information, or information that if disclosed would be reasonably likely to jeopardize the safety or security of an individual, infrastructure or information technology system, where that data or information has not been clearly marked as such, and which was not accompanied by a specific explanation included with this form.

The undersigned agrees to defend any action seeking release of the materials it believes to be trade secret, confidential or proprietary, or would be reasonably likely to result in a safety or security risk if disclosed. The undersigned also agrees to indemnify and hold harmless the Commonwealth, its agents and employees, from any judgments awarded against the Commonwealth in favor of the party requesting the materials, and any and all costs connected with that defense. This indemnification survives so long as the Commonwealth has possession of the submitted material, and will apply to all costs unless and until the undersigned provides a written statement or similar notice to the Commonwealth stating that it no longer wishes to exempt the submitted material from public disclosure.

The undersigned acknowledges that the Commonwealth is required to keep all records for at least as long as specified in its published records retention schedule.

The undersigned acknowledges that the Commonwealth reserves the right to reject the undersigned's claim that the information is trade secret, confidential, proprietary or is reasonably likely to result in a safety or security risk if disclosed, if the Commonwealth determines that the undersigned has not met the burden of establishing that the information constitutes a trade secret, confidential, or is otherwise exempt. The undersigned also acknowledges that if only a certain part of the submitted material is found to constitute a trade secret, is confidential or proprietary, or is otherwise exempt, the remainder of the submitted material will become public; only the protected information will be removed and remain nonpublic.

If being submitted electronically, the undersigned agrees that the mark below is a valid electronic signature.

[signature]	NA Chief Executive Officer	2/14/19
Signature	Title	Date

Case ID: 221102792

Aon Hewitt Investment Consulting

Appendix

A. AHIC Form ADV, Part 2A and 2B

Empower Results®

Form ADV, Part 2A
Firm Brochure

Aon Hewitt Investment Consulting, Inc.

200 E. Randolph St., Suite 1500

Chicago, IL 60601

Phone: 312.381.1200

www.aonhewitt.com/investmentconsulting

Dated: March 28, 2018

This brochure provides information about the qualifications and business practices of Aon Hewitt Investment Consulting, Inc. ("AHIC"). If you have any questions about the contents of this brochure, please contact the AHIC Compliance Department at 312-381-1200. The information in this brochure has not been approved or verified by the United States Securities and Exchange Commission ("SEC"), the Commodity Futures Trade Commission ("CFTC"), the National Futures Association ("NFA") or by any state securities authority.

Additional information about Aon Hewitt Investment Consulting, Inc. also is available on the SEC's website at www.adviserinfo.sec.gov.

Please note that registration as an investment adviser with the SEC, a commodity pool operator and commodity trading advisor with the CFTC, or being a member of the NFA does not imply any certain level of skill, training or ability with respect to the provision of investment advisory services.

Item 2: Material Changes

This section of Aon Hewitt Investment Consulting, Inc.'s Brochure ("Brochure") is intended to discuss and identify material changes that are made to the Brochure since our last update on June 9, 2017.

We will deliver to our clients, a free annual updated Brochure that includes a summary of any material changes that are made to this and subsequent Brochures within 120 days of the close of our fiscal year. If you would like to request a copy of the most recent Brochure at any time, please contact Aon Hewitt Investment Consulting, Inc. at 312-381-1200.

Item 10 – Other Financial Industry Activities and Affiliations: Added The Townsend Group ("Townsend") as a new advisory affiliate of AHIC. Also included a discussion on conflict of interests related to advisory affiliate service referrals and advisory affiliates acting as a sub-adviser to AHIC.

Item 3: Table of Contents

Item 4: Advisory Business

Aon Hewitt Investment Consulting, Inc. ("AHIC") is a registered investment adviser with the U.S. Securities and Exchange Commission (“SEC”); a Commodity Pool Operator (“CPO”) and a Commodity Trading Advisor (“CTA”) registered with the Commodity Futures Trade Commission (“CFTC”); and is a member of the National Futures Association (“NFA”) with its principal place of business located in Chicago, Illinois.

AHIC provides professional investment advisory and consulting services to public pension funds, endowments, foundations, not-for-profit organizations, corporate pension funds, defined contribution plans, insurance companies and registered investment advisers/wealth managers. In 2010, subsequent to the merger of Ennis Knupp & Associates, Inc., Hewitt Investment Group, LLC and Aon Investment Consulting, Inc., the business began operating under the name of Hewitt EnnisKnupp, Inc. In January 2015, Hewitt EnnisKnupp, Inc. changed its legal business name to Aon Hewitt Investment Consulting, Inc. AHIC is wholly owned by Aon Consulting, Inc., an indirect subsidiary of its ultimate parent Aon plc. Aon plc shares are listed on the New York Stock Exchange (symbol: AON). In 2018, AHIC also began operating under the umbrella brand name Aon.

AHIC provides both non-discretionary investment advice, discretionary investment solutions (including Outsourced Chief Investment Officer (“OCIO”)) and actuarial services to clients on many matters related to their investment programs and operations, including:

- Investment Policy Planning and Asset Allocation;
- Manager Structure and Selection;
- Performance Review and Manager Monitoring;
- Fiduciary Services;
- Alternative Asset Advisory Services;
- Delegated Investment Solutions and Pension Risk Management;
- Annuities Placement Solutions;
- Ad Hoc Projects; and
- Bespoke Services.

More information on each of the above services is provided below. As an extension of the services listed above, AHIC offers related services including defined contribution services, master trustee/custodian evaluation, and asset transition services. In addition to discretionary asset management for defined benefit and defined contribution pension plans, AHIC also has considerable experience in formulating spending and investment policies for foundations and endowments.

<u>Investment Policy Planning and Asset Allocation</u>

We help clients to:

- Define and control risk for their specific requirements;
- Diversify their investment portfolio;
- Develop investment objectives and a statement of investment policy;
- Meet cash flow needs; and
- Conduct scenario analysis on their portfolio(s) as well as alternatives portfolios.

Our **Investment Policy Services Team (the “IPS Team”)** and **Global Asset Allocation Team (the “GAA Team”, and together with the IPS Team, collectively referred to herein as, the “Teams”)** are composed of investment professionals with backgrounds in investment management, economics, and actuarial science. These Teams are responsible for maintaining AHIC’s “house” investment views and capital market assumptions.

These Teams also provide timely, proactive advice and research to our investment consultants regarding the potential investment implications of changes in capital markets. Additional responsibilities include coordinating with AHIC investment consultants to provide AHIC clients with top-down, strategic investment advice; researching new investment strategies; and monitoring portfolio positions from an asset allocation perspective.

Certain plan sponsors hire us to construct a dynamic “de-risking” glide path to help bring the plans to a fully funded status, while reducing uncompensated risks, with the goal of reducing the economic cost of plan benefits. The dynamic “de-risking” glide path is directly incorporated into the client’s investment policy to formalize the strategy, permit execution, and seek to ensure the highest levels of governance.

The **Institutional Advisory Services Team (“IAS Team”)** provides non-discretionary model portfolios (“Model Portfolios”), strategic asset allocation advice, and related advisory services to certain institutional and retail non-affiliated advisory firms, including certain open-end mutual fund companies and wrap-program sponsors in connection with third-party wrap-fee programs.

We do not sponsor any “wrap-fee” programs, but we may participate as a non-discretionary sub-adviser in wrap-fee programs. Under these arrangements, we provide Model Portfolios containing our current investment recommendations based on our clients’ investment policy statement and strategy goals or other parameters as agreed to between AHIC and our client. Although we provide recommendations, we do not have the authority to implement those recommendations. Ultimately, the decision making and discretionary responsibility for the asset allocation and securities selection remains with the plan sponsor or fiduciary to the plan. Our client also maintains responsibility for effecting all security transactions in connection with such determinations, which means our client’s portfolio may materially diverge from the Model Portfolio created for such client. There may be differences between the Model Portfolio and the portfolios managed by our client and its other clients. We receive a fee from our client as an investment adviser for the services provided in these programs.

The IAS Team is also responsible for managing risk in general, including: performing asset-liability analyses; designing custom interest rate risk management portfolios utilizing derivatives; and monitoring portfolio positions from an asset-liability perspective.

Manager Structure and Selection

Our **Global Investment Management Team (“GIM Team”)** consists of individuals dedicated to researching and evaluating non-affiliated investment managers worldwide. Our GIM Team monitors and rates such investment managers’ strategies. The GIM Team includes a number of former fund managers, which we believe provides further insight for understanding managers.

The GIM Team identifies investment managers and strategies across equities, fixed income, real estate equity and debt, private equity and debt, and alternative asset classes for our clients, and conducts qualitative on-going periodic due diligence on buy-rated and qualified managers. GIM also will conduct periodic quantitative screens on its manager universe which would include investment managers not currently classified as buy-rated or qualified-rated managers.

The GIM Team works with the AHIC investment consultants to periodically review the number and types of managers, funds, and separate account strategies used by clients paying careful attention to efficiency, costs, and management oversight. Further, the GIM Team’s due diligence process is leveraged by its discretionary and non-discretionary advisory teams to include screening, interviewing, and selecting manager candidates that meet each client’s needs. Observations from this research are summarized within written manager guidelines and performance objectives reports.

In certain circumstances, a client may delegate its authority to AHIC, including the authority to allocate assets and hire or fire investment managers. Please see the section on our delegated services below.

Performance Review and Manager Monitoring

Our manager research efforts are driven by several factors, including efforts to identify new investment strategies or approaches, monitor investment strategies to which we have assigned a rating, or monitor strategies in which our clients invest. We conduct both qualitative and quantitative research and screening on investment strategies. Qualitative research includes ongoing discussions and periodic on-site due diligence meetings with investment managers in order to assess investment strategies offered by that firm. Qualitative research is performed on all strategies in which we assign a “buy” recommendation. Qualitative research may also be performed on selected “qualified” or “sell” rated strategies, depending on client requirements or the research team’s interest in that strategy or firm. For those strategies that are rated by our quantitative process, the quantitative assessment is updated quarterly, which serves as a monitoring tool and information source for our researchers, consultants, and/or clients that may utilize the strategy in their portfolio. Assessments, whether qualitative or quantitative, focus on business/organization, staffing, investment process, risk management, operational considerations, performance, and terms and conditions. When evaluating investment strategies for a client, the research team also considers the investment in the context of the client’s objectives and guidelines. We inform our clients of important developments and, when appropriate, recommend changing investment managers or the asset allocation to such investment managers.

Fiduciary Services

Our **Fiduciary Services Team** works with clients and provides fiduciary oversight reviews to help them meet their fiduciary responsibilities. These services are provided to both public- and private-sector pension plans and committees. In most cases, these services are a separate retainer-based solution distinct from other AHIC investment consulting practices. Our fiduciary services include:

- Strategic planning;
- Fiduciary audits and operational reviews;
- Client and fiduciary training;
- Board/Committee governance and self-assessment; and
- Ad hoc projects.

Strategic Planning

We assist in the design of strategic plans and development of mission statements and core values as well as reasonable and achievable goals and objectives. We also assist in the implementation of the plans and the evaluation of their success.

Fiduciary Audits and Operational Reviews

We review the client’s policies and procedures to assess their effectiveness and appropriateness and provide recommendations for improvement. These reviews may include:

- Investment portfolio objectives, asset allocation, and policy;
- Investment operations and processes;
- Board oversight, policies, and principals; and
- Organization, staffing structure, and policies.

Upon completing our review, we create a report of findings and recommendations for delivery to the client's governing body and assist the client in selecting trustees and recordkeepers for fiduciary accounts.

Client and Fiduciary Training
Our educational offerings include:

- Written reports that provide background information, alternatives and recommendations (along with the rationale for the recommendations made as a result of the Fiduciary Audits or Operational Reviews) on a given issue;
- Research or educational materials on topics to discuss with a client's staff or committees;
- A client conference that covers a variety of investment-related topics.

Board/Committee Governance
We assist clients to develop governance manuals, policies, procedures, and monitoring methods appropriate to their oversight responsibilities and reporting structure. We also provide services to support our clients' administration of their fiduciary requirements, such as maintaining meeting minutes and compliance calendars, and assist with board/committee self-assessment.

Alternative Asset Advisory Services

Our **Global Hedge Funds, Private Equity** and **Real Estate Teams (collectively the "Global Alternatives Team")** are a sub-part of the GIM Team discussed above. The Global Alternatives Team is responsible for maintaining qualitative assessments on alternative asset manager strategies and keeping abreast of the conditions in these markets.

We provide both non-discretionary and discretionary investment advisory services on partnership interests in private equity, real estate, venture capital arrangements, hedge funds, leveraged buyout funds, and distressed securities funds.

With the exceptions of mutual funds, exchange traded funds, and non-public securities, we do not typically provide advice or recommendations on specific securities investments. In designing a client's investment policy, we will typically consider many types of investments, unless instructed by the client to limit our advice to particular sectors or industries. Our investment recommendations are not limited to any specific product or service offered by any particular broker-dealer or insurance company.

Because some types of alternative investments involve an additional degree of risk, alternative investment strategies will only be recommended when consistent with the client's stated investment objectives, tolerance for risk, liquidity, and suitability.

Hedge Fund Advisory Services

We develop, expand and monitor our clients' asset allocation structures in opportunistic strategies (e.g., real and absolute return, global tactical asset allocation, long/short equity including market neutral and 130/30 style funds, commodities, convertible arbitrage, and funds-of-funds). We seek to integrate our understanding of each of our client's goals, risk tolerances, and risk qualities of existing portfolio with our extensive manager research and monitoring capabilities. Our approach is to take a broad perspective on this opportunity set, covering not only a wide variety of hedge funds, but also those strategies that use "hedge fund like" approaches to investing. We conduct both on-site and telephonic manager meetings annually with a due diligence process that includes a robust examination of investment strategy, fund leadership, and operational due diligence.

We also provide institutional investors with a hedge fund investment risk monitoring and implementation platform that allows for hedge fund investing with increased transparency through the VISION platform. This service is designed to allow us to provide holdings-level transparency, IMA guideline monitoring, risk oversight and integrated risk reporting, as well as collectively to negotiate management fees for our clients.

Private Equity Advisory Services

We review and develop a client's private equity investment policy, asset allocation, and portfolio design. We conduct global private equity fund selection and due diligence reviews within each sub-sector. In addition, we coordinate the engagement of outside counsel for our clients so that limited partnership agreements are reviewed by legal professionals. Then, we negotiate terms and conditions on behalf of each client. We provide clients with performance reporting, portfolio analysis, and comprehensive portfolio company review. In no circumstances does this service provide our clients with legal advice. Clients have the responsibility to obtain their own legal and tax advice. We are able to educate clients on secondary sale processes and evaluate their portfolio construction decisions. We provide private equity education and market analysis, including commentary on current issues. We recommend commingled private equity investment funds as well as separate accounts that are structured and classified to meet client needs.

Real Estate Advisory Services

We consult with our clients to develop their real estate portfolio investment objectives, programs, and policies. Our real estate investment strategic planning and implementation services include:

- Investment pacing, size, and strategy diversification;
- Investment vehicle analysis and planning;
- Property and portfolio leverage planning;
- Manager search, selection, and monitoring;
- Performance measurement and attribution analysis;
- Topical real estate research and market analysis; and
- Transition structure and terms modeling, analysis, and fee negotiations.

Discretionary Investment Solutions and Pension Risk Management

Through our **Discretionary Advisory Team ("Delegated" or "delegated services")**, we design and manage certain institutional clients' investment portfolios. For these client relationships, we are delegated the authority to hire investment managers, terminate investment managers, select investment funds, and rebalance portfolio assets, subject to the client's investment policy statement and other terms outlined in the investment consulting agreement. Please see Item 16 for more information about our delegated services.

Certain plan sponsors hire us to construct a dynamic "de-risking" glide path to help bring the plans to a fully funded status, while reducing uncompensated risks, with the goal of reducing the economic cost of plan benefits. The dynamic "de-risking" glide path is directly incorporated into the client's investment policy statement to formalize the strategy, permit execution, and seek to ensure the highest levels of governance. In setting the glide path, we use a customized liability measure reflecting the client's desired objectives:

- *Potential Reduction in Economic Cost*: In many cases, the dynamic “de-risking” glide path, daily monitoring, and swift execution of the preapproved glide path may reduce the plans’ economic costs over time by reducing uncompensated risks and volatility.

- *Improve Probability of Reaching 100% Funded While Decreasing Risk*: The goal of the glide path is to seek to improve the probability of reaching 100% funded while protecting the downside risk.

- *Executing “Real-time”*: AHIC’s daily monitoring capabilities are key to implementing a dynamic “de-risking” glide path. We take discretion for the selection, implementation, and replacement of investment managers to execute a client’s dynamic policies. This results in a reduction in decision cycle times and a disciplined execution of plan strategies, which seeks to improve benefit security to plan participants and, in many cases, delivers lower economic cost and volatility to plan sponsors.

Our **Delegated Investment Team** is dedicated to the development, implementation and execution of our best thinking for our clients. This solution also utilizes “Buy Rated” investment manager strategies, which are researched by the GIM Team, as referenced above. The Delegated Investment Team utilizes a variety of tools and providers that seek to pursue the highest quality strategies available in the market.

Our **Delegated Portfolio Management Team** leverages the expertise of dedicated individuals with backgrounds in investment management and actuarial science. The team is responsible for managing risk in general, including: performing asset-liability analyses; designing custom interest rate risk management portfolios utilizing derivatives; and monitoring portfolio positions from an asset-liability perspective.

Certain AHIC clients that receive non-discretionary investment advisory services may also have a portion of their portfolio managed by the Delegated Investment Team, or provided in connection with AHIC’s Delegated Investment Solutions (“DIS”). AHIC provides non-discretionary (3(21) ERISA) advisory services with respect to certain AHIC clients, and also exercises discretionary management authority (3(38) ERISA) delegated services with respect to a portion of these client’s portfolios.AHIC qualifies as a “qualified professional asset manager” under the DOL’s Prohibited Transaction Class Exemption 84-14.

As part of our discretionary management services, we may invest our clients in AHIC-affiliated private funds and/or collective funds. While the investment in AHIC private funds or collective funds is not a requirement of our discretionary services, AHIC believes that it has the ability to offer scaled pricing to its clients by investing into affiliated private funds or collective funds, which may not otherwise be available to clients separately through the use of separate accounts or other unaffiliated commingled vehicles. Typically, AHIC will charge for its advisory services separately from an investment in an AHIC-affiliated fund, except for clientsinvested in ATC’s collective investment trust who may choose to pay AHIC’s investment advisory fee directly from CIT assets.

AHIC’s non-discretionary investment advisory services will not include evaluations or recommendations on DIS when clients make the determination to delegate a portion of their portfolio to DIS. Furthermore, the GIM Team will not perform monitoring or due diligence of the discretionary portfolio management or private funds managed by DIS, as these activities are performed on at least a quarterly-basis by a team managed by Delegated’s US Chief Risk Officer. The non-discretionary and discretionary solutions are performed by separate and distinct teams within AHIC. The non-discretionary team will remain responsible for performing fiduciary oversight of the client’s entire portfolio, and will make independent recommendations to their client on the services performed by DIS.

<u>Annuities Placement Solutions</u>

Our **Annuities Placement Solutions Team** leverages the expertise of dedicated individuals with backgrounds in insurance, risk management, actuarial science and finance. The team has extensive experience assisting clients in selecting annuity providers using the protocol established by the Department of Labor in its Interpretive Bulletin No. 95-1 dealing with the selection of the "Safest Available Annuity Provider."

The team specializes in implementing annuity arrangements for terminating defined benefit plans as well as partial settlements for ongoing plans. We evaluate the need for guaranteed interest contracts and assist clients in evaluating and understanding these pension investment alternatives. Guaranteed interest contracts are agreements issued by an insurance company that provide interest over a specified, agreed-upon time period. They are commonly considered by plan fiduciaries in defined benefit plans as an alternative to fixed income or in defined contribution plans as an investment for participants seeking principal preservation.

Ad Hoc Projects

We provide some of the services described above (for example, policy consulting, manager selection, and governance) on a project basis. We also provide the following services on a project basis:

- Investment Program Review
- Defined Contribution Services (e.g., Vendor Evaluation and Fee Benchmarking)
- Vendor Fee Reviews
- Manager Agreement Review
- Asset Transfer Oversight (at client direction)
- Asset Liability Studies
- Recordkeeper Selection

Bespoke Services

We allow clients to customize their investment portfolio to their needs and goals, such as by imposing reasonable investment restrictions on certain securities, industries, or sectors; managing a portfolio to a tax-efficient mandate; or by providing us with written instructions when opening an account or at any time thereafter.

Amount of Managed Assets

As of December 31, 2017, we had approximately $107 billion of assets under management on a discretionary basis and $2 billion in assets on a non-discretionary basis.

Item 5: Fees and Compensation

AHIC does not have a standardized fee or uniform fee schedule. Fees for our asset management services may be charged as a percentage of assets in the client's account. Consulting services may be charged as an hourly fee or as a flat fee. The nature of our proposed relationship with our client is considered in determining the fee structure for our client's account. Fees may vary between clients due to various factors, including, but not limited to, the type and size of the client's account, the range of additional services provided to the client, and the total amount of assets managed for a single client. We believe our fees are competitive and reasonable. However, there may be instances where similar services to those provided by us may be available for similar or lower fees from other asset managers. All fees are negotiated in advance with the client and will vary depending on a number of factors, including but not limited to:

- Complexity of assignment;
- Scope of work;
- Number of plans;
- Number of investment managers; and

- Nature and frequency of meetings and reports.

The fees charged for the investment advisory services are specified in the written agreement between AHIC and each client. AHIC's fees do not include trustee fees, custody fees, sub-advisory fees, brokerage commissions, transaction costs, mutual fund expenses, or other fees a client may incur.

Asset-Based Fees

Asset-based fees typically range from 0.01% to 0.25% of assets we advise on a non-discretionary basis. Asset-based fees typically range up to 0.60% of assets we manage on a delegated/discretionary basis. These fees are typically billed quarterly, in arrears, calculated on the value of assets in the account at the end of each calendar quarter and invoiced to the client.

Hourly Fees

Hourly fees typically range from $200 - $900 per hour depending on the service rendered and are billed monthly, in arrears, based on actual hours rendered to a client account and invoiced directly to the client.

Retainer Fees

Retainer fees typically range from $75,000 to $500,000, and are either billed quarterly, in arrears, or in installments negotiated with the client for the duration of a particular project. These fees are negotiated on a client-by-client basis dependent upon the services requested.

GENERAL INFORMATION ON FEES

Negotiability of Fees: Although we have established the fee ranges reflected above, we retain the right to negotiate or waive fees on a client-by-client basis in the future.

Fee Calculation: The fee charged is calculated as described above and is not charged on the basis of a share of capital gains upon or capital appreciation of the funds or any portion of the funds of an advisory client (Section 205(a) (1) of the Investment Advisers Act of 1940, as amended).

Termination of Advisory Relationship: Typically, a client may terminate its advisory relationship at any time upon no more than 30 days prior notice. Upon termination of any account, any prepaid, unearned fees will be promptly refunded to the client, and any earned, unpaid fees will be due and payable. Such fees are prorated based on the number of days left in the billing period.

Pooled Fund Investment Vehicles: We serve as the investment adviser to Aon Hewitt Group Trust ("AHGT"), Aon Hewitt Offshore Fund of Hedge Funds, Ltd. ("AHFoHF"), Aon Hewitt Institutional Funds ("AHIF"), and Aon Private Credit Opportunities Fund ("APCOF"). The fees relating to the funds are described in each respective Private Offering Memoranda and Supplement(s).

Collective Investment Trusts: We serve as the investment adviser to the Aon Hewitt Collective Investment Trust ("AHCIT"). The advisory fees we receive from AHCIT relating to the funds are described in the trust's Offering Statement. Certain clients may prefer to pay AHIC's advisory fees directly from the CIT, which is further described in the trust's Offering Statement. In its discretionary capacity, AHIC has the ability to hire and terminate investment advisory relationships on behalf of the CIT and negotiate investment advisory fees related to such sub-advisers. At this time, AHIC has agreed to pay certain operating expenses of the CIT. The amount of the reimbursement may change at any time without notice to fund investors.

Investment Advisory Fees and Expenses: AHIC's investment advisory fees, both for consulting and discretionary asset management, are separate and distinct from fees and expenses charged by our client's investment managers (mutual funds, collective investment trusts, separate account managers, as well as the sub-advisers we choose or recommend to manage assets on behalf of the AHGT, AHFoHF, AHIF, APCOF, or AHCIT). Generally, AHIC does not collect an investment management fee from its pooled vehicles except for when a client elects to pay AHIC's investment advisory fees as part of the AHCIT.

The fees and expenses related to the investment management firms unrelated to AHIC are described in each fund's prospectus, in the case of mutual funds, or other disclosure materials, in the case of the other types of managers. Investment management fees charged by investment managers (sub-advisers) within Aon Hewitt's funds are reflected in each respective AH fund's offering memorandum and are reflected in the expense ratios of the funds.

Custody and Brokerage Fees and Expenses: Clients should note that our investment advisory fees are separate from custody and brokerage charges that may be assessed by third parties, including Bank of New York Mellon (when investing in the AHGT, AHFoHF, and AHIF). Please see *Item 12 – Brokerage Practices* and *Item 15 – Custody* for more information.

Limited Prepayment of Fees: Clients may prepay our fees in advance. However, under no circumstances do we require or solicit payment of fees in excess of $1,200 more than six months in advance of services rendered. See Termination of Advisory Relationship above regarding return of any unearned advisory fees.

Affiliated Sales Activity: A limited number of AHIC employees are also affiliated with Aon Securities, Inc. ("ASI"), which is a registered broker-dealer and our affiliate. Their affiliation with ASI relates solely to their services with respect to distribution of interests in the AHGT, AHFoHF, APCOF, and AHIF. Although affiliated with ASI, our representatives receive no compensation from ASI or from clients for these services.

Additionally, AHIC employees also offer interests in the Aon Hewitt Collective Investment Trust ("AHCIT"), which is collective investment vehicle of Aon Trust Company ("ATC") and an affiliate of AHIC.

Mutual Funds: The investment advisory fees that we receive for services provided by our IAS Team as a non-discretionary sub-adviser to unaffiliated mutual funds, which are registered under the Advisers Act, are described in the registration statements and/or financial filings of such mutual funds, including such funds' prospectuses.

Global Investment Manager Database: Investment advisers do not pay a fee to AHIC (or otherwise compensate AHIC or its affiliates) to be included in AHIC's Global Investment Manager ("GIM") database. Neither AHIC nor any of its affiliates charge any investment adviser to be reviewed, evaluated, recommended, or selected by AHIC for any of its clients.

Occasionally, AHIC provides investment consulting services to an investment management firm specific to its employee retirement plan. AHIC may be compensated for these services by those investment managers consistent with the advisory fees described within this section. Further discussion related to these services can be found under *Item 10 – Other Financial Industry Activities and Affiliations.*

Item 6: Performance-Based Fees and Side-By-Side Management

Currently, AHIC does not charge performance-based fees. However, there may be certain of AHIC's affiliated funds whose underlying third-party funds or sub-advisers charge performance-based fees. AHIC may also invest client assets directly in third-party investment vehicles and/or third-party funds that may charge a performance-based fee.

“Side-by-Side management” refers to the simultaneous management of multiple types of client accounts/investment products. AHIC and its sub-advisers manage many accounts with a variety of strategies, which may present conflicts of interest. AHIC utilizes a customized investment advice platform where individual recommendations are provided to each client and are not applied holistically across all clients. In advising other clients, we may give advice and make recommendations to such clients, which may be the same, similar to, or different from those provided to other clients due to different client investment objectives and strategies. Clients should be aware that AHIC’s sub-advisers do at times sell or hold short positions in securities for one or more client accounts while purchasing or holding long positions in the same or substantially similar securities for other client accounts. AHIC conducts due diligence on its sub-advisers’ policies and procedures to ensure that appropriate trade allocation and execution policies are established.

Item 7: Types of Clients

AHIC provides investment advisory services to banking or thrift institutions, pooled investment vehicles, pension and profit sharing plans, not-for-profit, charitable organizations, corporations, government entities, investment companies, collective investment trusts, and endowments and foundations. We also serve hospital systems, Taft-Hartleys, family offices, insurance companies, and other public and private entities.

Item 8: Methods of Analysis, Investment Strategies and Risk of Loss

Methods of Analysis

We advise clients on broad investment objectives and the selection and monitoring of advisers and/or investment managers. Clients should refer to the disclosure documents of recommended advisers and investment managers for information on their methods of analysis, sources of information, and investment strategies.

AHIC’s GIM Team focuses the majority of its research on qualitative assessment, striving to thoroughly understand the organizations and teams that are responsible for investment performance.

The focus of the qualitative criteria includes:

- Special emphasis placed on understanding the incentive structure and team dynamic to determine the likelihood of team stability and long-term performance;
- Skill level, interpersonal skills, and attitudes of the general partners;
- The quality of the group’s deal flow with respect to intrinsic quality and competition for the opportunities;
- The due diligence and decision-making process employed by the group when it makes investments in companies, among others.

In addition, the GIM Team focuses on obtaining a thorough understanding of the research and investment process. In doing so, it is our belief that we are able to effectively evaluate periods of relative performance deviations thereby allowing for valuable proactive consulting for clients rather than a chasing performance mentality that plagues many investors. To truly understand investment management firms, it is the our belief that time must be spent face-to-face with the people at these organizations to determine their talent and commitment to client results.

Our researchers also spend a lot of time quantitatively analyzing managers. The quantitative analysis is not performance screening to find hot managers; instead, the team utilizes a variety of proprietary and third-party databases to measure risk and performance to better understand *how* a product performs and if it is in line with the style of management it pursues. The team runs portfolio attribution at the holdings level in an attempt to better understand drivers of results and challenge portfolio managers on their research and portfolio positioning.

The GIM Team's manager evaluation process assesses each manager's:

- Perceived skill;
- Fund size/competing accounts;
- Cost;
- Team;
- Performance evaluation;
- Product fit;
- Attractiveness of targeted stage;
- Strategy;
- Ownership and sharing of carried interest;
- Stability of team;
- Quality and depth of management;
- Culture; and
- Quality of service.

The quantitative criteria that are calculated and evaluated include internal rates of return, cash flow multiples, and distributions, which are benchmarked across a number of variables including fund type.

By evaluating these quantitative measures, the team gains a better understanding of how a manager may perform in a certain environment or how well a manager should fit within a portfolio context. Furthermore, an ongoing evaluation of qualitative and quantitative characteristics helps to evaluate if a manager continues to fit the role for which it was originally hired.

This dual evaluation allows the GIM Team to give clients a clear and accurate picture of our opinion on the investment managers and their strategies. Five areas of focus are extensively probed: organization, investment teams, investment process, risk considerations, and performance. This is accomplished via an on-site interview process conducted by multiple researchers.

Investment Strategies

To meet the wide variety of investment requirements of our clients, we offer customized investment solutions that implement our best thinking by investing client assets in affiliated commingled funds and/or funds or separate accounts managed by unaffiliated sub-advisers.

For our IAS solution, we build model portfolios based on our best thinking and analyses in accordance with clients' investment policy guidelines. With this solution, our clients are responsible for all portfolio trading, monitoring and operational aspects of implementing the model portfolios.

Our clients should not assume that portfolio investments will be profitable. The results for individual client portfolios will vary depending on market conditions and the portfolio's overall composition. Our clients' portfolios invest in securities; all investments carry a certain degree of risk, including the possible loss of principal that clients should be prepared to bear. There is no assurance that a client's portfolio will achieve its investment objective or that any investment will provide positive performance over any period of time.

We also sponsor several private funds. AHIC's private funds are available to certain sophisticated investors.

Risks

Please refer to the offering memorandum and supplement documents of the private funds offered by AHIC for the list of risk factors specific to each of the funds. There are a variety of risk factors each client must take into consideration, including, but not limited to, the risk factors listed herein.

A client's portfolio is subject to normal market fluctuations and other risks inherent in investing in securities, commodities, and other financial instruments. These risks may include or relate to, among other things, equity market, bond market, foreign exchange, interest rate, credit, commodities, market volatility, political risks, and any combination of these and other risks. The value of investments and the income from them, and therefore the value of and income of the third-party strategies, can go down as well as up, and an investor may not get back the amount invested. Changes in exchange rates between currencies or the conversion from one currency to another may also cause the value of the investments to diminish or increase. An investment in a third-party strategy should not constitute a substantial proportion of an investment portfolio and may not be appropriate for all investors.

Risks may occur simultaneously and/or may compound each other resulting in an unpredictable effect on the value of the third-party strategies. No assurance can be given as to the effect that any combination of risks may have on the value of the third-party strategies.

General Risk Factors

Risks Related to Investment in Equity Markets.

The third-party strategies, to the extent invested in the equity markets, are subject to a variety of market and financial risks. Common stocks, the most familiar type of equity security, represent an equity (ownership) interest in a corporation. Although common stocks and other equity securities have a history of long-term growth in value, their prices may fluctuate dramatically in the short term in response to changes in market conditions; interest rates; and other company, political, and economic developments. The value of the third-party strategies, to the extent invested in the equity markets, will fluctuate and the holders of these investments should be able to tolerate declines, sometimes sudden or substantial, in the value of their investment.

Risks of Investing in Equity Securities of Non-U.S. Companies and Smaller Companies.

Investments in non-U.S. securities, including emerging markets equities, and in small capitalization and mid-capitalization equity securities, involve special risks. For instance, smaller companies may be impacted by economic conditions more quickly and severely than larger companies. Risks of investing in foreign securities include those relating to political or economic conditions in foreign countries, potentially less stringent investor protection, disclosure standards and settlement procedures of foreign markets, potentially less liquidity of foreign markets, potential applicability of withholding or other taxes imposed by these countries, and currency exchange fluctuations.

Interest Rate Risk Applicable to Investment in Fixed-Income Securities.

Fixed-income securities are subject to the risks associated with investing in such instruments. Fixed-income securities, such as bonds, are issued to evidence loans that investors make to corporations and governments, either foreign or domestic. If prevailing interest rates fall, the market value of fixed-income securities that trade on a yield basis tends to rise. On the other hand, if prevailing interest rates rise, the market value of these fixed-income securities generally will fall. In general, the shorter the maturity, the lower the yield, but the greater the price stability. These factors may have an effect on the value of the third-party strategies. A change in the level of interest rates will tend to cause the net asset value of the third-party strategies to change. If these interest rate changes are sustained over time, the yield of the third-party strategies will fluctuate accordingly.

Credit Risk Applicable to Investment in Fixed-Income Securities, Including those of Lower Credit Quality.

Fixed-income securities, including corporate bonds, are subject to credit risk. When a security is purchased, its anticipated yield is dependent on the timely payment by the borrower of each interest and principal installment. Credit analysis and bond ratings take into account the relative likelihood that such timely payment will result. Bonds with a lower credit rating tend to have higher yields than bonds of similar maturity with a better credit rating. However, to the extent the third-party strategies invest in securities with medium or lower credit quality, they are subject to a higher level of credit risk than investments in investment-grade securities. In addition, the credit quality of non-investment grade securities is considered speculative by recognized ratings agencies with respect to the issuer's continuing ability to pay interest and principal. Lower-grade securities may have less liquidity and a higher incidence of default than higher-grade securities. Furthermore, as economic, political and business developments unfold, lower-quality bonds, which possess lower levels of protection with respect to timely payment, usually exhibit more price fluctuation than do higher-quality bonds of like maturity, and the value of the third-party strategies invested therein will reflect this volatility.

Risks Associated with Commodity Investments and Derivatives.

Certain third-party strategies may use exchange–traded or over-the-counter ("OTC") futures, forwards, warrants, options, swaps, and other derivative instruments to hedge or protect the portfolio from adverse movements in underlying prices and interest rates or as an investment strategy to help attain the third-party strategy's investment objective. Certain third-party strategies may also use a variety of currency hedging techniques, including foreign currency contracts, to attempt to hedge exchange rate risk or to gain exposure to a particular currency. The third-party strategies' use of derivatives could reduce returns, may not be liquid, and may not correlate precisely to the underlying securities or index. Derivative securities are subject to market risk, which could be significant for those derivatives that have a leveraging effect that could increase the volatility of such third-party strategies. Derivatives are also subject to the risk of material and prolonged deviations between the theoretical and realizable value of a derivative (e.g., due to non-conformance to anticipated or historical correlation patterns). Derivatives are also subject to credit risks related to the counterparty's ability to perform, and any deterioration in the counterparty's creditworthiness could adversely affect the instrument. A risk of using derivatives for hedging purposes is that a third-party strategy's manager might imperfectly judge the market's direction, which could render a hedging strategy ineffective or have an adverse effect on the value of the derivative. Furthermore, many derivatives, particularly those that are not traded in transparent markets, may be subject to significant price risk. Prices in these markets are privately negotiated and there is a risk that the negotiated price may deviate materially from fair value. This deviation may be particularly acute where there is no active market available from which to derive benchmark prices. The price of a given derivative may demonstrate material differences over time between its theoretical value and the value that may actually be realized by a third-party strategy (e.g., due to non-conformance to anticipated or historical correlation patterns). Many OTC derivatives are priced by the dealer; however, the price at which a dealer values a particular derivative may not comport with the price at which the third-party strategy seeks to buy or sell the position. In many instances, a third-party strategy will have little ability to contest the dealer's valuation. Derivatives, particularly to the extent they are transacted on an OTC or bilateral basis or are highly customized, may also be highly illiquid, making it difficult, or in some cases impossible, for a third-party strategy to exit a position at what the third-party strategy's manager considers a reasonable price.

To the extent that a third-party strategy enters into a derivative on an OTC or "bilateral" basis, which means that the third-party strategy's ultimate counterparty in a transaction is not a regulated clearing house (a well-capitalized and regulated party that becomes the counterparty to each trade on both sides of a specific market upon acceptance for clearing), then the third-party strategy will be subject to the risk that the counterparty to the third-party strategy will not be able to perform its obligations under the transaction. Any deterioration in the counterparty's creditworthiness could result in a devaluation of the transaction and result in losses to the third-party strategy. There are a small number of major financial institutions globally that act as counterparties in the majority of OTC derivatives transactions and represent the vast majority of liquidity available in these markets. These institutions have historically been highly leveraged and largely unregulated and have had substantial financial exposure to each other, increasing the risk that a failure of one financial institution could lead to a "domino" effect of further failures of major financial institutions. Many of these financial institutions received substantial government-directed financial support or were "bailed out" during the financial crisis of 2008-2010. The failure of Lehman Brothers in September 2008 had a significantly adverse impact on those traders that transacted with Lehman Brothers in the OTC markets. There can be no guarantee that similar failures will not occur in the future.

There has been substantial disruption in the OTC derivatives markets related to the market turmoil and failure of certain financial institutions in 2008 and 2009. The vast government intervention during this period also led to considerable uncertainty among market participants. Although the OTC derivatives markets have since stabilized somewhat, there can be no assurance that the turmoil in the markets will not recur. This disruption and uncertainty could cause substantial losses to a third-party strategy if its OTC derivatives are prematurely terminated, especially due to the default of a third-party strategy counterparty, where payment may be delayed or completely lost.

Risks of Trading Futures on Foreign Exchanges.
Certain third-party strategies may trade futures on non-U.S. exchanges. These exchanges are not regulated by any U.S. governmental agency. Such third-party strategies could incur substantial losses trading on foreign exchanges to which they would not have been subject when trading on U.S. markets. In addition, the profits and losses derived from trading foreign futures and options will generally be denominated in foreign currencies; consequently, such third-party strategies will be subject to a certain degree of exchange rate risk in trading such contracts. Exchange rate risk is the risk that a security's value will be affected by changes in exchange rates relative to the U.S. dollar.

Substantial New Regulation of OTC Derivatives Markets
The Dodd-Frank Act includes provisions that seek to comprehensively regulate the U.S. OTC derivatives markets for the first time. As a result of the Dodd-Frank Act, the SEC and the CFTC may also require a substantial portion of derivative transactions that are currently executed on a bilateral basis in the OTC markets to be executed through regulated securities, futures, or swap exchanges or execution facilities and submitted for clearing to regulated clearing houses. OTC trades submitted for clearing will be subject to minimum initial and variation margin requirements set by the relevant clearing house, as well as possible margin requirements, mandated by U.S. securities and futures regulators. The regulators also have broad discretion to impose margin requirements on non-cleared OTC derivatives. Although the Dodd-Frank Act includes limited exemptions from the clearing and margin requirements for so-called "end users," the third-party strategies will not be able to rely on such exemptions. OTC derivatives dealers also will be required to post margin to the clearing houses through which they clear their customers' trades instead of using such margin in their operations, as they currently are allowed to do. This will further increase the dealers' costs, and these increases are expected to be passed through to other market participants in the form of higher fees and less favorable pricing. New requirements resulting from the Dodd-Frank Act may make it more difficult and costly for the third-party strategies to enter into customized transactions. They may also render certain strategies in which the third-party strategies might otherwise engage impossible or so costly that they will no longer be economical to implement.

OTC derivatives dealers and major OTC derivatives market participants will also be required to register with the SEC and/or the CFTC. The third-party strategies or third-party Managers may be required to register as major participants in the OTC derivatives markets. Dealers and major participants will be subject to minimum capital and margin requirements. These requirements may apply irrespective of whether the OTC derivatives in question are exchange-traded or cleared. OTC derivatives dealers will also be subject to new business conduct standards, disclosure requirements, reporting and recordkeeping requirements, transparency requirements, position limits, limitations on conflicts of interest, and other regulatory obligations. These requirements may increase the overall costs for OTC derivatives dealers, which are likely to be passed along, at least in part, to market participants in the form of higher fees or less favorable pricing. The overall impact of the Dodd-Frank Act on the third-party strategies is as yet uncertain and it is unclear how the OTC derivatives markets will adapt to this new regulatory regime.

Risks Associated with U.S. Government Obligations.
Obligations of the U.S. government and the agencies and instrumentalities thereof are referred to herein as "U.S. Government Obligations." Not all U.S. Government Obligations are backed by the full faith and credit of the United States. For example, securities issued by the Federal Farm Credit Bank or by the Federal National Mortgage Association are supported by the agency's right to borrow money from the U.S. Department of the Treasury under certain circumstances, and securities issued by the Federal Home Loan Banks are supported only by the credit of the issuing agency. There is no guarantee that the U.S. government will support these

securities, and, therefore, they involve more risk than U.S. Government Obligations that are supported by the full faith and credit of the United States.

Further, one nationally recognized U.S. statistical rating organization, in August 2011, downgraded the credit rating of long-term U.S. government securities to AA+ from AAA, and other nationally recognized statistical rating organizations have placed U.S. government securities on negative "watch." These events and circumstances could result in further market disruptions that could adversely affect the market for U.S. Government Obligations, as well as other financial markets, on a global basis.

Redemption Risk.
A third-party strategy may need to sell its holdings in order to meet redemption requests of participating trusts holding investments in a fund. Such third-party strategy could experience a loss when selling securities to meet redemption requests if the redemption requests are unusually large or frequent, occur in times of overall market turmoil or declining prices for the securities sold, or when the securities the third-party strategy wishes to or is required to sell are illiquid. The third-party strategy may be unable to sell illiquid securities at its desired time or price. Illiquidity can be caused by a drop in overall market trading volume, an inability to find a ready buyer, or legal restrictions on the securities' resale. Certain securities that were liquid when purchased may later become illiquid, particularly in times of overall economic distress.

***Risk of Reliance on Industry Research*.**
Certain third-party strategies and their Managers are dependent to a significant extent on information and data obtained from a wide variety of sources to assess the quality of the securities in which they propose to invest, such as financial publications that monitor markets and investments, industry research materials, ratings issued by one or more nationally recognized credit rating agencies to assess the credit quality of securities in which they propose to invest, and other materials prepared by third parties. There may be limitations on the quality of such information, data, publications, research, and ratings, and generally neither AHIC nor the third-party strategies' managers independently verifies any of the same. For instance, certain asset-backed securities, such as sub-prime collateralized mortgage obligations and securities backed by bond insurance that initially received relatively high credit ratings were, in connection with the credit markets turbulence that began in 2007, subsequently significantly downgraded as the investment community came to realize that there may have been previously unanticipated risks associated with these securities. There is a risk of loss associated with securities even if initially determined to be of relatively low risk, such as in the case of collateralized debt obligations and other structured-finance investments that often are highly complex.

Legal and Regulatory Changes Could Adversely Affect the Third-party Strategy.
Regulation of investment vehicles such as the third-party strategies, and of many of the investments a third-party strategy manager is permitted to make on behalf of the third-party strategy(ies) advised by it, is still evolving and therefore subject to change. In addition, many governmental agencies, self-regulatory organizations, and exchanges are authorized to take extraordinary actions in the event of market emergencies. The effect of any future legal or regulatory change on a third-party strategy is impossible to predict, but could be substantial and adverse.

Risks of Securities Lending Undertaken by the Third-party Strategy.
The third-party strategies, to the extent they are engaged in securities lending, may be subject to the risks associated with the lending of securities, including the risks associated with defaults by the borrowers of securities subject to the securities lending program and the credit, liquidity, and other risks arising out of the investment of cash collateral received from the borrowers.

Restrictions on Redemptions and Payment of Redemption Proceeds.
Investors should note that there may be restrictions in connection with the subscription, holding, redemption of, and trading in the third-party strategies units. Such restrictions may have the effect of preventing the investor from freely subscribing, holding, trading, and/or redeeming a third-party strategy unit. For additional information, please refer to each fund's confidential offering memorandum.

Market Disruption Events and Settlement Disruption Events.
A determination of a market disruption event or a settlement disruption event may have an effect on the value of the third-party strategies and/or may delay settlement in respect of a third-party strategy unit. The third-party

strategies may incur losses from disrupted markets, and other extraordinary events may affect markets in a way that is not consistent with historical pricing relationships. The risk of loss from a disconnect from historical prices is compounded by the fact that in disrupted markets many positions become illiquid, making it difficult or impossible to close out positions against which the markets are moving.

In addition, market disruptions caused by unexpected political, military, and terrorist events may, from time to time, cause losses for an investment portfolio, and such events can result in otherwise historically low-risk strategies performing with unprecedented volatility and risk. A financial exchange may, from time to time, suspend or limit trading. Such a suspension could render it difficult or impossible for a third-party strategy to liquidate affected positions and thereby expose it to losses.

Other Risks and Conflicts

Because of the wide range of services offered by AHIC and its affiliates, it is possible that conflicts may arise. As discussed in *Item 6 – Performance Based Fees and Side-by-Side Management*, certain conflicts of interest also arise from the fact that AHIC and each sub-adviser may provide consultation or investment management services to other clients, pooled investment vehicles, or separately managed accounts, some of which may have similar or different investment objectives to those of the strategies available in the strategies and funds managed by AHIC. As AHIC manages our client relationships on a customized basis, there may be conflicting investment objectives and risk tolerances among AHIC clients invested in similar investment vehicles.

Investors should be aware their investment is not guaranteed and understand that there is a risk of loss of value in their investment.

Item 9: Disciplinary Information

We are required to disclose any legal or disciplinary events that are material to a client's or prospective client's evaluation of our advisory business or the integrity of our management.

AHIC and its management personnel have no reportable disciplinary events to disclose; however, Aon plc and its business units and affiliates do business throughout the country and, like all businesses in the United States, are subject to a certain number of lawsuits pending in the ordinary course of its business on a worldwide basis. Details of litigation filed against Aon are available in Aon plc’s annual Form 10 K filing (Note 16) and Aon plc’s quarterly Form 10 Q filing (Note 14). Excerpts of the 10 K and 10 Q filings containing, respectively, Note 16 and Note 14, are available on Aon’s website (www.aon.com). Although the ultimate outcome of all such matters cannot be ascertained, it is the position of Aon plc that the disposition or ultimate determination of such claims will not have a material effect on the financial position of Aon plc or any of its business units nor impacts its ability to perform services for the benefit of its clients.

Item 10: Other Financial Industry Activities and Affiliations

AHIC shares office space and other resources with its parent company, Aon plc, a publically traded UK based corporation. **Aon plc (“Aon”)** is a global provider of risk management, insurance and reinsurance brokerage, and human resources solutions and outsourcing services. These services are provided through direct and indirect subsidiaries. As discussed above in *Item 5 – Fees and Compensation*, we offer a number of OCIO solutions to our clients, in conjunction with some services which are offered through various Aon affiliated companies. AHIC’s arrangements with these affiliates may or may not be material to its advisory business at any one particular time. AHIC and its affiliates may refer clients and introduce investment opportunities to each other.

As a result of some of these solutions, certain employees of ours hold securities licenses with **Aon Securities, Inc. (“ASI”)**, a FINRA registered broker-dealer and an SEC registered investment adviser, and an indirect subsidiary of our ultimate parent, Aon plc. Interests in the AHGT, AHFoHF, and AHIF are also offered through ASI, which is not remunerated for this service. ASI often plays several roles when engaging with its clients, including structuring and distribution of securities. On the structuring side, ASI advises on the details of a proposed transaction, including the duration, pricing, and terms and conditions of securities. Once structured, ASI also sells or distributes the securities to a wide variety of investors (i.e., acts as a placement agent). As part of ASI's sale or distribution of securities, ASI may come into contact with AHIC clients as potential investors in securities being distributed by ASI. Only properly FINRA licensed registered representatives can directly engage in the sales or distributions of AH funds offered by ASI acting as placement agent. AHIC does not receive any commission for any sales of ASI distributed securities. AHIC's compensation is derived from asset-based advisory fees based on the AUM of the client's portfolio for its discretionary services regardless of the use of AH private funds or unaffiliated products/services. AHIC's advisory fees are the direct compensation paid by the client to AHIC as disclosed under the terms of a discretionary investment management agreement.

Aon Retirement Plan Advisors, LLC ("ARPA") is a registered investment adviser, and like us, is a wholly owned subsidiary of Aon Consulting, Inc. ARPA provides investment consulting services primarily to smaller retirement plans (typically under $75 million in plan assets) and to companies providing certain executive benefits to their employees.

Aon Trust Company ("ATC") is an Illinois non-depository, state-chartered bank. AHIC serves as investment adviser with limited discretionary authority to the Aon Hewitt Collective Investment Trust, of which ATC is Trustee. AHIC offers the AHCIT to certain delegated defined contribution clients. Additional information on AHCIT, its structure and the fees paid to AHIC are available within AHCIT's private offering statement.

Townsend Holdings LLC ("The Townsend Group" or "TTG") is an SEC Registered Investment Adviser and serves as a provider of global investment management and advisory services primarily focused on real estate and real assets.TTG also has a UK affiliate, Townsend Group Europe Limited, that is based in the UK and is authorized and regulated by the UK Financial Conduct Authority.

<u>Participating Affiliates</u>

Aon Hewitt Limited ("AHL") is a UK registered company that has been regulated by the UK's Financial Conduct Authority to provide regulated products and services since September 2011. AHL's main focus is on advising UK pension schemes, Trustees, and scheme sponsors on managing pension risks, setting investment strategies, improving member engagement, and providing member administration services. In addition, AHL provides HR and outsourcing services to clients.

Aon Hewitt, Inc., is a wholly owned subsidiary of Aon Canada and part of the Aon plc group of companies. Aon Hewitt Inc., offers a range of sophisticated advisory and consulting services in risk control and risk management, reinsurance, and human capital. The Canada Retirement & Investment Consulting organization consists of retirement consultants and actuaries who advise and support organizations in actively managing the risks of their retirement benefit programs.

<u>Other Activities</u>
In addition to the above affiliations, a number of investment management firms we review and may recommend to our clients are AHIC clients themselves and/or clients of Aon or firms with which Aon may have vendor or other business relationships. We maintain processes to avoid any perceived conflicts of interest associated with our recommendations of firms that may do business with Aon in any capacity. These processes include a core ethical culture emphasizing our fiduciary responsibilities, the diligence and awareness of our senior management team, a review of all client engagements by senior management, and compliance review of personal trading.

AHIC may, in its discretion, delegate all or a portion of its advisory or other functions (including asset allocation decisions on behalf of clients), consistent with client agreements and applicable laws, to any affiliate that is registered with the SEC as an investment adviser or to a Participating Affiliate. To the extent that AHIC delegates its advisory or other functions to any affiliate that are registered as investment advisers with the SEC, a copy of the brochure of each such affiliate is available on the SEC's website at www.adviserinfo.sec.gov and will be provided to clients or prospective clients upon request. Further, AHIC affiliates may serve from time to time as general partners to limited partnerships or co-invest in investments in which advisory clients may also invest.

AHIC and its investment advisory affiliates may refer clients and introduce investment opportunities to each other. AHIC also may contract services for its affiliated Aon companies that is not investment advice-related. Common services that are provided by affiliates may fulfill non-investment advisory services such as actuarial services, pension benefit administration, or insurance brokerage. AHIC may share its clients' confidential information with its affiliates to facilitate the delivery of such contracted services.

Entities affiliated with Aon, AHIC's ultimate parent company, may from time to time serve as general partners of limited partnership or co-invest in funds in which AHIC advisory clients may also invest. These partnerships typically invest in assets in the real estate and real asset markets.

AHIC has entered into intercompany agreements with its investment advisory affiliate, The Townsend Group, to perform administrative services necessary for the operation of its products in the real estate, infrastructure, and private credit.

Unaffiliated Third-Party Investment Management Firms

We also provide investment consulting services to investment management firms specific to the employee retirement plans of those firms. AHIC provides these services subject to a competitive bid and pricing process consistent with AHIC's sales practices. AHIC does not provide any investment consulting or management services to unaffiliated, third-party investment management firms in relation to the product or services those firms offer to their clients. Specific information regarding AHIC's advisory fees is provided in *Item 5 – Fees and Compensation*.

We conduct periodic reviews of our investment management research database to ensure that recommendations of any investment management firm that also happens to be a client of Aon are not disproportionate to other similar firms.

Commodity Pool Operator and Commodity Trading Advisor

AHIC is registered as a CPO and CTA with the CFTC and is a member of the NFA.

Pooled Investment Vehicles

AHIC serves as the investment adviser to the Aon Hewitt Group Trust and the Aon Hewitt Collective Investment Trust, which are available to eligible qualified retirement plans and government plans that meet certain requirements.

AHIC also serves as the investment adviser to Aon Hewitt Offshore Fund of Hedge Funds, Aon Hewitt Institutional Funds, and Aon Private Credit Opportunities Fund.

Expense Sharing Arrangements

We pay Aon for all expenses incurred by us that relate to the operation of our business, including: costs associated with total employee compensation; supervised persons licenses; rent and utilities; furniture and equipment; computers; and telephones. All such expenses, and allocation methodologies thereof, are governed by an expense sharing agreement between us and various affiliates within Aon Hewitt. Some of our non-consulting executive officers and directors are also employed in various corporate capacities by Aon or Aon Hewitt affiliates, in those entities' capacity as leading providers of a variety of human resource management consulting services, including actuarial and benefit plan consulting services, insurance, communications and management consulting, and benefit plan administration.

Client Investment Committees
AHIC may serve as a member of a client's Investment Committee with voting rights. However, AHIC abstains from voting on any issues involving retaining or terminating it as a client's investment manager or investment adviser.

Item 11: Code of Ethics, Participation or Interest in Client Transactions and Personal Trading

We have adopted a Code of Ethics expressing our commitment to ethical conduct. Our Code of Ethics describes the firm's fiduciary duties and responsibilities to clients and sets forth our procedures related to personal securities transactions of our supervised persons with access to client information. Our officers, directors, and employees may buy or sell securities for their personal accounts identical to or different than those held by our clients. It is our policy that no supervised person shall prefer his or her own interest to that of an advisory client or make personal investment decisions based on the investment decisions of advisory clients. Further, we also may recommend to clients the purchase of shares in mutual funds, exchange traded funds, and AHIC's pooled investment vehicles when consistent with the client's investment guidelines and objectives in which Aon or one or more of its employees or affiliates have a financial interest.

To supervise compliance with our Code of Ethics, we require that all Covered Persons, as that term is defined in AHIC's Code of Ethics, provide annual securities holdings reports and quarterly transaction reports to the firm's Chief Compliance Officer. All of our Covered Persons must acknowledge the Code of Ethics terms at least annually. We require these Covered Persons also to obtain approval from the Chief Compliance Officer prior to investing in any IPOs or private placements.

We require all individuals to act in accordance with all applicable federal and state regulations governing registered investment advisory practices. Our Code of Ethics further includes the firm's policy prohibiting the misuse of material non-public information. Any individual not in observance of the above may be subject to discipline.

We will provide a complete copy of our Code of Ethics to any client or prospective client upon request to Aon Hewitt Investment Consulting, Inc., Attn: AHIC Compliance, 200 E. Randolph Street, Suite 1500, Chicago, IL 60601.

Item 12: Brokerage Practices

As a result of AHIC's business model, we generally delegate all of the trading activity on behalf of our clients to our sub-advisers. We allow the sub-advisers to determine the broker-dealers through which they transact securities. Trade aggregation occurs when the broker is permitted to aggregate a customer's trades with those of other customers. These efficiencies may result in lower trade costs for the customers but may influence the timing of a transaction. The investment managers we select in connection with our discretionary investment consulting services are allowed to aggregate customer trades subject to our review of their trading and brokerage practices and subject to them following applicable rules and regulations regarding these practices. We periodically review their adherence to these practices.

From time to time, we will recommend broker-dealers to investment advisory clients, typically retirement plan clients whose portfolios are managed by a separate investment adviser that is not affiliated with AHIC. There are typically two different scenarios in which we are hired by a pension client to recommend a broker-dealer: (1) to assist pension clients with the transition between investment managers; or (2) to assist pension clients with the funding of new portfolio positions. We will solicit and review bids from independent third-party broker-dealers. The specific brokerage needs can vary between each pension client, but the primary factors considered in making final recommendations are typically: (1) the competitiveness of execution rates; (2) the quality of previous executions provided; and/or (3) how efficiently the broker-dealer transitions the portfolios with minimal market impact. Our fees for this service are fully disclosed. We do not receive direct or indirect compensation from any recommended broker-dealers.

Soft-dollar arrangements are those in which brokerage commissions are utilized to pay for services or other benefits that the adviser would have to pay for itself (for example, investment research). AHIC does not have any soft-dollar arrangements and does not receive any soft-dollar benefits.

Item 13: Review of Accounts

For our investment advisory clients, we will negotiate the nature and frequency of client reporting and account reviews with each client. Most commonly, reporting is provided quarterly, but the client may request reports more frequently (monthly) or less frequently, but no less frequently than annually. Additional reviews may be triggered by material market, economic, or political events, or by changes in the client’s circumstances. All accounts are reviewed by one of our consultants.

On at least an annual basis, senior management performs reviews of a sample of accounts to evaluate for appropriate investment allocations and other safeguards.

For our delegated clients, we review client accounts on a regular basis to confirm that allocations are within target ranges and are in adherence with the client’s investment guidelines. In addition to monitoring client accounts, we monitor our sub-advisers adherence to their stated investment guidelines and objectives. We also review any internal research notices issued on the sub-advisers contained in our client accounts to remain cognizant of the sub-advisers’ portfolio management and operational activities.

For our model portfolios delivered through IAS, we provide updates to the model portfolios as indicated in our investment agreement with the client.

Item 14: Client Referrals and Other Compensation

From time to time we may receive a client referral from certain of our affiliates, such as Aon Risk Services, Aon Consulting Inc., Aon Securities Inc., or The Townsend Group, all of which are subsidiaries of Aon. In these situations, we may compensate the referring consultant for the referral. Actual payment is dictated by the role of the referring consultant and internal Aon organizational compensation policies.

Similarly, AHIC employees may receive internal compensation for referring prospective or current clients to affiliated Aon businesses. In these situations, referral compensation is paid by AHIC’s affiliates out of their own assets, and is not paid directly by the client. Clients will be charged additional fees beyond AHIC’s fees for the services provided by AHIC’s affiliates. There may be an inherent conflict of interest with such arrangement as AHIC employees may receive referral compensation for making the referral for an affiliate’s services. While such arrangements raise a conflict of interest consideration for AHIC, compensation policies are structured with the goal to mitigate such conflicts and to comply with applicable law, including regulations and guidance applicable to client portfolios subject to the Employee Retirement Income Security Act of 1974 (“ERISA”).

AHIC Delegated Investment Solutions may be an appropriate consideration for AHIC's clients. AHIC may have an incentive to recommend that an investment advisory client select Delegated Investment Solutions as a discretionary asset manager or OCIO due to additional fees that we may receive based on the asset-based fee structure associated with the discretionary assets managed by AHIC. Further, AHIC may introduce The Townsend Group's services to its clients. To mitigate this potential conflict of interest, AHIC's investment consulting practice will not evaluate or recommend that its clients use AHIC's Delegated Investment Solution or The Townsend Group for a discretionary asset management service or investment advice. However, a client may independently choose to these solutions in their fiduciary capacity.

We have engaged a non-affiliated, third party to provide background research and initial introductions for some of our solutions. Any payments made are paid solely by AHIC and are not dependent on final client engagement. No client funds are used to pay for this referral assistance.

Certain AHIC Covered Persons are associated with ASI, an affiliated broker-dealer of AHIC, and in that capacity may engage in marketing or selling activities with respect to the placement of AHIC's private funds. AHIC directly compensates its Covered Persons for successful marketing or selling activities.

Item 15: Custody

Generally, each AHIC client appoints a third-party qualified custodian for the client's funds and securities. However, pursuant to SEC custody rules, we are deemed to have custody in limited circumstances involving certain pooled investment vehicle clients for whom AHIC serves in a capacity as general partner, managing member, or a role of similar capacity. In these circumstances, all assets of each such client are held by a qualified custodian, and account statements are delivered at least quarterly directly from the qualified custodian to the independent representative designated by the client to receive such statements on behalf of the client. Underlying investors of the pooled investment vehicle clients also will receive statements from AHIC on a monthly basis. AHIC arranges for its pooled investment vehicles to be audited on an annual basis and for the audited financial statements to be delivered to all investors.

In limited circumstances, AHIC is deemed to have custody of certain client accounts because AHIC directs the payment of fees and expenses from such accounts. For these accounts, AHIC arranges for an independent public accountant to conduct a surprise asset verification of the assets annually.

Clients should receive at least quarterly statements from the broker-dealer, bank, or a qualified custodian that holds and maintains the client's investment assets. We strongly urge our clients to compare the account statements or reports we provide with those official statements from the client's custodian records.

Item 16: Discretionary Investing

We manage accounts on a discretionary or non-discretionary basis.

When we manage accounts on a non-discretionary basis, we perform our duties in accordance with the investment contract. We generally provide non-discretionary advice through our model portfolios or with our investment consulting clients such as endowments, foundations and public funds.

Generally, when managing accounts on a discretionary basis, we provide a service to certain institutional clients' investment portfolios, where we are delegated the authority to hire investment managers, terminate investment managers, and rebalance portfolio assets, subject to the client's investment policy statement and other terms outlined in the investment consulting agreement. We select, approve, and monitor these investment managers' strategies pursuant to the client's investment guidelines which, in many cases, are developed with our assistance. We exercise our investment discretion consistent with a client's investment policy, as well as with any investment guidelines or restrictions.

As the delegated portfolio manager, we execute and deliver any and all agreements necessary for the investment, and we direct the client-appointed custodian to acquire, hold, sell, transfer, exchange, and dispose of the investments, as applicable. We provide our delegated service offering to both defined benefit and defined contribution plans, as well as select other clients.

For certain other delegated clients, we may enter into agreements with investment managers outside of AHIC's private funds. The primary reasons why a delegated client may not be recommended to invest through the funds are that they don't have sufficient assets to qualify as investors or that the investment alternatives available through the funds do not meet the investing needs of the client.

We also provide a service whereby we have been delegated the authority to oversee the investment management of a portfolio structured to perform similarly to a target date maturity fund. These funds are common in defined contribution (including 401(k)) retirement plans. These funds are designed to reduce risk over time as the investor gets closer to retirement age. These funds are typically named after the "target" retirement year of the plan participant or investor (i.e., the "2025 Fund"). Rather than rely upon one investment manager's investment funds, clients who hire us for this service look for us to assist them in using many of the other funds available for investment in the plan to build a "customized" target date portfolio. We will assist the plan's fiduciary committee with developing the "glide path" or the planned investment strategy of the portfolio and are given discretionary authority to adjust the asset allocation of the portfolio to meet the ranges dictated by the glide path.

We also assist some of our delegated clients by being given the delegated authority over private equity investments made by these plan clients. This delegated authority is limited to the percent allocation to the private equity class that is dictated in the client's investment policy statements, which allows us to determine which securities and the amounts of securities that are bought or sold in a client's account.

Clients delegate to us the investment authority when they sign a discretionary agreement with our firm, and may limit this authority by giving us written instructions. Clients may also change/amend such limitations by providing us with written instructions.

Item 17: Voting Client Securities

Where clients provide proxy voting authority to AHIC, and in the discretionary management of its client portfolios, AHIC allocates assets to various sub-advisers who are directly responsible for voting proxies on behalf of AHIC's clients consistent with the respective sub-adviser's proxy voting policies and procedures. Each sub-adviser is responsible for exercising voting authority over securities in client portfolios consistent with the client's best interests, which is viewed as making a judgment as to what voting decision (including a decision not to vote) is reasonably likely to maximize total return to the client. Each sub-adviser must maintain proxy voting policies and procedures consistent with SEC Rule 206(4)-6 of the Advisers Act and DOL Interpretive Bulletin 2016-1, where applicable.

Regarding AHIC's non-discretionary clients, AHIC does not advise on the manner in which to vote proxies in a client's plan/portfolio. However, from time to time, non-discretionary clients may request guidance on investment decisions related to mutual fund proxies. No opinion will be issued directly related to the manner in which the proxy should be voted by the client. All opinions produced for these purposes will be provided to the client for its evaluation of the proxy merits. The client would be responsible for voting of any proxies issued and the maintenance of any supporting documentation related to its proxy vote.

In the event that AHIC would vote proxies on behalf of the AH funds ("Funds"), we may retain a third-party service provider to manage the proxy process, to provide proxy recommendations or guidelines, to cast votes, to respond to client requests for the policy or voting information, and/or to keep and maintain records required under the policy. Sub-advisers will be added or removed from the third-party service as applicable.

General Voting Guidelines

- Sub-advisers with equity holdings are to vote proxies for accounts they manage on behalf of an AHIC client in a manner consistent with the sub-adviser's proxy voting policies and procedures and any written instructions from AHIC or our client.

- A sub-adviser must notify AHIC of votes contrary to its general guidelines, votes on non-routine matters, and instances where the sub-adviser refrains from voting during its quarterly reporting to AHIC.

- We expect sub-advisers to vote proxies according to each respective sub-adviser's stated proxy voting policy and in the best interest of shareholders, except when a client's proxy guidelines require specific voting instructions contrary to the sub-adviser's proxy policies.

- Sub-advisers may refrain from voting client proxies in certain circumstances consistent with AHIC's Proxy Voting Policy.

Conflicts of Interest

The sub-adviser must have procedures in place to address the mitigation of such Conflicts of Interests. In the case of conflicts of interests arising with a proxy held by a sub-adviser in the Funds, the sub-adviser should vote per their usual policy but notify AHIC so that we may review the identified conflict and provide further guidance, if applicable.

Aon Hewitt Funds Voting Guidelines

In those cases where AHIC votes proxies, AHIC will delegate to business management to review the particular matter being voted on. Votes will be cast in a manner which AHIC believes is in the best interest of fund investors. For matters related to:

- Board of Directors - AHIC will generally vote for directors up for election. However, votes on director nominees will be determined on a case-by-case basis, considering relevant factors.

- Compensation - AHIC will determine on a case-by-case basis the vote that will be taken.

Class Action Claims

From time to time, in its capacity as investment manager to an Aon Hewitt Fund, AHIC receives notice that such Fund may be eligible to participate in a securities class action claim to recover losses incurred as a result of fraud or other alleged bad act ("Class Action Claim"). AHIC will only pursue Class Action Claims related to Aon Hewitt Funds, excluding the AHCIT. AHIC's affiliate, ATC, is responsible for the participation of any Class Action Claims associated with investors in the AHCIT.

AHIC has contracted with a third-party class action service to participate in Class Action Claims for any eligible securities held in an Aon Hewitt managed Fund. The third-party service provider will file a Class Action Claim for any and all settlements in which a Fund held positions in or transacted in the securities that are subject to the settlement.

For a copy of AHIC's Proxy Voting Policy, please contact AHIC Compliance.

Item 18: Financial Information

Registered investment advisers are required to provide you with certain financial information or disclosures about AHIC's financial condition. AHIC has no financial commitment that impairs its ability to meet contractual and fiduciary commitments to clients. AHIC has not been the subject of a bankruptcy petition at any time during the past ten years.

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Form ADV, Part 2B
Brochure Supplement

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Chicago, IL 60601

Phone: 312.381.1200

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This brochure supplement provides information about the qualifications and business practices of Aon Hewitt Investment Consulting, Inc. ("AHIC") supervised persons that supplements AHIC's Brochure. You should have received a copy of that brochure. Please contact Lyda Iturralde, Chief Compliance Officer, at 312-381-1200 or by email at lyda.iturralde@aonhewitt.com, if you did not receive AHIC's brochure or if you have any questions about the contents of this supplement. The information in this brochure supplement has not been approved or verified by the United States Securities and Exchange Commission or by any state securities authority.

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EDUCATIONAL AND BUSINESS EXPERIENCE

Claire P. Shaughnessy (b. 1967), Partner, Aon Hewitt Investment Consulting, Inc.

Education

M.B.A., New York University

B.S. & B.A., Georgetown University

Business Background

Aon Hewitt Investment Consulting, Inc. (2010 – Present): Claire serves as a lead consultant and works with a focused group of institutional clients including public and corporate pension funds, defined contribution plans, and foundations to build successful investment programs.

Professional Designations

CFA Charterholder

DISCIPLINARY INFORMATION

Ms. Shaughnessy has not had any legal or disciplinary events in the past.

OUTSIDE BUSINESS ACTIVITIES

Ms. Shaughnessy is not actively engaged in any other investment-related business or occupation, nor is she actively engaged in any other business or occupation for compensation.

ADDITIONAL COMPENSATION

Not Applicable.

SUPERVISION

Ms. Shaughnessy is subject to Aon Hewitt Investment Consulting, Inc.'s written compliance and supervisory procedures and Code of Ethics, which includes ongoing compliance monitoring. Ms. Shaughnessy's activities are directly supervised by Steven Voss, Senior Partner. Mr. Voss can be reached at 312-381-1308.

CFA Charterholder: The Chartered Financial Analyst (CFA) designation is an international professional certification offered by the CFA Institute (formerly AIMR) to financial analysts who complete a series of three examinations. To become a CFA Charterholder, a candidate must pass each of three six-hour exams, possess a bachelor's degree (or equivalent, as assessed by CFA Institute) and have 48 months of qualified, professional work experience. CFA Charterholders are also obligated to adhere to a strict Code of Ethics and Standards governing their professional conduct.

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EDUCATIONAL AND BUSINESS EXPERIENCE

Kevin J. Vandolder (b. 1969), Partner, Aon Hewitt Investment Consulting, Inc.

Education

M.B.A., New York University

B.Comm., University of Windsor

Business Background

Aon Hewitt Investment Consulting, Inc. (1996 – Present): Kevin leads the Defined Contribution (DC) investment consulting practice. Kevin conducts research in order to develop solutions to increase retirement readiness for AHIC's DC clients.

Professional Designations

CFA Charterholder

DISCIPLINARY INFORMATION

Mr. Vandolder has not had any legal or disciplinary events in the past.

OUTSIDE BUSINESS ACTIVITIES

Mr. Vandolder is not actively engaged in any other investment-related business or occupation, nor is he actively engaged in any other business or occupation for compensation.

ADDITIONAL COMPENSATION

Not Applicable.

SUPERVISION

Mr. Vandolder is subject to Aon Hewitt Investment Consulting, Inc.'s written compliance and supervisory procedures and Code of Ethics, which includes ongoing compliance monitoring. Mr. Vandolder's activities are directly supervised by Beth Halberstadt, Partner. Ms. Halberstadt can be reached at 781-906-2386.

CFA Charterholder: The Chartered Financial Analyst (CFA) designation is an international professional certification offered by the CFA Institute (formerly AIMR) to financial analysts who complete a series of three examinations. To become a CFA Charterholder, a candidate must pass each of three six-hour exams, possess a bachelor's degree (or equivalent, as assessed by CFA Institute) and have 48 months of qualified, professional work experience. CFA Charterholders are also obligated to adhere to a strict Code of Ethics and Standards governing their professional conduct.

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EDUCATIONAL AND BUSINESS EXPERIENCE

Jeanna Cullins (b. 1954), Partner, Aon Hewitt Investment Consulting, Inc.

Education

J.D., Georgetown University Law Center

B.A., (cum laude) Brooklyn College, City University of New York

Business Background

Aon Hewitt Investment Consulting, Inc. (2008 – Present): Jeanna is a Partner and serves as the primary consultant and manages consulting assignments for a select number of Aon Hewitt retainer and project clients. She leads AHIC's Fiduciary Services group, which focuses on fiduciary reviews, strategic planning, trustee education and plan governance matters.

Independent Fiduciary Services (1998 – 2008): Prior to joining AHIC, Jeanna served as Managing Director and Operational Review Practice Leader at IFS. During her 10-year tenure at IFS, she worked on more than 30 fiduciary reviews (a.k.a "operational reviews") advising the leadership of some of the largest pension funds in the country to develop effective, efficient, practical ways to enhance their operations.

District of Columbia Retirement Board (1993 – 1997): Executive Director (1985 – 1993): Board's General Counsel.

Jeanna serves on the Board of Directors of the Metropolitan Chicago YWCA; the Illinois Student Assistant Commission Investment Advisory Panel; and the emeritus board and is an active member of the National Association of Public Pension Attorneys. She was recognized as a Top Employee Benefits Consultant by Risk & Insurance magazine and by Chicago United as a Business Leader of Color. She has also served as a trustee on the District of Columbia Tobacco Settlement Trust Fund and the National Association Securities Professionals Board.

DISCIPLINARY INFORMATION

Ms. Cullins has not had any legal or disciplinary events in the past.

OUTSIDE BUSINESS ACTIVITIES

Ms. Cullins actively serves on HE&R Co.'s Board of Directors. She is also a member of the Illinois Student Assistance Commission Investment Advisory Panel.

ADDITIONAL COMPENSATION

Ms. Cullins receives additional compensation in her role as a director for HE&R Co.

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SUPERVISION

Ms. Cullins is subject to Aon Hewitt Investment Consulting, Inc.'s written compliance and supervisory procedures and Code of Ethics, which includes ongoing compliance monitoring. Ms. Cullins' activities are directly supervised by Russ Ivinjack, Senior Partner. Mr. Ivinjack can be reached at 312-715-1700.

Form ADV, Part 2B
Brochure Supplement

Aon Hewitt Investment Consulting, Inc.

200 East Randolph Street, Suite 1500

Chicago, IL 60601

Phone: 312.381.1200

www.aonhewitt.com/investmentconsulting

Stephen T. Cummings, Head of North America Investment Consulting

200 East Randolph Street

Suite 1500

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847-442-0064

This brochure supplement provides information about the qualifications and business practices of Aon Hewitt Investment Consulting, Inc. ("AHIC") supervised persons that supplements AHIC's Brochure. You should have received a copy of that brochure. Please contact Lyda Iturralde, Chief Compliance Officer, at 312-381-1200 or by email at lyda.iturralde@aonhewitt.com, if you did not receive AHIC's brochure or if you have any questions about the contents of this supplement. The information in this brochure supplement has not been approved or verified by the United States Securities and Exchange Commission or by any state securities authority.

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EDUCATIONAL AND BUSINESS EXPERIENCE

Stephen T. Cummings (b. 1963), Head of North America Investment Consulting, Aon Hewitt Investment Consulting, Inc.

Education

M.B.A., University of Chicago – Booth School of Business

B.S., University of Texas at Austin

Business Background

Aon Hewitt Investment Consulting, Inc. (1989 – Present): As the Chief Executive Officer of AHIC, Stephen leads over 200 investment consulting professionals with over 550 clients and continues to serve as the primary consultant for several retainer and project clients. During his time with AHIC and the predecessor, EnnisKnupp, he completed such client projects as the coordination and implementation of multiple defined benefit and defined contribution plans into a consolidated structure for a multi-billion-dollar corporate client. He also frequently speaks before industry groups on a broad range of topics including, public fund oversight, portfolio construction, and the evolution of the consulting industry.

Professional Designations

CFA Charterholder

DISCIPLINARY INFORMATION

Mr. Cummings has not had any legal or disciplinary events in the past.

OUTSIDE BUSINESS ACTIVITIES

Mr. Cummings is not actively engaged in any other investment-related business or occupation, nor is he actively engaged in any other business or occupation for compensation.

ADDITIONAL COMPENSATION

Not Applicable.

SUPERVISION

Mr. Cummings is subject to Aon Hewitt Investment Consulting, Inc.'s written compliance and supervisory procedures and Code of Ethics, which includes ongoing compliance monitoring. Mr. Cummings' activities are directly supervised by Cary Grace, CEO, Global Retirement and Investment. Ms. Grace can be reached at 847-777-1464.

CFA Charterholder: The Chartered Financial Analyst (CFA) designation is an international professional certification offered by the CFA Institute (formerly AIMR) to financial analysts who complete a series of three examinations. To become a CFA Charterholder, a candidate must pass each of three six-hour exams, possess a bachelor's degree (or equivalent, as assessed by CFA Institute) and have 48 months of qualified, professional work experience. CFA Charterholders are also obligated to adhere to a strict Code of Ethics and Standards governing their professional conduct.

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203-523-8039

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EDUCATIONAL AND BUSINESS EXPERIENCE

Amanda Janusz (b. 1985), Senior Consultant, Aon Hewitt Investment Consulting, Inc.

Education

M.B.A., University of Connecticut

B.A., Williams College

Business Background

Aon Hewitt Investment Consulting, Inc. (2007 – Present): Amanda serves as a Senior Consultant, working with client that include corporate defined contribution and defined benefit clients, public defined benefit clients, endowment clients, 403(b) clients, and non-profit/hospital operating assets.

DISCIPLINARY INFORMATION

Ms. Janusz has not had any legal or disciplinary events in the past.

OUTSIDE BUSINESS ACTIVITIES

Ms. Janusz is not actively engaged in any other investment-related business or occupation, nor is she actively engaged in any other business or occupation for compensation.

ADDITIONAL COMPENSATION

Not Applicable.

SUPERVISION

Ms. Janusz is subject to Aon Hewitt Investment Consulting, Inc.'s written compliance and supervisory procedures and Code of Ethics, which includes ongoing compliance monitoring. Ms. Janusz's activities are directly supervised by Diane Smola, Associate Partner. Ms. Smola can be reached at 203-523-8292.

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Form ADV, Part 2B
Brochure Supplement

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Darren Moran, Consultant

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203-523-8905

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EDUCATIONAL AND BUSINESS EXPERIENCE

Darren Moran (b. 1988), Associate Partner, Aon Hewitt Investment Consulting, Inc.

Education

M.B.A., Fairfield University

B.S., Bryant University

Business Background

Aon Hewitt Investment Consulting, Inc. (2011 – Present): Michael serves as a primary consultant and manages consulting assignments for several retainer and project clients.

DISCIPLINARY INFORMATION

Mr. Moran has not had any legal or disciplinary events in the past.

OUTSIDE BUSINESS ACTIVITIES

Mr. Moran is not actively engaged in any other investment-related business or occupation, nor is he actively engaged in any other business or occupation for compensation.

ADDITIONAL COMPENSATION

Not Applicable.

SUPERVISION

Mr. Moran is subject to Aon Hewitt Investment Consulting, Inc.'s written compliance and supervisory procedures and Code of Ethics, which includes ongoing compliance monitoring. Mr. Moran's activities are directly supervised by Diane Smola, Associate Partner. Ms. Smola can be reached at 203-523-8292.

B. DR/BC Ongoing Operations Overview

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Ensuring Ongoing Operations

Overview

Aon's Business & Technology Resilience (BTR) program provides a global, systematic, practiced response to unplanned incidents or catastrophic events, allowing Aon to continue or quickly recover business operations. The program represents the combined disciplines of Business Continuity, Technology Resilience and Situation Response under unified leadership.

Program Leadership and Structure

The practice leader of Business & Technology Resilience (BTR) is responsible for overseeing and coordinating all three sub-programs in close partnership with the practice leader of Corporate Protection Services (CPS) and the practice leader of the Global Emergency Operations Center (GEOC) to deliver incident response and business continuity globally. All programs receive executive sponsorship from Aon's Executive Leadership team, and are aligned within the converged Global Security Services (GSS) organization under Aon's global Chief Security Officer.

The BTR program is staffed with skilled, certified, dedicated professionals who guide operational and strategic program delivery activities and develop a continuity culture at Aon. In addition, Aon has an extended network of trained, accountable business colleagues at the local level to ensure comprehensive plans are developed, maintained and tested. Our delivery model follows generally accepted industry best practices.

Global Business & Technology Resilience Program

The BTR program provides guidance, oversight and a perpetual focus on Aon's contingency planning efforts to maximize preparedness, minimize impact and continue operations in the event of a major business disruption. Plans are developed, rehearsed and used during incidents, and updated regularly to maintain capability and validity. Aon's program follows a standard methodology governed through formal global program policies, standards and frameworks. This program ensures the development, maintenance and exercise of strategies and plans for our global operations.

Starting with Risk

All Aon locations are given a risk ranking using standard criteria to determine the required level of contingency planning. Business units determine business processes and dependencies that have the greatest potential impact in the event of a major disruption. This information forms the foundation for strategy and planning.

Strategy & Planning

Business Continuity

The Aon Business Continuity sub-program establishes Aon's strategies for adequately preparing Aon to anticipate and respond to significant business disruptions with protocols that protect business operations and the interests of our clients.

Aon has developed a framework for global business continuity plans supported through established governance and a business continuity policy, standard and framework. These tools support efficient business operations, preservation of corporate memory and compliance with relevant legal and regulatory requirements.

Aon develops and maintains carefully thought-out and exercised Business Continuity Plans (BCPs). All BCPs are directly managed by BC Plan Owners and Coordinators. These BCPs help manage the recovery of business processes and operations following a major incident at any office. The local office BCPs are based on an all-hazards approach and address worst case scenarios and act as catalysts to sustain critical operations. The approach includes:

- Identifying critical business processes and the impact of disruption
- Formulating and implementing strategies to minimize the impact and recover critical processes
- Administering a testing and maintenance program to ensure viability of the plans
- Ensuring compliance with appropriate governance and regulatory obligations, and relevant external practices.

Business Continuity plans detail the steps required to recover business operations. The plans adhere to standard program requirements and include:

- **Business:** processes, recovery time objectives and prioritization
- **Colleagues**: capabilities, roles and responsibilities, and teams
- **Operations:** recovery strategies, recovery tasks, and procedures
- **Resources:** applications, equipment, supplies, telecomm, vital records and documents
- **Communications:** internal and external contact lists

Work area recovery strategies are identified and documented during the plan development cycle and are specific to individual plans. Aon relies primarily on five types of recovery strategies during significant business interruptions:

- Move key colleagues to an unaffected Aon location(s)
- Relocate key colleagues to a contracted work area recovery center or approved alternate location(s)
- Transfer work activities to an unaffected Aon location(s)
- Have key colleagues work virtually from home or other non-office locations; and
- Stop non-essential business operations

Colleagues in alternate offices with similar skill-sets, training or certifications can carry out tasks on behalf of impacted colleagues when conditions prevent staff relocation. Additionally, Aon has processes in place to perform "just in time" training for key colleagues in non-affected locations who will be responsible for supporting client facing services.

Many Aon offices in major metro areas have options for relocating within or outside of the metro area in response to the specific disaster situation. Additionally, Aon operates in over 120 countries and approximately 600 offices worldwide. Corporate Real Estate can leverage relationships with existing property owners to quickly expand office space. The Situation Response team, in coordination with the Corporate Crisis Management team coordinates the logistics with the Business Continuity Plan Owners to relocate colleagues and/or work activities.

Aon colleagues who relocate to other Aon office sites or third-party locations for temporary operations can access critical systems from anywhere on the Aon network via the secure Virtual Private Network (VPN). Aon has a geographically diverse, high availability VPN with multiple access points and flexible bandwidth that can be increased. Colleagues who normally use a fixed desktop can quickly be issued a laptop when warranted by the situation.

Technology Resilience

The Aon Technology (TR) sub-program establishes Aon's requirements for adequately preparing Aon to anticipate and respond to significant technology disruptions with protocols that protect business operations and the interests of our clients. With the increasing importance of information technology for the continuation of business critical functions, protecting and recovering an organization's data and IT infrastructure in the event of a disruptive situation has become a more visible business priority. The TR program is the framework of established governance for processes, policies and procedures related to preparing for recovery or continuation of critical technology infrastructure after a natural or human-induced disaster.

A "disaster" is any event or incident that prevents essential application or data center operations beyond downtime tolerances at a specific location. A disaster forces the move of an individual application or entire data center operations to a different geographic location in order to recover critical operations in a more acceptable timeframe.

Incidents that can be resolved within the tolerated downtimes without moving operations to a different geographic location are not considered disasters. These incidents are not covered in Aon's TR plans, and are not in scope in the global TR program.

Aon's Technology Resilience Plans (TRPs) document and manage the process of recovering applications and/or datacenter operations to a different geographic location. Technology Resilience planning includes planning for resumption of applications, data, hardware, communications (such as networking) and other IT infrastructure. TRPs must be adaptable and routinely updated as part of a change management process.

Aon develops and maintains TRPs for critical applications and key data centers. Typically, critical systems and data are identified using the Technology Resilience Criticality framework and/or the Business Impact Analysis (BIA) process, which identify business requirements following a disaster or significant incident affecting normal business operations. The TRPs act as catalysts to recover critical operations by:

- Reducing the risk of disruption of business operations or loss of information
- Identifying and prioritizing the recovery of technology infrastructure, systems, services, and data to reduce disruption of these services
- Formulating and implementing strategies to minimize impact and recover technology infrastructure, systems, services, and data
- Administering a testing and maintenance program to ensure viability of the strategies and services
- Ensuring Technology Resilience is considered part of technology services
- Ensuring compliance with appropriate governance and regulatory obligations, and relevant external standards and good business practices.

These plans detail the steps required during an incident to enable recovery of critical infrastructure, systems, services and data. TR plans adhere to standard program requirements and include:

- **Technology:** applications, systems, data and infrastructure (production and recovery)
- **Objectives:** recovery time objectives (RTO), recovery point objectives (RPO), dependencies and recovery prioritization
- **Colleagues:** roles and responsibilities, and teams
- **Operations:** recovery strategies and recovery procedures
- **Resources:** equipment, software, supplies, vital records and documents
- **Communications:** internal and external contact lists

Aon's large data centers are well-equipped and include appropriate precautions, including regularly scheduled maintenance and testing commensurate with the services operating within these locations. In general, this includes:

- Security measures with controlled access, monitoring and alarms
- Fire suppression systems with detection and alarms
- Air conditioning/mechanicals with leak detection, monitoring and alarms
- Generator(s) and uninterruptible power supply (UPS) system(s)
- Appropriate redundancy measures for standard data center equipment and controls

Services (i.e., network, telecomm, storage, etc.) are diverse and vendor arrangements are in place to ensure expedited restoration or equipment replacement. Additionally, Aon's enforcement of policies, standards, change management (technology service administration) facilitates rapid, secure installation and/or recovery of technology services.

As part of Aon's back-up strategy, established storage tiers dictate the type and frequency of strategy (i.e., tape, replication, etc.) for applications, systems and data. Detailed media inventory tracking and emergency retrieval procedures are maintained. Data stored on systems used by Aon colleagues is regularly backed-up and securely stored at locations outside of the primary data center either at another Aon data center or approved storage solution.

Globally, applications and systems hosted in Aon's data centers are recovered using various strategies based on the pre-determined recovery time objectives (RTO) and recovery point objectives (RPO). Strategies run from fully redundant, mirrored, high availability solutions to recovery at third-party sites with traditional tape back-ups.

Generally, systems and data hosted in local offices that are not co-located with an Aon data center may be recovered in a larger Aon office or in a data center supporting Aon. Additionally, spare equipment, development or test platforms can be temporarily reallocated to address recovery for the impacted site on a priority basis.

Aon information technology has established and documented escalation processes to manage technology outages and/or crisis situations. These procedures are regularly tested, updated and integrated with the Global Emergency Operations Center (GEOC) and Business & Technology Resilience programs.

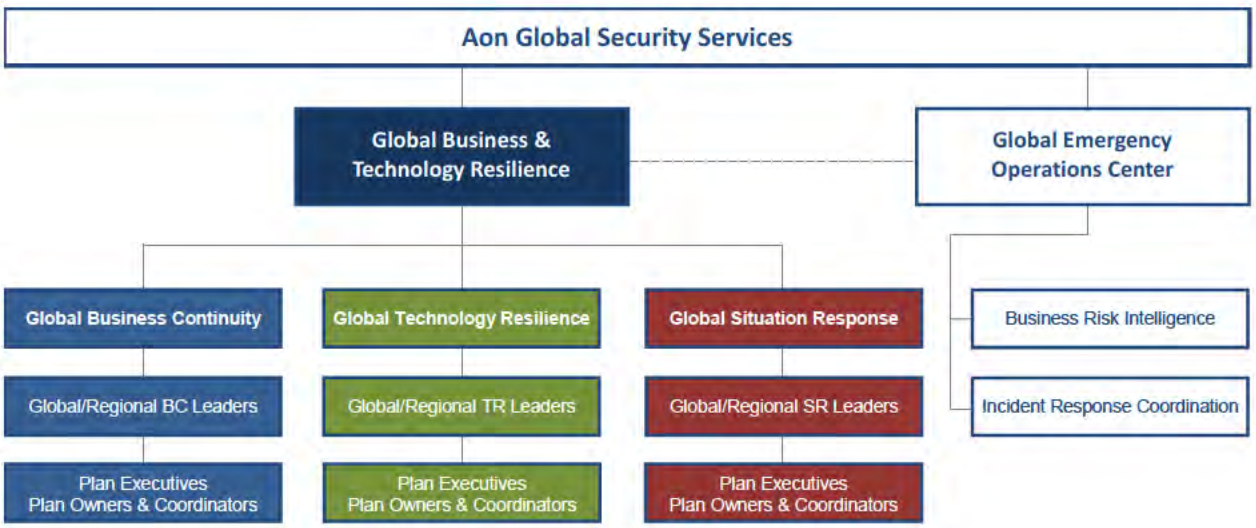
Aon's technology service vendors support and participate in relevant aspects of the Technology Resilience program, including testing.

Situation Response

The Aon Situation and Crisis Management Program establishes Aon's strategies and procedures for adequately preparing Aon to anticipate and respond to disasters and/or significant business disruptions with protocols that protect colleagues, and provide for coordination, communication and decision-making.

Aon has developed a framework for global situation response plans supported through established governance and a situation response policy, standard and framework. These tools support efficient business operations, preservation of corporate memory and compliance with relevant legal and regulatory requirements.

The Business & Technology Resilience team works in close partnership with the Corporate Protection Services team to provide end-to-end preparation and response support. As such, Aon has established a standard situation response organization, with incident management activities coordinated locally and globally by Aon's Global Emergency Operations Center.



Aon develops and maintains well-rehearsed Situation Response Plans (SRPs) at each office location. All SRPs are directly managed by the appropriate identified SR Plan Owner and Coordinator (generally senior leaders at a given location). The SRPs act as catalysts to sustain critical operations by:

- Identifying critical leaders responsible for decision making and leading situation response activities
- Documenting incident notification and escalation procedures
- Formulating and implementing effective response and communication strategies to minimize impact and recover critical and vital processes; and
- Administering a testing and maintenance program to ensure viability of the plans

Case ID: 221102792

These plans detail the steps required during an incident to enable swift, organized, and coordinated responses to business interruptions that may affect critical processes. Situation Response plans adhere to standard program requirements and include:

- **Business:** activation and prioritization,
- **Colleagues:** team members, designated alternates, roles and responsibilities
- **Operations:** incident response & Engagement, Immediate Situation Response Team Tasks
- **Resources:** documents (supplemental reference information)
- **Communications:** internal and external contact lists, protocols and procedures, media guidelines

The Situation Response teams, using the documented plans, are responsible for managing and coordinating the overall response to a situation at a location, until it is under control or contained without impact to the business, or until business continuity and/or other supporting plans are executed and normal operations have been restored.

Emergency Response

Under the direction of the Corporate Protection Services (CPS) team, Aon offices maintain facility-level Emergency Response Plans (ERPs) to coordinate life safety actions in the event of a building emergency. The ERPs outline steps for fire/evacuation, medical emergencies and other immediate response incidents. Trained colleague volunteers serve as emergency response team members to provide additional direction and ensure all occupants within Aon space evacuates safely including specific procedures for persons needing evacuation assistance. The CPS team administers the Security Risk Assessment to determine the level of physical security and emergency response preparedness at each site.

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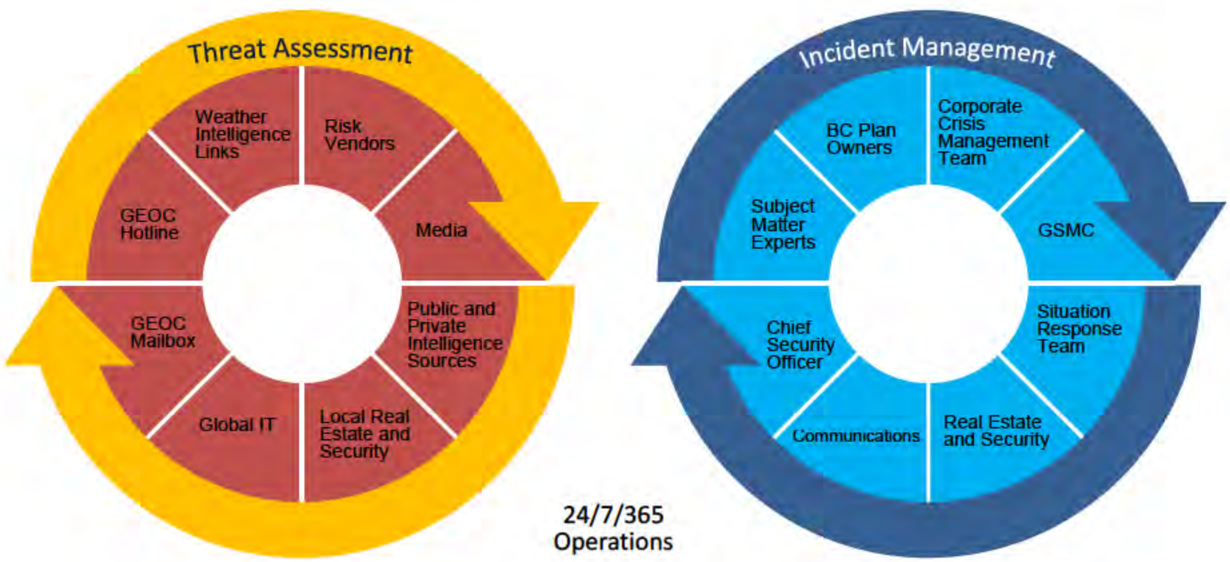
Global Emergency Operations Center (GEOC)

As a centralized function for business risk intelligence, incident reporting and incident response coordination, the Global Emergency Operations Center (GEOC) provides a set of defined services to colleagues at all levels of the organization, following standard global protocol. Services fall into two distinct categories:

- Business risk intelligence
- Incident management and coordination



Activation & Communication

A continuity incident is generally declared when business operations will be severely impacted for a period of 24 hours or more. The decision that a situation is severe enough to warrant implementation of all or a portion of the contingency plan(s) will be made through a consensus of the appropriate Situation Response team(s), Business Continuity Plan Owner(s) and Technology Resilience leaders, depending on the exact nature of the incident.

Throughout the incident, conference calls are used to initiative and facilitate response and recovery efforts. Briefing calls and associated situation status communications are coordinated by the GEOC with support capabilities available 24x7x365.

Continuous Improvement

Testing and Exercises

Plans are regularly tested in accordance with the program standards. Exercises are developed and conducted based on criticality using one of Aon's acceptable methods. Action plans for identified deficiencies are developed. Documented results are either drafted by or submitted to the appropriate leader in the BTR program.

Training

Aon colleagues involved in BTR activities are trained regularly (annually at a minimum), so they understand their plan(s), roles and responsibilities involved in responding to a situation.

Maintenance and Change Control

Plans are reviewed regularly (annually at a minimum) to ensure adequacy and currency of the plans, teams and solutions. In the event of material operating or technology changes, plans are reviewed and updated accordingly.

Monitoring and Reporting

Regular reporting is produced to create awareness and drive development, testing and maintenance of plans.

Client Communications

In the event of a disruption to services the appropriate Aon personnel will contact affected clients to advise them of the situation. Regular communications will be established based on the type and duration of incident.

Additionally, clients can contact their Aon relationship managers to discuss or obtain program summary documentation.

Contact Information

Theresa Enright
Practice Leader
Global Protection Services
Global Business & Technology Resilience
+1-312-381-2463
theresa.enright@aon.com

Aon
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Why Aon

Our integrated approach to risk management and our state-of-the-art security toolkit are what sets us apart.

We've integrated the risk management functions into an industry best practice organization that addresses all aspects of security risk management, and we're at the forefront of technology and process innovations that are defining risk solutions for the future.

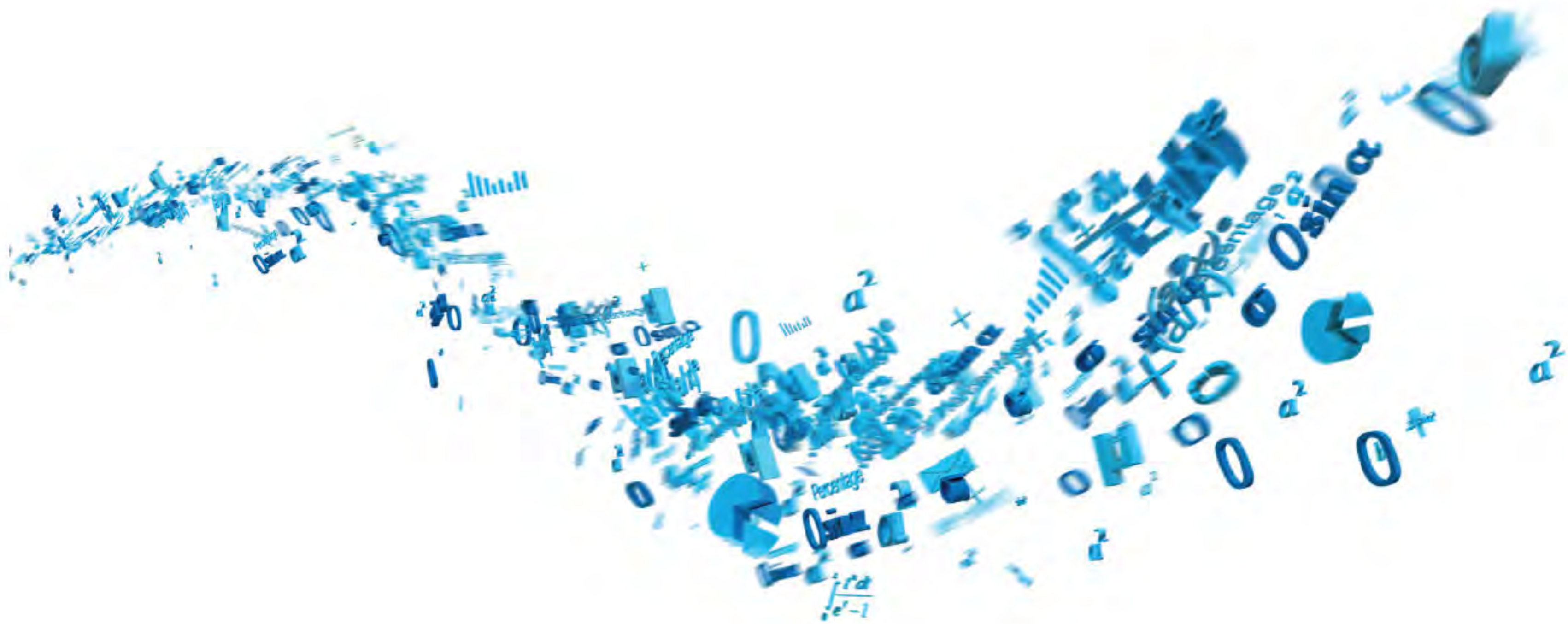
In addition, our technical environment is unparalleled. We're continually refining our delivery models for clients and are developing a range of security and risk management offerings from which clients can choose, since different clients may require different levels of security. All of the models, however, benefit from Aon's integrated approach and state-of-the-art technology.

At Aon, our clients expect us to be experts in providing the right combinations of people, processes, and technology to safeguard their data. We are leaders in the risk management field and take pride in the competitive advantage our protections provide our clients.

About Aon

Aon plc (NYSE:AON) is a leading global provider of risk management, insurance brokerage and reinsurance brokerage, and human resources solutions and outsourcing services. Through its more than 72,000 colleagues worldwide, Aon unites to empower results for clients in over 120 countries via innovative risk and people solutions. For further information on our capabilities and to learn how we empower results for clients, please visit: http://aon.mediaroom.com.

C. AHIC's Manager Buy-Rated Record



Selected Aon Buy-Rated Strategy Results

Prepared For: INSERT
Delivery Date: INSERT

Information presented is for illustrative purposes only and should not be considered investment advice. None of the information presented above has been calculated using the recipient's portfolio information.

Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc., an Aon Company.

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Gross of Fees Buy-Rated Strategy Results (as of 9/30/2018)
Model Performance - Equity

Strategy	1 Year Excess Return	3 Years Excess Return	5 Years Excess Return	10 Years Excess Return	Since Inception Excess Return	Months
Total U.S. Large Cap	-0.8%	0.3%	-0.2%	-0.1%	0.3%	1/1/2001
Russel 1000 Index						
Total U.S. Mid Cap	2.1%	1.2%	0.6%	N/A	0.1%	1/1/2010
Russell MidCap Index						
Total U.S. SMid Cap	-0.5%	-1.5%	-1.2%	-0.6%	-0.3%	1/1/2007
Russel 2500 Index						
Total U.S. Small Cap	1.7%	-0.3%	-0.1%	0.8%	0.7%	1/1/2002
Russell 2000 Index						
International Equity	0.8%	0.4%	1.4%	2.2%	1.2%	1/1/2001
MSCI ACW ex-U.S. Index (Net)						
Emerging Markets	-1.9%	-0.1%	0.4%	1.2%	1.6%	4/1/2007
MSCI EM Index (Net)						
Global Equity	1.5%	1.5%	1.8%	2.4%	3.0%	7/1/2002
MSCI ACWI Index (Net)						

Source: Aon Hewitt, fund managers, eVestment
Data: USD (net)
See following slides for benchmark descriptions

Hypothetical Composite Performance Disclosure: The returns presented for the buy-list results represent model performance for Aon's buy-rated investment strategies for the asset class(es) as shown. These investment strategies are managed by external investment advisers and not Aon. The investment strategies included in the model performance are subject to change without notice due to the changing nature of Aon's manager research. Model performance is purely hypothetical, cannot be invested in, and is shown only for illustrative purposes; returns do not reflect the performance of an actual account. Model performance has inherent limitations. The model performance does not reflect the impact of material economic and market factors that would be experienced if actual client assets were being managed. While model performance may have performed better than the associated benchmark for some or all of the time periods shown, the future performance may not be as favorable relative to the benchmark in the future. Please refer to the Appendix disclosures for additional details.

Gross of Fees Buy-Rated Strategy Results (as of 9/30/2018)
Model Performance – Fixed Income

Strategy	1 Year Excess Return	3 Years Excess Return	5 Years Excess Return	10 Years Excess Return	Since Inception Excess Return	Since Inception Months
Global Agg	-0.4%	0.4%	0.0%	0.6%	0.3%	1/1/2001
Blmbg. Barc. Global Aggregate Index						
US Fixed Income	0.6%	1.2%	0.8%	N/A	1.3%	1/1/2008
Blmbg. Barc. US Agg Index						
US Core	0.5%	0.7%	0.6%	1.0%	0.7%	1/1/2008
Blmbg. Barc. US Agg Index						
US Core+	0.9%	1.7%	1.0%	2.3%	1.6%	1/1/2008
Blmbg. Barc. US Agg Index						
US Long Credit	0.3%	0.4%	0.5%	N/A	0.7%	9/1/2010
Blended Benchmark						
US Long Gov/Credit	0.2%	0.6%	0.4%	N/A	0.7%	9/1/2010
Blmbg. Barc. Long Govt/Credit Index						
US Bank Loans	-0.1%	0.2%	0.3%	N/A	0.3%	1/1/2011
Blended Benchmark						
US High Yield	0.0%	-0.4%	0.0%	N/A	0.1%	1/1/2011
Blended Benchmark						

Source: Aon Hewitt, fund managers, eVestment
Data: USD (net)
See following slides for benchmark descriptions

Hypothetical Composite Performance Disclosure: The returns presented for the buy-list results represent model performance for Aon's buy-rated investment strategies for the asset class(es) as shown. These investment strategies are managed by external investment advisers and not Aon. The investment strategies included in the model performance are subject to change without notice due to the changing nature of Aon's manager research. Model performance is purely hypothetical, cannot be invested in, and is shown only for illustrative purposes; returns do not reflect the performance of an actual account. Model performance has inherent limitations. The model performance does not reflect the impact of material economic and market factors that would be experienced if actual client assets were being managed. While model performance may have performed better than the associated benchmark for some or all of the time periods shown, the future performance may not be as favorable relative to the benchmark in the future. Please refer to the Appendix disclosures for additional details.

Appendix: Gross of Fees Buy-Rated Returns Composite Disclosures

The model returns presented herein for the Buy-list results represent hypothetical, model performance for AHIC's buy-rated investment strategies across asset classes, which has been derived from the application of a model. These models do not represent the returns of an actual client account, they are intended to be illustrative and they cannot be invested in by any person. AHIC's buy-rated investment strategies are managed by third-party investment advisers ("managers") and not AHIC. Further, the investment strategies included in the model performance are subject to change without notice. Model performance has inherent limitations. Model performance is not necessarily indicative of future results, and there can be no assurance that AHIC will achieve comparable results or that such model returns will be realized. Please see below for additional details on the methodology used in the development of this model portfolio performance.

The model performance does not reflect the impact of material economic and market factors that would be experienced if actual client assets were being managed. Any change to the assumptions, however minor, will alter the outcome. While model performance may have performed better than the associated benchmark identified in the presentation for some or all of the time periods shown, the future performance may not be as favorable relative to the benchmark in the future. Further, the model portfolio does not reflect the impact of market volatility compared to the volatility of the index which is materially different from that of the model portfolio. The gross model performance results portrayed may or may not reflect the reinvestment of dividends and other earnings from the underlying third-party managers' strategies. The performance information of the underlying third-party managers' strategies used in the model portfolio is obtained either through a third party service provider, eVestment, which does not have a standard reporting requirement from managers on whether the performance reflect the reinvestment of dividends and other earnings, or directly from the investment manager.

The model performance is presented on a "gross" basis and does not take into account any AHIC advisory fees, taxes, brokerage commissions, custodial fees, or other expenses that may be borne by a client, which will reduce returns and in the aggregate are expected to be substantial. Any actual return experienced will be reduced by the advisory fees and other expenses you may incur as a client. Actual underlying third party manager's fees may vary and schedules of such fees are available upon request.

Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. AHIC's advisory fees are described in Part 2A of AHIC's Form ADV. As an example of the impact of advisory fees compounded over time, a portfolio worth an initial value of $10 million, invested over a five-year period and returns 8% per year and charged a 0.45% annual advisory fee would be worth $14,693,281 before advisory fees and $14,370,454 after the deduction of advisory fees.

Appendix: Gross of Fees Buy-Rated Returns Composite Disclosures

Investors should note that the terms and assumptions used in preparing the model returns may not be consistent with the terms, investment strategy or investment objectives of the investors; therefore, the model performance should not be construed as a performance expectation for any actual account. A client's account would not be structured to include all the buy-rated investment strategies included in the asset class or sub-asset class model performance. The model portfolio does not represent a strategy or advisory services currently or previously offered by AHIC. An actual account will vary significantly from the model performance as the account is customized based on a client's investment objective; therefore, the actual composition and performance of the account will differ from those of the model portfolio due to the client's risk budget, experienced market conditions, manager selection, and asset allocation decisions. There can be no assurance that an investment mix or any model performance shown will lead to the expected results shown or perform in any predictable manner. Aon Hewitt, AHIC, or AHIM do not guarantee any minimum level of investment performance or the success of any portfolio or investment strategy. All investment involves risk and investment recommendations will not always be profitable, and a loss of principal may occur.

Buy-Rated model performance is calculated as follows:

- Buy-rated strategy track records are aggregated by asset class and/or sub asset class (e.g., equity, fixed income, liquid alternatives, or real estate)
- The returns of the buy-rated investment strategies are equal-weighted to calculate the model performance for each monthly period
- The individual monthly returns are compounded to result in annualized returns reflecting changes in unit value, the strategies' trading costs, and reinvestment of all distributions. Results do not take into account sales, redemption, distribution or optional charges or income taxes payable by any investor, which will reduce returns
- Model performance results are shown as the excess return versus the respective benchmarks for the time period under consideration
- The inception date for each individual model performance is the earliest date of the buy-rated strategy(ies) included in that model performance (e.g., International Equity)
- The inception date for each "total" model performance is the earliest common date of the sub asset class model performance included in that model performance (e.g., Total Small Cap, which includes Small Cap Growth, Small Cap Core, and Small Cap Value) over the longest common time period
- When a strategy is no longer buy-rated, it is removed from its respective model performance on a go-forward basis but not retroactively; returns of strategies removed from the model performance remain in the model performance for the period in which they were buy-rated
- New buy-rated investment strategies are added to the model performance in the month following it being buy-rated; returns of investment strategies that are added to the buy-list are not backfilled
- There may be additional sub-adviser's fund management fees and expenses associated with investing in buy-rated strategies not taken into account in the model performance; investors should refer to the relevant disclosure information and/or offering documents for detailed information before investing

Gross of Fees Buy-Rated Returns Composite Disclosures (continued)

Benchmark performance is:

- The relevant index for that asset class or sub asset class and is a standard market index; or
- A custom benchmark, representing the benchmarks of the underlying investment strategies, equally weighted
- The individual monthly benchmark returns are compounded to result in the corresponding annualized benchmark returns
- Unmanaged index returns assume reinvestment of any and all distributions. Performance of the benchmark(s) is not an exact representation of any particular investment, as you cannot invest directly in an index or custom benchmark. All returns for investment adviser strategies and benchmarks are compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed.

Gross of Fees Composites Benchmark Index Definitions

- **Russell 1000 Index** - A capitalization-weighted index of the 1,000 largest publicly traded U.S. stocks by capitalization.
- **Russell MidCap Stock Index** - A capitalization-weighted index of the 800 smallest stocks in the Russell 1000 Index. This index is a broad measure of mid-capitalization stocks.
- **Russell 2000 Index** - A capitalization-weighted index of the smallest 2,000 stocks in the Russell 3000 Index. The index excludes the largest- and smallest-capitalization issues in the domestic stock market.
- **MSCI All Country World Index** - A capitalization-weighted index of stocks representing 46 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America.
- **MSCI All Country World ex-U.S. Index** - A capitalization-weighted index consisting of 23 developed and 21 emerging countries, but excluding the U.S.
- **MSCI Emerging Markets Index** - A capitalization-weighted index of stocks representing 22 emerging country markets.
- **Bloomberg Barclays Aggregate Bond Index** - A market value-weighted index consisting of government bonds, SEC-registered corporate bonds and mortgage-related and asset-backed securities with at least one year to maturity and an outstanding par value of $250 million or greater. This index is a broad measure of the performance of the investment grade U.S. fixed income market.
- **Bloomberg Barclays Capital Global Aggregate** - Provides a broad-based measure of the global investment-grade fixed income markets. The three major components of this index are the U.S. Aggregate, the Pan-European Aggregate, and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds, Canadian government, agency and corporate securities, and USD investment grade 144A securities.
- **Barclays Capital Long Gov't/Credit Index** - The Barclays Capital U.S. Government/ Credit Bond Index measures performance of U.S. dollar denominated U.S. treasuries, government-related, and investment grade U.S. corporate securities that have a remaining maturity of greater than or equal to 1 year. In addition, the securities have $250 million or more of outstanding face value, and must be fixed rate and non-convertible.
- **Blended Benchmark -** An equal weighted benchmark consisting of the high-yield benchmarks of the strategies included in the composite.

Net of Fees Buy-Rated Strategy Results (as of 9/30/2018)
Model Performance – Hedge Funds

Strategy	1 Year Excess Return	3 Years Excess Return	5 Years Excess Return	10 Years Excess Return	Since Inception Excess Return	Since Inception Months
Single Hedge Funds	0.6%	-1.4%	0.9%	1.1%	0.8%	10/31/2005
Single HF Composite Benchmark						
Fund of Hedge Funds	1.9%	1.1%	1.1%	2.1%	1.6%	1/31/2005
HFRI Fund of Funds Composite Index						
Equity Hedge Buy List	1.1%	-3.8%	0.4%	0.8%	1.3%	10/31/2005
Equity Hedge Composite Benchmark						
Event Driven (Total) Buy List	1.2%	-1.5%	1.1%	-0.1%	-1.4%	4/30/2007
Event Driven Composite Benchmark						
Global Macro Buy List	3.8%	0.9%	2.3%	3.2%	2.6%	4/30/2006
Macro Composite Benchmark						
Relative Value (Total) Buy List	0.4%	0.7%	0.5%	N/A	0.6%	7/31/2010
Relative Value Composite Benchmark						
Multi-Strategy (Total) Buy List	-3.3%	-1.8%	-0.8%	0.8%	-0.6%	1/31/2008
Multi-Strat Composite Benchmark						

Source: Aon Hewitt, fund managers, Hedge Fund Research, Inc. (www.hedgefundresearch.com)
Data: USD (net)
Note: Single hedge funds Includes Equity Hedge, Relative Value, Credit, Macro, Multi-Strat, and Activist buy rated strategies

Hypothetical Composite Performance Disclosure: The returns presented for the buy-list results represent model performance for Aon's buy-rated investment strategies for selected hedge fund strategy types. These investment strategies are managed by external investment advisers and not Aon. The investment strategies included in the model performance are subject to change without notice due to the changing nature of Aon's manager research. Model performance is purely hypothetical, cannot be invested in, and is shown only for illustrative purposes; returns do not reflect the performance of an actual account. Model performance has inherent limitations. The model performance does not reflect the impact of material economic and market factors that would be experienced if actual client assets were being managed. While model performance may have performed better than the associated benchmark for some or all of the time periods shown, the future performance may not be as favorable relative to the benchmark in the future. The returns used in the composite calculation are net of investment management fees as calculated by the underlying managers, either sourced from HFR Database, eVestment, or the manager directly. AHIC's model performance does not consider any Aon Hewitt Investment Consulting ("AHIC") advisory fees or other expenses incurred by a client. Actual returns will be reduced by the sub-advisors' investment management fees, your AHIC advisory fee and other expenses you may incur as a client. AHIC's advisory fees are described in Form ADV Part 2A. Please refer to the Appendix disclosures for additional details.

Appendix: Net of Fees Buy-Rated Returns Composite Disclosures Model Performance

The returns presented for the buy-list results represent model performance for Aon's buy-rated investment strategies across different hedge fund categories. These investment strategies are managed by external investment advisers and not Aon. The investment strategies included in the model performance are subject to change without notice due to the changing nature of Aon's manager research. Model performance is purely hypothetical, cannot be invested in, and is shown only for illustrative purposes; returns do not reflect the performance of an actual account. Model performance has inherent limitations. The model performance does not reflect the impact of material economic and market factors that would be experienced if actual client assets were being managed. While model performance may have performed better than the associated benchmark for some or all of the time periods shown, the future performance may not be as favorable relative to the benchmark in the future. Further, the model portfolio may not reflect the impact of market volatility compared to the volatility of the index which is materially different from that of the model portfolio. Model performance is not necessarily indicative of future results, and there can be no assurance that AHIC will achieve comparable results or that such model returns will be realized. Please see below for additional details on the methodology used in the development of this model portfolio performance.

Model performance returns presented are net of each respective sub-advisors' investment management fees, either actual fees or a model fee as determined and applied by each manager, and trading expenses and include the reinvestment of dividends and interest. The model performance does not consider any Aon Hewitt Investment Consulting ("AHIC") advisory fees or other expenses incurred by a client. Returns do not reflect the deduction of AHIC's investment advisory fees, as the proposal presumes an annual retainer fee, and not an asset based fee. Actual returns will be reduced by the sub-advisors' investment management fees, your AHIC advisory fee and other expenses you may incur as a client. AHIC's advisory fees are described in Form ADV Part 2A. More information regarding the buy-rated model performance is included below.

As an example of the impact of sub-advisors' investment management fees compounded over time, a portfolio worth an initial value of $10 million, invested over a five year period and returns 8% per year and charged a 0.70% annual investment management fee would be worth $14,693,281 before advisory fees and $14,186,165.43 after the deduction of investment management fees.

The model performance should not be construed as a performance expectation for any actual account. A client's account would not be structured to include all the buy-rated strategies included in the asset class or sub-asset class model performance presented. An actual account will vary significantly from the model performance as the account is customized based on a client's investment objective; therefore the actual composition and performance of the account will differ from those of the model portfolio due to the client's risk budget, experienced market conditions, manager selection, and asset allocation decisions. There can be no assurance that an investment mix or client account will lead to the model portfolio results shown or perform in any predictable manner. AHIC does not guarantee any minimum level of investment performance or the success of any portfolio or investment strategy. All investment involves risk and investment recommendations will not always be profitable, and a loss of principal may occur.

Appendix: Net of Fees Buy-Rated Returns Composite Disclosures

Buy rated strategy composites are calculated as follows:

- Buy-rated strategy track records are aggregated by asset class and/or sub asset class (e.g., equity, fixed income, hedged funds)
- The returns of the buy-rated investment strategies are equal-weighted to calculate the model performance for each monthly period.
- The individual monthly returns are compounded to result in annualized returns reflecting changes in unit value, the strategies' trading costs, and reinvestment of all distributions. Results do not take into account sales, redemption, distribution or optional charges or income taxes payable by any investor that would have reduced returns.
- Model performance results are shown as the excess return versus the respective benchmarks for the time period under consideration.
- When a strategy is no longer buy-rated, it is removed from its respective model performance on a go forward basis but not retroactively; returns of strategies no longer buy-rated are removed from the model performance going forward but remain in the model performance for the period in which they were buy-rated.
- Newly buy-rated strategies are added to the model performance in the month following it being buy-rated; or at quarter-end if only quarterly returns are available. Returns of strategies that are added to the buy-list are not backfilled.
- The investment adviser's fund management fees and expenses may be associated with investing in buy-rated strategies; investors should refer to the relevant disclosure information and/or offering documents for detailed information before investing.
- The returns used in the composite calculation are net of fees as calculated by each individual manager; net of fee results used in the buy list composite calculation are sourced from eVestment, Hedge Fund Research, NCREIF, or the manager directly. Aon does not apply a fee assumption for the manager. The model performance does not consider any Aon Hewitt Investment Consulting ("AHIC") advisory fees or other expenses incurred by a client.

Benchmark performance is:

- The relevant index for that asset class or sub asset class and is a standard market index; or
- A custom benchmark, representing the benchmarks of the underlying investment strategies, equally weighted
- The individual monthly benchmark returns are compounded to result in the corresponding annualized benchmark returns
- Unmanaged index returns assume reinvestment of any and all distributions. Performance of the benchmark(s) is not an exact representation of any particular investment, as you cannot invest directly in an index or custom benchmark. All returns for investment adviser strategies and benchmarks are compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed.

Net of Fee Composites Benchmark Index Definitions

- **Single HF Composite Benchmark - HFRI Fund Weighted Composite Index.** The HFRI Fund Weighted Composite Index is a global, equal-weighted index of over 2,000 single-manager funds that report to HFR Database. Constituent funds report monthly net of all fees performance in US Dollar and have a minimum of $50 Million under management or a twelve (12) month track record of active performance. The HFRI Fund Weighted Composite Index does not include Funds of Hedge Funds.
- **HFRI Fund of Funds Composite Index** – Fund of Funds invests with multiple managers through funds or managed accounts. The strategy designs a diversified portfolio of managers with the objective of significantly lowering the risk (volatility) of investing with an individual manager. The Fund of Funds manager has discretion in choosing which strategies to invest in for the portfolio. A manager may allocate funds to numerous managers within a single strategy, or with numerous managers in multiple strategies. The minimum investment in a Fund of Funds may be lower than an investment in an individual hedge fund or managed account. The investor has the advantage of diversification among managers and styles with significantly less capital than investing with separate managers. PLEASE NOTE: The HFRI Fund of Funds Index is not included in the HFRI Fund Weighted Composite Index.
- **Equity Hedge Composite Benchmark** – A weighted average of the underlying managers benchmarks which are either HFRI Equity Hedge (Total) Index, HFRI EH: Equity Market Neutral Index, or HFRI Emerging Markets (Total) Index.
- **Event Driven Composite Benchmark** - A weighted average of the underlying managers benchmarks which are either HFRI ED: Activist Index, HFRI ED: Distressed/Restructuring Index, or HFRI Event-Driven (Total) Index
- **Macro Composite Benchmark** - A weighted average of the underlying managers benchmarks which are either HFRI Macro: Discretionary Thematic Index or HFRI Macro: Systematic Diversified Index.
- **Relative Value Composite Benchmark** - A weighted average of the underlying managers benchmarks which are either 50% HFRI RV: Fixed Income-Corporate Index 50% HFRI ED: Credit Arbitrage Index, HFRI Relative Value (Total) Index, or HFRI RV: Fixed Income-Asset Backed
- **Multi-Strat Composite Benchmark** - A weighted average of the underlying managers benchmarks which are either SG (Newedge) Multi Alternative Risk Premia Index or Dow Jones Credit Suisse Multi-Strategy Index.
- **HFRI Equity Hedge (Total) Index** – Equity Hedge: Investment Managers who maintain positions both long and short in primarily equity and equity derivative securities. A wide variety of investment processes can be employed to arrive at an investment decision, including both quantitative and fundamental techniques; strategies can be broadly diversified or narrowly focused on specific sectors and can range broadly in terms of levels of net exposure, leverage employed, holding period, concentrations of market capitalizations and valuation ranges of typical portfolios. EH managers would typically maintain at least 50% exposure to, and may in some cases be entirely invested in, equities, both long and short.
- **HFRI Emerging Markets (Total) Index** – Emerging Markets funds invest, primarily long, in securities of companies or the sovereign debt of developing or 'emerging' countries. Emerging Markets regions include Africa, Asia ex-Japan, Latin America, the Middle East and Russia/Eastern Europe. Emerging Markets - Global funds will shift their weightings among these regions according to market conditions and manager perspectives.

Net of Fee Composites Benchmark Index Definitions

- **HFRI EH: Equity Market Neutral Index** – Equity Market Neutral strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. These can include both Factor-based and Statistical Arbitrage/Trading strategies. Factor-based investment strategies include strategies in which the investment thesis is predicated on the systematic analysis of common relationships between securities. In many but not all cases, portfolios are constructed to be neutral to one or multiple variables, such as broader equity markets in dollar or beta terms, and leverage is frequently employed to enhance the return profile of the positions identified. Statistical Arbitrage/Trading strategies consist of strategies in which the investment thesis is predicated on exploiting pricing anomalies which may occur as a function of expected mean reversion inherent in security prices; high frequency techniques may be employed and trading strategies may also be employed on the basis on technical analysis or opportunistically to exploit new information the investment manager believes has not been fully, completely or accurately discounted into current security prices. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.
- **HFRI ED: Activist Index** – Activist strategies may obtain or attempt to obtain representation of the company's board of directors in an effort to impact the firm's policies or strategic direction and in some cases may advocate activities such as division or asset sales, partial or complete corporate divestiture, dividend or share buybacks, and changes in management. Strategies employ an investment process primarily focused on opportunities in equity and equity related instruments of companies which are currently or prospectively engaged in a corporate transaction, security issuance/repurchase, asset sales, division spin-off or other catalyst oriented situation. These involve both announced transactions as well as situations which pre-, post-date or situations in which no formal announcement is expected to occur. Activist strategies are distinguished from other Event Driven strategies in that, over a given market cycle, Activist strategies would expect to have greater than 50% of the portfolio in activist positions, as described.
- **HFRI ED: Distressed/Restructuring Index** – Distressed/Restructuring strategies which employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings. Managers are typically actively involved with the management of these companies, frequently involved on creditors' committees in negotiating the exchange of securities for alternative obligations, either swaps of debt, equity or hybrid securities. Managers employ fundamental credit processes focused on valuation and asset coverage of securities of distressed firms; in most cases portfolio exposures are concentrated in instruments which are publicly traded, in some cases actively and in others under reduced liquidity but in general for which a reasonable public market exists. In contrast to Special Situations, Distressed Strategies employ primarily debt (greater than 60%) but also may maintain related equity exposure.
- **HFRI Event-Driven (Total) Index – Event-Driven:** Investment Managers who maintain positions in companies currently or prospectively involved in corporate transactions of a wide variety including but not limited to mergers, restructurings, financial distress, tender offers, shareholder buybacks, debt exchanges, security issuance or other capital structure adjustments. Security types can range from most senior in the capital structure to most junior or subordinated, and frequently involve additional derivative securities. Event Driven exposure includes a combination of sensitivities to equity markets, credit markets and idiosyncratic, company specific developments. Investment theses are typically predicated on fundamental characteristics (as opposed to quantitative), with the realization of the thesis predicated on a specific development exogenous to the existing capital structure.

Net of Fee Composites Benchmark Index Definitions

- **HFRI Macro: Discretionary Thematic Index** – Discretionary Thematic strategies are primarily reliant on the evaluation of market data, relationships and influences, as interpreted by an individual or group of individuals who make decisions on portfolio positions; strategies employ an investment process most heavily influenced by top down analysis of macroeconomic variables. Investment Managers may trade actively in developed and emerging markets, focusing on both absolute and relative levels on equity markets, interest rates/fixed income markets, currency and commodity markets; frequently employing spread trades to isolate a differential between instrument identified by the Investment Manager to be inconsistent with expected value. Portfolio positions typically are predicated on the evolution of investment themes the Manager expect to materialize over a relevant time frame, which in many cases contain contrarian or volatility focused components.
- **HFRI Macro: Systematic Diversified Index** – Systematic: Diversified strategies have investment processes typically as function of mathematical, algorithmic and technical models, with little or no influence of individuals over the portfolio positioning. Strategies which employ an investment process designed to identify opportunities in markets exhibiting trending or momentum characteristics across individual instruments or asset classes. Strategies typically employ quantitative process which focus on statistically robust or technical patterns in the return series of the asset, and typically focus on highly liquid instruments and maintain shorter holding periods than either discretionary or mean reverting strategies. Although some strategies seek to employ counter trend models, strategies benefit most from an environment characterized by persistent, discernible trending behavior. Systematic: Diversified strategies typically would expect to have no greater than 35% of portfolio in either dedicated currency or commodity exposures over a given market cycle.
- **HFRI RV: Fixed Income-Corporate Index** – Fixed Income: Corporate includes strategies in which the investment thesis is predicated on realization of a spread between related instruments in which one or multiple components of the spread is a corporate fixed income instrument. Strategies employ an investment process designed to isolate attractive opportunities between a variety of fixed income instruments, typically realizing an attractive spread between multiple corporate bonds or between a corporate and risk free government bond. Fixed Income: Corporate strategies differ from Event Driven: Credit Arbitrage in that the former more typically involve more general market hedges which may vary in the degree to which they limit fixed income market exposure, while the later typically involve arbitrage positions with little or no net credit market exposure, but are predicated on specific, anticipated idiosyncratic developments.
- **HFRI ED: Credit Arbitrage Index** – Credit Arbitrage strategies employ an investment process designed to isolate attractive opportunities in corporate fixed income securities; these include both senior and subordinated claims as well as bank debt and other outstanding obligations, structuring positions with little or no broad credit market exposure. These may also contain a limited exposure to government, sovereign, equity, convertible or other obligations but the focus of the strategy is primarily on fixed corporate obligations and other securities are held as component of positions within these structures. Managers typically employ fundamental credit analysis to evaluate the likelihood of an improvement in the issuer's creditworthiness, in most cases securities trade in liquid markets and managers are only infrequently or indirectly involved with company management. Fixed Income - Corporate strategies differ from Event Driven: Credit Arbitrage in that the former more typically involve more general market hedges which may vary in the degree to which they limit fixed income market exposure, while the latter typically involve arbitrage positions with little or no net credit market exposure, but are predicated on specific, anticipated idiosyncratic developments.

Net of Fee Composites Benchmark Index Definitions

- **HFRI Relative Value (Total) Index** – Investment Managers who maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities. Managers employ a variety of fundamental and quantitative techniques to establish investment theses, and security types range broadly across equity, fixed income, derivative or other security types. Fixed income strategies are typically quantitatively driven to measure the existing relationship between instruments and, in some cases, identify attractive positions in which the risk adjusted spread between these instruments represents an attractive opportunity for the investment manager. RV position may be involved in corporate transactions also, but as opposed to ED exposures, the investment thesis is predicated on realization of a pricing discrepancy between related securities, as opposed to the outcome of the corporate transaction.
- **HFRI RV: Fixed Income-Asset Backed Index** – Fixed Income: Asset Backed includes strategies in which the investment thesis is predicated on realization of a spread between related instruments in which one or multiple components of the spread is a fixed income instrument backed physical collateral or other financial obligations (loans, credit cards) other than those of a specific corporation. Strategies employ an investment process designed to isolate attractive opportunities between a variety of fixed income instruments specifically securitized by collateral commitments which frequently include loans, pools and portfolios of loans, receivables, real estate, machinery or other tangible financial commitments. Investment thesis may be predicated on an attractive spread given the nature and quality of the collateral, the liquidity characteristics of the underlying instruments and on issuance and trends in collateralized fixed income instruments, broadly speaking. In many cases, investment managers hedge, limit or offset interest rate exposure in the interest of isolating the risk of the position to strictly the yield disparity of the instrument relative to the lower risk instruments.
- **Dow Jones Credit Suisse Hedge Fund Index** - an asset-weighted hedge fund index and includes open and closed funds. The index is an asset-weighted hedge fund index that provides a rules-based measure of an investable portfolio.
- **SG (Newedge) Multi Alternative Risk Premia Index**- represents risk permia managers who employ investment programs diversified across multiple asset classes while utilizing multiple risk premia factors. These managers trade multiple asset classes such as equities, fixed income, currencies, and in many cases commodities, and aim to capture discrete risk premia, including value, carry, and momentum. Single asset class and risk premia programs are excluded. It is equally weighted, non-investable index of funds.

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Aon Hewitt Investment Consulting, Inc.

200 E. Randolph Street

Suite 1500

Chicago, IL 60601

ATTN: AHIC Compliance Officer

Private Markets Track Records

As of 6/30/2018

Information presented is for illustrative purposes only and should not be considered investment advice. None of the information presented above has been calculated using the recipient's portfolio information.

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Private Equity Track Record by Vintage Year

As of 6/30/2018

	Track Record Returns										IRR Quartile
Vintage Year	# of Partnerships	Total Commitments	Cumulative Paid-In	Cumulative Distributions	Net Asset Value	Total Value	DPI	RVPI	TVPI	IRR	
2006	1	$ 15,000,000	$ 15,000,000	$ 25,178,082	$ 559,044	$ 25,737,126	1.68x	0.04x	1.72x	8.97%	2
2007	8	215,502,649	225,408,299	276,762,177	84,183,151	360,945,328	1.23x	0.37x	1.60x	10.35%	2
2008	10	262,236,000	269,207,781	322,272,082	157,220,461	479,492,543	1.20x	0.58x	1.78x	16.30%	1
2009	11	236,121,000	233,661,019	231,714,451	121,937,697	353,652,148	0.99x	0.52x	1.51x	10.89%	3
2010	4	115,287,500	116,794,161	95,424,669	77,778,927	173,203,596	0.82x	0.67x	1.48x	12.50%	2
2011	10	290,000,000	266,099,250	297,643,002	177,577,321	475,220,323	1.12x	0.67x	1.79x	18.79%	2
2012	13	575,602,920	586,615,719	316,646,871	543,074,326	859,721,197	0.54x	0.93x	1.47x	13.81%	2
2013	12	397,248,276	334,685,143	158,311,448	319,210,408	477,521,856	0.47x	0.95x	1.43x	16.45%	2
2014	15	545,394,000	458,083,930	139,429,474	477,580,790	617,010,264	0.30x	1.04x	1.35x	17.31%	2
2015	18	814,752,125	594,969,098	111,669,451	707,146,438	818,815,889	0.19x	1.19x	1.38x	24.86%	1
2016	18	662,608,871	268,481,502	27,220,024	284,008,878	311,228,902	0.10x	1.06x	1.16x	18.59%	2
2017	18	1,299,835,106	257,041,853	8,431,722	246,967,383	255,399,105	0.03x	0.96x	0.99x	-1.34%	2
2018	15	608,949,580	34,454,208	0	30,353,441	30,353,441	0.00x	0.88x	0.88x	-18.02%	3
Total Portfolio	153	$6,038,538,027	$3,660,501,963	$2,010,703,453	$3,227,598,265	$5,238,301,718	0.55x	0.88x	1.43x	14.66%	N/A
Burgiss Peer Universe Benchmark							0.39x	0.89x	1.28x	10.58%	
Over/Under Benchmark							0.16x	-0.01x	0.15x	4.08%	

Past performance does not guarantee future results. There is a potential for a loss of principal. The performance presented is net of fund management fees and expenses but does not include any AHIC consulting fees. Actual returns will be reduced by AHIC's investment advisory fees and other expenses you may incur as a client. Figures are presented in USD. AHIC's advisory fees are described in Form ADV Part 2A. Please see following page for additional important notes.

Private Equity Track Record by Vintage Year

Notes

1. **Past performance does not guarantee future results.** There is a potential for a loss of principal. The performance presented is net of fund management fees and expenses but does not include any AHIC consulting fees. Actual returns will be reduced by AHIC's investment advisory fees and other expenses you may incur as a client. Current performance may be lower or higher than the performance quoted. The information presented was calculated based on data received from underlying fund managers. Figures are presented in USD.
2. Fund of funds recommendations are excluded from the track record.
3. Only partnerships recommended to and utilized by current AHIC investment consulting clients in an advisory or delegated capacity who have engaged AHIC to provide private equity reporting services are included.
4. Benchmark data provided by Burgiss. Benchmark returns are based on the pooled cash flows and valuations of all relevant vintage year funds in the Burgiss Manager Universe. Total portfolio benchmark returns are the commitment-weighted averages of the individual vintage year benchmark returns. The Burgiss Manager Universe contains cash flow and valuation data for over 7,000 private markets funds with total capitalization of over $6 trillion. Data is sourced directly from institutional investor portfolios. Quartiles are determined by ranking the funds in the Burgiss Manager Universe and comparing vintage year returns to the fund rankings. The first quartile represents the top 25% performing funds, and the fourth quartile represents the bottom 25% performing funds.
5. These returns are internal rates of return (IRRs) based upon the aggregate cash flows of our clients within Private Equity investments recommended by AHIC's Global Investment Management team. This dollar-weighted return calculation methodology lends greater significance to client portfolios and fund managers with larger dollar commitments and consequently underweights the returns from client portfolios and fund managers with smaller dollar commitments.
6. A client's performance experience may be lower or higher than the performance shown. The calculated track record does not represent the historical performance of any actual client account. Individual portfolios are managed to their respective investment guidelines which may differ from other significantly in terms of security holdings, industry weightings, and regional exposure. Fund performance, characteristics and volatility also may differ from the benchmark(s). The client track record information represented in this report was calculated based on the data received in General Partner statements.
7. The track record includes all fund commitments made as of the date of presentation whether or not a fund has called capital. Funds in subsequent vintage years are not expected to call capital until the stated year.
8. Dividends, interest and the impact of subscription lines of credit are incorporated in these returns to the extent they are embedded in the underlying cash flows of the funds.

Discretionary Private Equity Track Record by Vintage Year

As of 6/30/2018

	Track Record Returns										
Vintage Year	# of Partnerships	Total Commitments	Cumulative Paid-In	Cumulative Distributions	Net Asset Value	Total Value	DPI	RVPI	TVPI	IRR	IRR Quartile
2007	4	$ 80,000,000	$ 84,069,412	$ 112,471,105	$ 32,791,080	$ 145,262,185	1.34x	0.39x	1.73x	11.82%	2
2008	4	80,000,000	84,586,550	101,370,722	58,249,189	159,619,911	1.20x	0.69x	1.89x	17.82%	1
2009	7	114,621,000	127,481,642	125,285,838	74,594,500	199,880,338	0.98x	0.59x	1.57x	11.48%	3
2010	3	65,000,000	65,889,007	60,889,870	47,125,960	108,015,830	0.92x	0.72x	1.64x	14.79%	2
2011	7	120,000,000	117,082,857	134,571,791	90,455,554	225,027,345	1.15x	0.77x	1.92x	19.97%	2
2012	9	205,000,000	206,607,221	105,840,543	191,790,535	297,631,078	0.51x	0.93x	1.44x	13.17%	2
2013	9	173,501,276	141,956,204	58,165,752	143,184,667	201,350,419	0.41x	1.01x	1.42x	15.62%	2
2014	8	217,868,000	163,415,308	48,193,471	169,237,544	217,431,015	0.29x	1.04x	1.33x	17.07%	2
2015	12	350,366,625	274,489,168	62,916,653	340,036,863	402,953,516	0.23x	1.24x	1.47x	28.65%	1
2016	12	275,924,871	107,343,146	10,979,764	110,665,842	121,645,606	0.10x	1.03x	1.13x	15.84%	2
2017	10	319,000,000	63,260,461	2,486,956	59,938,365	62,425,321	0.04x	0.95x	0.99x	-2.60%	3
2018	7	214,121,000	12,864,047	0	10,949,737	10,949,737	0.00x	0.85x	0.85x	-39.52%	4
Total Portfolio	92	$2,215,402,772	$1,449,045,023	$ 823,172,465	$1,329,019,836	$2,152,192,301	0.57x	0.92x	1.49x	15.64%	N/A
Burgiss Peer Universe Benchmark							0.41x	0.89x	1.31x	11.40%	
Over/Under Benchmark							0.15x	0.02x	0.18x	4.24%	

Past performance does not guarantee future results. There is a potential for a loss of principal. The performance presented is net of fund management fees and expenses but does not include any AHIC consulting fees. Actual returns will be reduced by AHIC's investment advisory fees and other expenses you may incur as a client. Figures are presented in USD. AHIC's advisory fees are described in Form ADV Part 2A. Please see following page for additional important notes.

Discretionary Private Equity Track Record by Vintage Year

Notes

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D. Research Papers

- Alternative Premia
- Alternative PriceBank Capital Relief
- Direct Lending: An Investment Opportunity Within Private Debt

Aon Hewitt
Retirement & Investment

Alternative Premia, Alternative Price

August 2017

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Key Points

- Alternative risk premia (ARP) consist of a range of strategies that offer a premium for either taking risks others do not wish to bear or for exploiting market anomalies.
- ARP have increased in popularity over the last few years with a spate of new product launches.
- ARP are a viable investment proposition for many investors, bringing diversification and added return potential to traditional portfolios.
- Not all implementations are created equal, and care must be taken when choosing a provider.
- We recommend investment in ARP products to those looking for alternative sources of return at reasonable fee levels.

Introduction

ARP strategies have risen to prominence over the last few years, fuelled by investors' desire for diversification and an advancing understanding over what should be categorised as alpha and beta. We believe these strategies can aid diversification within a portfolio and allow investors access to sources of return that are different from traditional equity and bonds, at a reasonable price point.

In this paper we discuss:

- Evolution of ARP
- Defining ARP
- Overview of ARP strategies
- Role of ARP in portfolios

Evolution of ARP

The existence of the equity risk premium (excess return earned by investing in stocks above the risk-free rate) is widely accepted by today's investor. Markowitz[1] was amongst the first to link investment return and risk and enabled the "risk premia" of different investments to be measured. This ability to measure the risk premia of different assets led to a realisation amongst investors that not all investing was skill-based and there were gains to be generated by just investing in an index like the FTSE 100 or S&P 500. What had previously been thought of as alpha[2] was actually beta.[3]

As markets evolved, a plethora of indices sprung up across asset classes, allowing investors access to ever-more-exotic investment strategies with corresponding "exotic betas." During this period, we also witnessed the growth of the hedge fund industry, which usually charged both management and

[1] Portfolio Selection, Harry Markowitz, *The Journal of Finance,* Vol. 7, No. 1 (1952)
[2] Alpha is a term used to denote manager skill.
[3] Beta is a term used to denote the return available from the market; e.g., an investment in an S&P 500 tracker would have a beta of roughly 1 to the S&P 500 index.

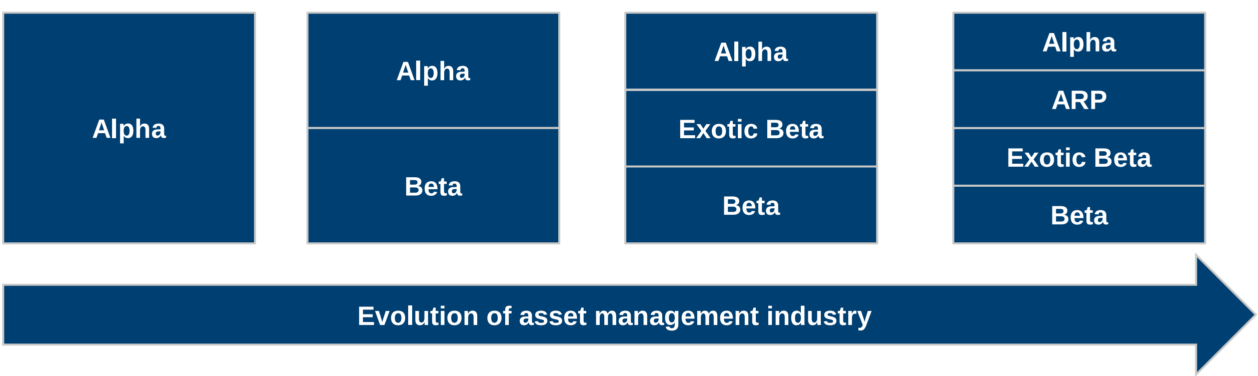
performance fees for what many claimed was alpha.[4] These strategies promised and delivered outstanding returns through investing in an unconstrained manner across or within certain markets.

As hedge funds evolved, some market practitioners examined whether hedge fund strategies were in part also targeting risk premia and whether these could be extracted in a systematic manner. For example, was merger arbitrage a pure alpha strategy, or were the majority of the returns generated simply by taking deal risk? Perhaps returns could be generated by investing in **all** deals rather than trying to select the "best" ones. A few found success with this bottom-up approach, and the first ARP products were launched in the mid- to late 2000s with varying degrees of success.

At the same time as the first ARP products were appearing, a similar revolution was occurring in the equity long-only space. Here, "smart beta" or "factor-based investing"[5] products were appearing that looked to capture the returns from well-known equity (and later fixed income) factors such as Value in a simple, transparent, rules-based manner. The main differences between smart beta and ARP are as follows:

1. Smart beta is concerned with long-only investing, whereas ARP are mainly implemented in a long short manner.
2. Smart beta is concerned mainly with single-stock equity investing,[6] whereas ARP strategies can be applied across all asset classes.

After the global financial crisis, interest in ARP generally fell away as equity markets surged. However, after the difficult markets of 2011, interest in ARP was reignited and more ARP products came to market, at first launched by banks and soon after by asset managers. These offerings are generally characterized by lower fees than traditional hedge funds, exposure to a number of different risk premia, and high levels of transparency into the mechanics behind the various implementations.



Defining ARP

There are a multitude of definitions of ARP. Broadly speaking, the definition breaks down as follows:

- The "alternative" part of the ARP definition can be thought of, in general terms, as an ability to go long or short and an ability to invest across asset classes.

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[4] The hedge fund industry grew from an estimated $39 billion in 1990 to an estimated $3.0 trillion in December 2016 (HFR).
[5] *10 Insights on Rules-Based and Factor Investing,* Aon Hewitt (2015)
[6] More recently, attempts have been made to adapt the smart beta framework to fixed income investing.

- The term “risk premia” can be thought of in two ways:
  - First, as accepting a premium for taking on a risk that others do not wish to hold (i.e., providing insurance against tail risk to other market participants)
  - Second, other types of strategies better characterised as market anomalies[7] than reward for bearing a well-defined risk

Let’s delve further into the two ways to think of risk premia.

- **Providing insurance against tail risk:** An example would be a short volatility strategy, a simple expression of which would be selling straddles (appropriately hedged)[8] on an index. In this case, the seller receives an option premium for bearing the risk of a large increase in volatility, which generally accompanies a large fall in the market. As with other forms of insurance, the strategies can be successful over the long term (which is why insurers exist!) but prone to large payouts when the insured event occurs (i.e. the market experiences a large fall).[9]
- **Market anomalies:** We believe the most obvious is momentum (or trend-following) across asset classes, which is included as a strategy in many risk premia products, but is not a reward for bearing a certain kind of risk and does not have a return distribution that is negatively skewed. There are several behavioural explanations as to why momentum, or trend-following is successful, and has proved to have been so over many years,[10] but this strategy does not bear the hallmarks of a risk premia strategy as defined above; it has a tendency to perform well in volatile periods and displays positive skew.

So there are two distinct explanations as to what qualifies as alternative risk premia. As a general rule, these strategies will also display the following characteristics:

- **Intuitive:** There must be a sound rationale as to why the premia exist. This can be a behavioural or economic explanation.
- **Well known:** There must be strong academic evidence of the existence of such premia and a conventional way of implementing them. However, some practitioners may employ a greater degree of sophistication than others.
- **Scalable:** The premia need to be sufficiently scalable and liquid so that they are a viable trading strategy and would not disappear due to trading costs.
- **Value add:** The premia need to have a positive expected return over time.
- **Persistent:** The premia need to demonstrate persistence over time and the ability to potentially persist in the future.

In the general lexicon, ARP strategies have come to mean strategies that display most, if not all of the five qualities above, whether they are a market anomaly or a reward for bearing risk. ARP products normally contain both types of investment opportunities—providing insurance and exploiting market anomalies. The reason for this is that the return profile of some market anomalies sits nicely alongside that of certain insurance premia, meaning a combination of the two can be a compelling proposition.

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[7] Capital Fund Management, in particular, uses the market anomaly/insurance for risk illustration of Risk Premia. See *Risk Premium Investing—A Tale of Two Tails,* CFM, 2015.
[8] A straddle is the sale/purchase of a put and a call of the same strike. Such a strategy is not affected by changes in the price level of the index but is exposed to a change in volatility of the index. A short volatility strategy is profitable over time because investors are willing to overpay for market insurance.
[9] Such strategies can be described as negatively skewed—they make regular and consistent small gains but can suffer large losses. Past performance is no guarantee of future results.
[10] *Two Centuries of Trend Following,* Capital Fund Management (2015); *A Century of Evidence on Trend-Following Investing,* AQR (2014)

Overview of ARP Strategies

There have been a large number of product launches in this space over the last couple of years. These range from a customized approach, where an asset manager or bank will offer a menu of up to 100 risk premia to choose from, to products that feature five or more premia in a traditional fund format, where sizing of the individual premium is included as part of the package. Although there are a bewildering number of ARP strategies available, they generally fall into four buckets:

- Momentum
- Value
- Carry
- Other

The first three buckets can generally be applied across equities, fixed income, commodities, and currencies whilst the fourth generally encompasses risk premia strategies that are difficult to generalise and in some cases are asset class-specific. Examples of all can be found in the academic literature; however, in many cases the "devil is in the details" in terms of implementation. Most of the strategies would be executed through equities, futures and forwards.

Momentum[11]

As an ARP strategy, momentum comes in two forms: time series and cross-sectional. Time series momentum is commonly referred to as trend following, which is a strategy widely used within managed futures. This exploits the well-known anomaly that markets tend to trend. The second type, cross-sectional, looks at relative performance within an asset class, rather than absolute performance across asset classes.[12,13] A number of behavioural explanations have been posited for why the momentum phenomenon exists, based mostly on investor under and overreaction, such as investors underreacting to short-term news and overreacting to long-term news.[14,15]

Value[16]

Value strategies look to buy cheap assets and sell expensive assets. The origins of value investing date back to the early 1930s and are based on the work of Benjamin Graham and David Dodd, who noticed that after the Great Depression, many stocks seemed cheap compared to book value and created a strategy that looked to buy "cheap" stocks that displayed certain characteristics. Such a strategy proved successful, with Warren Buffett being a well-known advocate of such an approach. The value phenomenon has since been expanded to encompass other asset classes[17]—for example, in bonds an

[11] *Time Series Momentum* , Moskowitz et al. (2011)
[12] *Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency,* Jegadeesh and Titman (1993)
[13] For time series momentum, a security's own past return predicts its future return. For cross sectional momentum, a security's outperformance relative to peers predicts future relative outperformance (*Time Series Momentum*, Moskowitz, Ooi and Pedersen (2010))
[14] *A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets,* Hong and Stein (1999)
[15] *The Disposition Effect and Underreaction to News,* Frazzini (2006)
[16] *Security Analysis,* Graham and Dodd, 1934
[17] *Value and Momentum Everywhere,* Asness, Moskowitz, and Pedersen (2013)

investor could go long bonds with the highest real yield (ex-ante cheap) and short bonds with the lowest real yield (ex-ante expensive).

Carry[18]

Carry strategies involve the search for yield and favour investing in high-yielding assets over low-yielding assets regardless of valuations. Carry is the return derived merely from holding an asset, independent of any price movements, and is most well-known as a strategy exploited in currency markets, where investors buy high-yielding currencies or currencies that have high nominal interest rates and borrow in lower-yielding currencies. However, the strategy can be extended to other asset classes—for example, dividends could represent carry within stocks and the slope of the yield curve within fixed income.

Other

There are a large number of potential risk premia strategies not covered by the first three categories. One example would be the short volatility strategy mentioned above, which could be extended across asset classes. There are also risk premia styles such as quality and size, which are long/short implementations of “smart beta” factors.

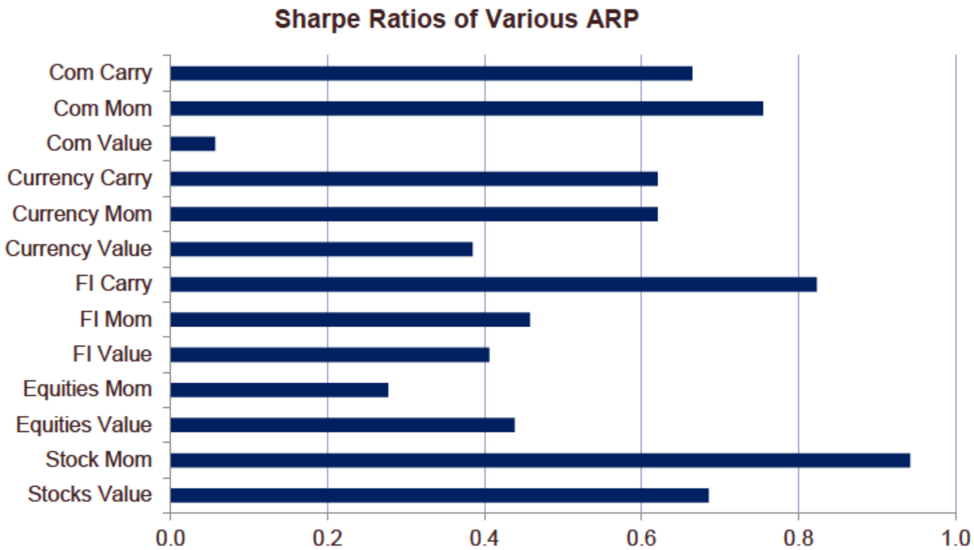
How Have the Various Strategies Performed

Most ARP products have quite short track records, as this is an investment style that has established itself only recently. As such, we use backtests for any meaningful performance analysis, with all the caveats that entails.[19] As these strategies can be scaled up or down relatively easily (subject to capacity constraints) to meet a range of risk and return combinations, it appears more useful to examine the ratio of risk to return rather than the absolute level of return. Hence, the Sharpe ratio is used rather than nominal risk and return metrics.

[18] Carry, Koijen et al. (2015)

[19] The data for the following charts has been sourced from AQR, which manages a number of products within this space. The strategies shown do not represent all of the strategies that AQR manages. All data is shown from January 1990 through March 2016 except for FI Carry, Momentum, and Value, which is from February 1990 and Commodity Value, Momentum, and Carry, which is from May 1990. Momentum represents cross-sectional momentum strategies. All data presented is **gross of fees and gross of trading costs**. Any returns shown are excess of cash. Volatility has been normalised to 10% per annum for all strategies and combinations of strategies. Returns shown are a backtest and do not represent returns realised by any investor.

Strategy Sharpe Ratios



Source: AQR, Aon Hewitt
Note: "Com" is short for "commodities." "Mom" is short for "momentum." Stocks represent single-name strategies whilst equities represent equity indices. Momentum represents cross-sectional rather than time series momentum.

As can be seen from the above, individual Sharpe ratios of the strategies are positive for the period under review, spanning 26 years, ranging from 0.1 to more than 0.9. Some have achieved better risk-adjusted returns than others, but all of the strategies have added value over long periods of time.

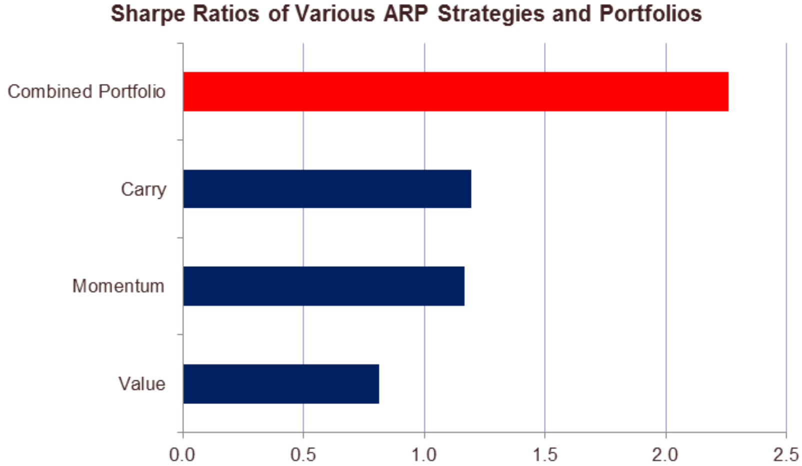
Although strategies like those above are available on a stand-alone basis, increasingly asset managers are approaching the market with strategies that combine a number of the above premia in a single product. The main reason for this is the power of diversification at the ARP level, combining a number of strategies with low correlation, and a positive Sharpe ratio can create a portfolio with a much higher Sharpe ratio. The lower the correlation, the greater the increase in Sharpe ratio (all else being equal).

Correlations period 1990 - March 2016

	Stock Value	Stocks Mom.	Equities Value	Equities Mom.	FI Value	FI Mom.	FI Carry	Currency Value	Currency Mom.	Currency Carry	Com Value	Com Mom.	Com Carry
Stock Value	1.0												
Stocks Mom.	-0.7	1.0											
Equities Value	0.2	-0.2	1.0										
Equities Mom.	-0.2	0.2	-0.2	1.0									
FI Value	0.0	0.0	0.1	0.0	1.0								
FI Mom.	0.0	0.1	-0.1	0.1	-0.3	1.0							
FI Carry	0.1	0.1	-0.1	0.0	-0.2	0.1	1.0						
Currency Value	0.2	-0.2	0.1	0.0	0.1	-0.1	-0.1	1.0					
Currency Mom.	-0.1	0.3	-0.1	0.2	-0.2	0.1	0.1	-0.3	1.0				
Currenc Carry	0.1	0.0	-0.1	0.2	-0.1	-0.1	0.3	0.0	0.3	1.0			
Com Value	0.1	-0.1	0.1	-0.1	0.0	0.0	0.1	0.1	-0.1	0.0	1.0		
Com Mom.	0.0	0.1	-0.1	0.2	-0.1	0.0	0.0	0.0	0.2	0.1	-0.5	1.0	
Com Carry	0.0	0.0	-0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	-0.4	0.5	1.0

Source: AQR, Aon Hewitt

We can see from the above that the correlation between individual substrategies is low. In fact, the average pairwise correlation stands at 0.14. This means that creating a portfolio of these strategies should produce much higher risk-adjusted returns than individually allocating to any single strategy.[20] This is in fact what we find. Finally, we can take this one step further and create a portfolio that is diversified across asset classes and different premia.[21]



Source: AQR, Aon Hewitt

Here we can see how the combined portfolio had a much higher Sharpe ratio than the single-strategy portfolios, which in themselves exhibited higher Sharpe ratios than the underlying ARP. We can also view this using simpler risk metrics:

Annualised Excess Return (gross of fees and trading costs)	22.6%
Annualised Volatility	10.0%
Sharpe Ratio	2.3

The simulation above does not account for trading costs, other fees (including management fees), market impact, and market constraints. However, if we put market constraints to one side (and there are managers running strategies such as those above with billions of dollars), we can have reasonably conservative estimates for both management fees (1% per annum ("p.a.") and trading costs (3% p.a.) for ARP strategies based on conversations with asset managers operating these types of strategies. Adjusting for these on a linear basis results in the following.

Annualised Excess Return (net of estimated fees and trading costs)	17.8%
Annualised Volatility	10.0%
Sharpe Ratio	1.8

[20] Taking this one step further, if strategies have a zero correlation to each other, the Sharpe ratio of a portfolio of such strategies will increase by the square root of the number of such strategies added. However, very few strategies are completely orthogonal to each other. See also *Correlation and portfolio construction,* Metolius Capital, 2013

[21] In this case, we will follow a naïve allocation of 33% to Carry, 33% to Momentum, and 33% to Value resulting in a portfolio of 13 different ARP. Carry, Momentum, and Value portfolios are equally weighted allocations to the relevant strategies above, rebalanced monthly.

Although 'live' track records of these strategies are limited, there are reputable managers operating in this area with track records of one to five years. Realised Sharpe ratios have been between 0 and 1.2 with annualised returns of 0% to 10% and realised annualised volatility of 5% to 10%. The difference between the simulation above and realised performance of managers could be attributed to real-life implementation constraints as well as uncertainty over historical costs/opportunities. Our view is that Sharpe ratios in the region of 0.5 – 1 are more realistic going forward than those in the historical backtests above.

Expected Excess Returns (net of estimated fees and trading costs)	3%–10%
Expected Volatility	6%–10%
Sharpe Ratio	0.5–1

Role of ARP in Portfolios

If the expected risk and return statistics are achieved by an ARP strategy, it would be a compelling addition to a traditional 60/40 portfolio,[22] even with a moderate level of correlation. What we find is that the correlation of a traditional portfolio to the ARP portfolio described above is very low:

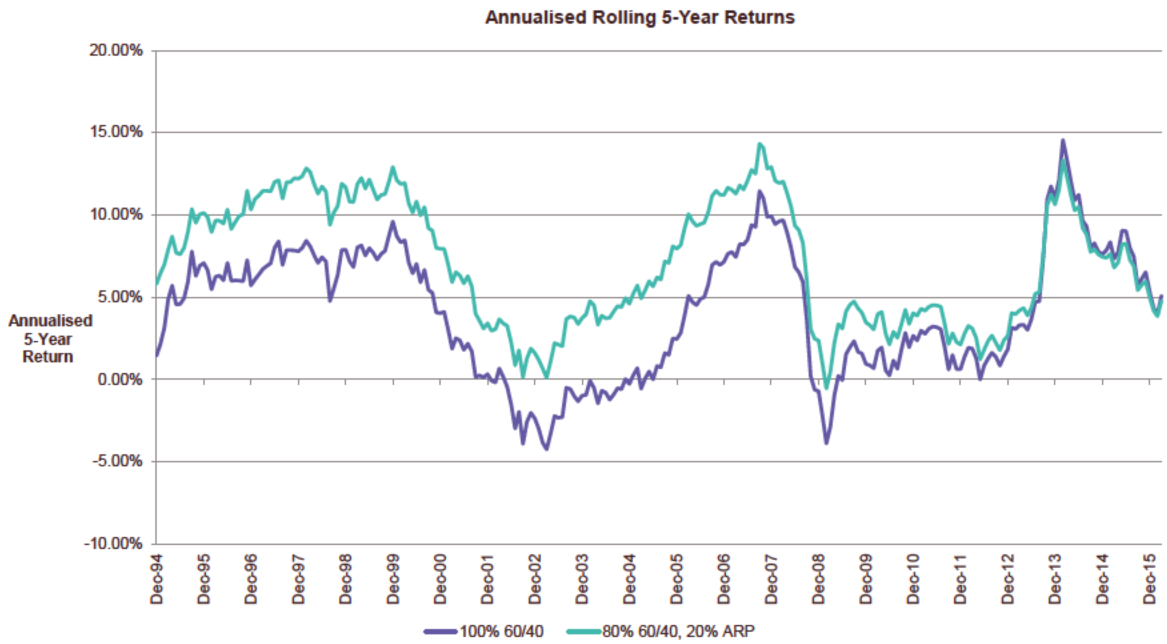
Correlations Period 1990 - March 2016

	Value	Momentum	Carry	ARP Portfolio	Equities	Bonds	60/40 Portfolio
Value	1.0						
Momentum	-0.5	1.0					
Carry	-0.1	0.3	1.0				
ARP Portfolio	0.2	0.5	0.8	1.0			
Equities	0.0	0.0	0.2	0.2	1.0		
Bonds	-0.2	0.1	0.1	0.0	0.3	1.0	
60/40 Portfolio	0.0	0.0	0.3	0.1	1.0	0.5	1.0

Source: AQR, Aon Hewitt

[22] The "traditional portfolio" is a 60/40 mix of equities and bonds, with equities represented by the MSCI World Index and bonds by the Barclays Global Aggregate Bond Index.

Taken together, the respectable expected returns of ARP portfolios coupled with the very low correlations to traditional allocations, you may conclude that the addition of such strategies could have an advantageous impact on a traditional portfolio:



Source: AQR, Aon Hewitt. The chart above is net of a presumed management fee of 1% per annum for the ARP portfolio and net of estimated trading costs of 3% per annum for the ARP portfolio. It assumes costless exposure to the index strategies. The estimated management fee is based on our conversations with asset managers as are estimated transaction costs. These have been applied linearly at the portfolio level rather than the underlying strategy level and assume the ability to scale up or down at zero cost. As such, they are merely indicative.

Although the above likely overestimates the improvement in outcome by utilising ARP strategies, due to the inflated Sharpe Ratio, the low correlation of these strategies to traditional portfolios means that outcomes may still be significantly improved over many time frames using the more realistic expected risk and return metrics above (e.g. a Sharpe of 0.5-1).[23] It is interesting to note the convergence between the rolling five-year returns in recent times. We would attribute this to the solid performance from equity and bond markets that we have seen in recent years, which is unlikely to be sustained.

However, rather than just adding ARP strategies to traditional portfolios, we see a number of uses for these strategies:

1. For investors looking for diversification to traditional assets at an attractive price point, ARP could be a relevant option, to be considered alongside multi-asset funds. This could include investors who have previously been put off by the higher fees charged by hedge funds.
2. For investors looking to build out a hedge fund allocation, the core building blocks could initially be ARP funds. These could be supplemented and replaced with hedge fund managers who generate alpha over time, or a long-term core/satellite approach could be adopted, with the addition of hedge funds that exploit opportunities not targeted by ARP strategies. It should be noted that the correlation between hedge funds and ARP portfolios is generally low, as hedge funds can generate alpha and

[23] For reference, the 60/40 portfolio has a Sharpe ratio of approximately 0.4 over the period.

may be targeting one or two specific approaches rather than the multi-strategy approach of a typical ARP portfolio.

3. Larger investors may wish to consider a principal component analysis[24] of their existing portfolios to identify certain ARP that may be underrepresented, and allocate to the relevant single sleeves accordingly.

As for the number of ARP funds an investor may wish to allocate to, that will depend on individual circumstances. Due to the inherent diversification with the funds, an allocation to one fund may be sufficient and should contain the governance burden of adding managers to the portfolio. We believe two or three managers is likely to be the optimal allocation, as we expect a significant degree of dispersion within this space, and there are enough nuances in approach from different managers to warrant such an approach. Finally, in terms of how much of a portfolio should be allocated to such strategies that would again depend on individual circumstances and risk/return objectives. However, it should be enough to make a difference[25] and may potentially come from traditional assets for those clients who do not have many diversifiers — or it may come from hedge funds for those who wish to rationalise their exposure or replace some of their hedge funds with ARP funds

Further Considerations

Not all providers are equally equipped to provide a diversified portfolio of risk premia. Some of the details we would consider when looking at these providers are listed below:

Trading is not trivial

Trading costs for these strategies can be significant, depending on a number of factors. First, the underlying instruments being traded; as a general rule, equity-based strategies will usually be more expensive than futures-based strategies. Costs may also depend on the sophistication of both the trading platform and the trading strategy. The trading platform of the manager is important as it needs to be set up to trade large volumes of different instruments at low costs. The sophistication of the trading strategy can also increase or decrease costs. For example, more regular rebalancing will potentially increase costs; however, it may also mean the strategy is at all times more focussed on the specific risk premia it is trying to isolate. A trade-off needs to be made, and previous experience in this space can help the decision-making process.

Strategy smorgasbord

We have only scratched the surface of the available universe of specific ARP. There are many others, which raises the question of how many should be included in a portfolio. Theoretically, continuing to add ARP with low correlation and positive Sharpe ratios to each other in a portfolio should continue to increase the Sharpe ratio of that portfolio, up to a point. However, we prefer to see managers sticking to strategies where they have some experience, expanding the universe only when they have performed appropriate research and have developed a robust strategy. We would prefer managers to target a small number of ARP effectively rather than offer a whole suite of completely generic ARP.

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[24] A principal component analysis will decompose the portfolio into the main set of factors that are driving its returns.
[25] *Go Big or Go Home: A Case for an Evolution in Risk Taking,* Mike Sebastian/Aon Hewitt, June 2012

Devil is in the details

There is no standard implementation of the ARP strategies discussed above. The choice of parameters is at the discretion of the provider. Hence, the same strategy can have wildly different outcomes depending on the construction. Although at face value many of the ARP appear relatively simple, on closer inspection there are a large number of choices to make when implementing a specific strategy. These choices are not only about how to implement specific strategies, but also about how to combine these strategies. For this reason, careful review of strategies and the available offerings is helpful when considering an investment in ARP.

Out-of-sample performance is limited

Most of the providers of ARP have launched diversified products only within the last few years, hence out-of-sample performance is limited. We have observed wide-ranging performance with net realised Sharpe ratios over the last few years, generally anywhere from 0 to above 1 on products that target 5% to 10% volatility. We believe this is more realistic than the backtested Sharpe ratios achieved in the above analysis, but is still compelling.

Strategy crowding

As this area grows in popularity, we believe further assets will flow into these strategies—particularly if they perform well and more providers begin to offer products. There is a question as to whether the strategies will continue to work as effectively in such a scenario. This is outside the scope of this paper and is an issue that should be revisited as the market grows.

Fees

ARP are not classified as alpha strategies and because of this, fees are lower than standard hedge fund fees. Typically, the fees for an ARP product featuring multiple premia would be from 0.7% per annum to 1% per annum management fee and 0% to 10% performance fee, with target volatilities of 6% to 10%. Higher volatility targets will generally command higher fees with the price point similar to multi-asset strategies on a unit risk basis.

Conclusion

Alternative risk premia strategies have exploded in popularity over the last few years driven by an increasing understanding of the demarcation between alpha and beta, and the potential for these strategies to add diversification to traditional portfolios. We are of the view that these strategies can offer sources of return that are different to traditional equities and bonds, at a price point that is appealing compared to hedge funds and competitive compared to actively managed long only and multi asset-strategies. As with other actively managed strategies, care must be taken in the evaluation and selection of these products.

Although these strategies do not provide alpha in the traditional sense, they do provide alternative sources of return, many that are not present in traditional portfolios. There are large discrepancies in implementation and strategy construction, and existing experience and platforms in trading systematic strategies can be an advantage. Going forward, we would expect relatively high performance dispersion within this space, closer to that seen in hedge funds than other actively managed strategies due to large variance in skillsets. Thus, while there is the potential to add significant value, we believe manager selection is critical to successful investing in this area.

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Bank Capital Relief

October 2018

Empower Results®

Table of contents

Executive summary

New European banking regulations brought about by the financial crisis have forced banks to take measures to repair their balance sheets and improve their capital ratios. Bank capital relief emerged as a strategy to address this issue. The strategy has features that make it attractive to investors seeking alternative sources of income.

This paper serves as an introduction to the bank capital relief strategy and provides clients with our key thoughts and conclusions.

Our key conclusions are that the bank capital relief strategy:

- Offers the potential for a relatively high and sustainable income of around 8% per annum for investors willing to lock up capital for five years or more
- Should exhibit low performance volatility
- Has low correlation with other illiquid credit opportunities
- Provides sufficient reduction in a bank's capital requirements to support sustainable excess returns versus risk

What is a bank capital relief strategy?

A bank capital relief strategy enables a bank to use capital markets to mitigate some of its risk by buying credit protection on a portfolio of loans. This helps a bank to achieve its regulatory capital requirements by essentially "insuring" a portion of the risk associated with that portfolio, thereby reducing the amount of regulatory capital it is required to hold on its balance sheet. This type of transaction allows the bank to reduce its credit risk without having to sell assets or reduce its lending activity.

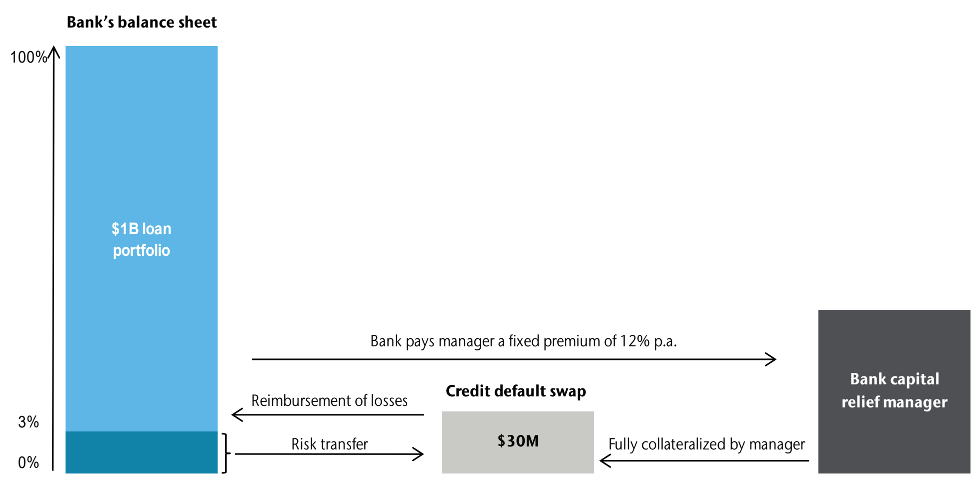
For example, a common type of bank lending provides revolving loan facilities to large companies with the flexibility to draw down capital if needed. These types of loans typically carry high regulatory charges even though they tend to be unprofitable for the bank because the company may not use the facility. A bank is therefore often willing to pay a significant premium for a bank capital relief transaction, since the impact on its return on equity can be substantial. Also, it allows the bank to maintain strategically important borrower relationships.

The opportunity set for this strategy is already meaningful—and driven by regulatory pressure on the banking industry, particularly in Europe, where banks have lagged their U.S. counterparts in selling non-core assets and reducing debt on their balance sheets. Since the financial crisis, regulators have forced banks to increase their balance sheet reserves to meet the required regulatory capital ratios; the potential size of the market is therefore significant. At present around 30 banks have entered into these transactions. The size of the market is estimated at around $26 billion, and is growing rapidly with $8 billion of this issuance in 2017 alone.

The conventional ways to reduce a bank's regulatory shortfall include issuing equity, reducing lending or selling assets. The attraction for the bank of a regulatory capital strategy is that it offers a reasonably non-invasive due diligence process and transaction structure, which allows the bank to maintain relationships with valued borrowers while improving the equity returns on its balance sheet.

The diagram below shows the outline of a typical bank capital relief transaction. The investor agrees with the bank on a portfolio (pool) of loans on the bank's balance sheet that is eligible for risk sharing. The lending can include short-term (60–90 days) trade finance loans or longer-term (around five years) loans to corporates, often small to medium enterprises (SMEs) in Europe. Of this loan pool, the investor will typically provide protection for the first or second loss tranche, with the bank often retaining the first portion (for example, 1%) of losses and the senior tranche. It is preferable that transactions are structured such that the bank retains some of the credit risk to ensure an alignment of interests between the bank and the investor, often meaning the bank is the first to "feel the pain" when there is a credit loss.

Diagram 1: Illustrative example of bank capital relief transaction



Source: Aon, September 2018

The transaction is structured in the form of a credit default swap with the full notional amount of the investment transferred to a separate account that represents the maximum loss investors could incur, often held with a third-party custodian. The bank then pays a fixed premium for the term of the agreement, paid annually in advance, for terms of about five years. At the end of the term, the manager receives back the full notional amount less any losses on the reference portfolio. The net result for the investor is the premium minus the realized default losses. Other risks, such as currency risk, interest rate risk and counterparty risk, are mitigated through this structure.

The terms of the transaction will be agreed upon by the bank and the investor, and can include strict parameters on the loans that are eligible for inclusion in the pool. The choice of which loans are eligible can be made on a disclosed basis, where the investor knows the exact names of the borrowers, or on a blind pool basis, where the investor does not know the borrower identities but knows the overall characteristics of the pool—such as asset type, sector, geography and credit risk. Particular attention is paid to a bank's underwriting practices and historic loss experiences within its lending business. As such, due diligence on both the bank and the underlying portfolio is critical, as is the assessment of appropriate pricing for the assets. Hence, the only realistic way for our clients to access this opportunity would be via an experienced manager.

Bank capital relief may be compared to other forms of bank disintermediation such as securitization or direct lending; however, there are very clear distinctions. The key difference is that the loans are not being sold by the bank and instead remain on its balance sheet, unlike an asset-backed security where the loans are transferred to a special purpose vehicle, or in direct lending where the investment manager is underwriting loans to companies generally not served by banks.

The strategy enables institutional investors to obtain exposure to corporate borrowers they wouldn't otherwise be able to access, since these are the loans the banks want to retain on their balance sheets.

Table 1: The key differences between bank capital relief, direct lending and collateralized loan obligations:

	Bank Capital Relief	Direct Lending	Collateralized Loan Obligations
Purpose for bank	Regulatory equity optimization	Bank disintermediation	Reduce balance sheet
Typical asset types	Corporate exposures, SME lending, trade finance	Corporate loans	Corporate loans
Number of investments	5–10 transactions	25–60	Varies
Fund term	5 years	5 years	Open-ended
Target returns (net of fees)	8–11%	6–10%	LIBOR + 0.5%–12%
Income distributed?	Yes	Yes	Yes
Volatility	Low NAV volatility expected	Low NAV volatility expected	Medium NAV volatility
Credit risk	Varies	Below investment grade (IG)	Varies
Rate sensitivity	Low	Low	Floating rate
Target fund size	$200–$750 million	$200–$5,000 million	$200–$1,000 million
Fees	100bps and performance fee with preferred return	75–150bps and performance fee with preferred return	50–150bps
Leverage	Unlevered	Unlevered or levered options	Unlevered

Source: Aon, September 2018

Role within a portfolio

We think there is a strong case for an investment in this strategy for those clients who can give up medium-term liquidity. We consider bank capital relief strategies to be income-generating strategies for comparison and evaluation alongside other enhanced income opportunities. Some of their advantages:

- **The potential of a relatively high and sustainable income.** The upside for the banks, in terms of the reduction in their tier 1 capital requirements, drives the argument for excess returns versus risk.
- **Low correlation to other credit strategies.** The strategy's return will be derived almost entirely from the income generated from the pre-agreed premium. The risk sourced by the approach is largely uncorrelated to credit risk from other strategies that rely on the capital markets for asset sourcing. In addition, even for clients that have exposure to direct lending to companies in Europe, this strategy offers diversification since it provides exposure to a diverse set of corporate borrowers.
- **The strategy features low performance volatility.** The primary risk of the strategy is losses that are significantly greater than expected in the reference portfolios on which the fund sells protection. However, even during the last major recession, there was no substantial increase in defaults on corporate loan portfolios.
- **The bank capital relief strategy is conceptually quite simple, even though the structure of the transaction can be complex.** An investor receives a premium from taking credit risk on a selected portfolio of loans from a bank up to a pre-agreed amount.
- **This is an illiquid investment opportunity,** typically implemented via closed-ended funds with terms of five years or more. There is no secondary market at present, so no liquidity can be provided unless matching interest is eventually found in the market. The transactions are themselves self-liquidating.

Potential considerations

As with any investment, there are certain risks and details that investors should consider when looking at bank capital relief funds.

The primary risk of the strategy is losses that are significantly greater than expected in the reference portfolio on which the fund sells protection. When accumulated losses exceed the attachment point retained by the bank, the investor will automatically start to experience capital erosion; i.e., the investor's exposure is not linear with the default losses on the overall loan portfolio. Ultimately, investor returns depend on how much these losses erode the transaction capital and on the annual default rate of the underlying portfolio. However, this capital loss is partly compensated by the premiums paid over the term of the transaction.

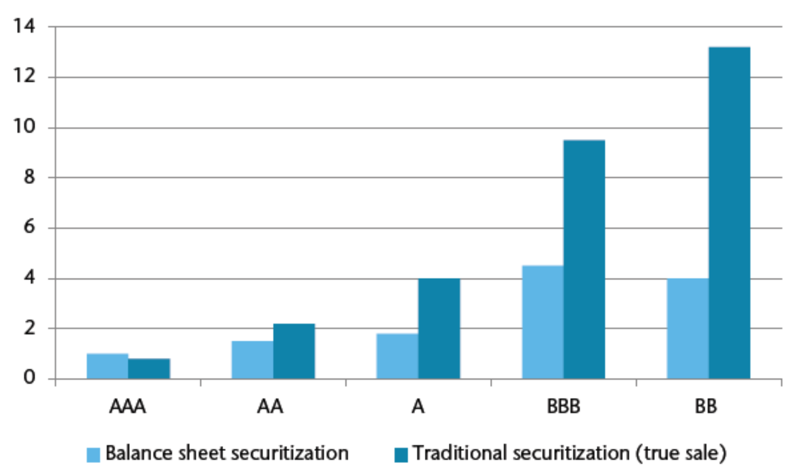
Clearly there is obvious potential for adverse selection in the choice of the loan portfolio. This risk is mitigated to some extent by the manager conducting thorough due diligence on the bank on which it intends to transact. Pre-investment analysis includes but is not limited to an assessment of a bank's internal credit rating system, the bank's credit process, the robustness of the bank's underwriting and lending platform, and the client base in terms of industry, country and credit instruments used. This risk can be further mitigated by ensuring that the reference portfolio of loans is a reflection of the bank's core lending activity, such that there is some assurance that the bank will continue to service the whole book being referenced.

Transactions are impacted only by real losses in the portfolio; mark-to-market fluctuations do not create losses for the investors. In the case of default, recoveries and their timing are tied to actual workouts undertaken by the bank (usually longer than banks estimate—but the investor is still paid during this period). Unlike leveraged loans or high-yield bonds, core SME borrowers (typically German family-owned firms) and trade finance have shown a strong willingness to pay, and defaults have exhibited low volatility over the cycle.

Data on historical loss and default performance is more difficult to gather for bank capital relief portfolios, as most transactions are not public and are often unrated. Data provided by the managers we have researched estimates the annual expected loss for the corporate loan portfolios they reference to be in the range of 0.3% p.a. to 0.9% p.a. The losses for the associated bank capital relief trades depend on the details of how the transaction is structured.

The European Banking Authority's report on "synthetic" securitization, as bank capital relief is often referred to, shows that the default rate compares very favorably to "true sale" securitization whereby the bank actually sells off the assets in a structure such as collateralized loan obligation ("CLO").

Figure 1: Lifetime default rate as of 2014 (%); ratings issued from 2000



Source: European Banking Authority

Even following the financial crisis in 2008, the losses on these loan portfolios peaked at 0.8% versus the losses of 3.6%[1] on all rated corporate credit instruments. This illustrates the resilience of corporate loans versus corporate bonds during periods of market stress.

[1] *Moody's Corporate Annual Default Rate Survey 2017*

While we must treat these figures with caution, it does appear that unexpected losses represent an extremely stressed scenario such that there would have to be an unprecedented level of defaults to result in poor returns. In addition, if the bank itself were to default, then the transaction would unwind and the investor would receive its capital back, although any further premium payments would obviously not be received.

Conclusion

We believe bank capital relief strategies can aid diversification within a portfolio and allow investors to access an attractive level of income of that is significantly uncorrelated with traditional equities and fixed income.

An allocation to bank capital relief is especially appealing for investors that do not currently have an allocation to private debt, but should also complement existing investment in strategies such as direct lending and real estate debt.

An increase in capital flows to this space has had an impact on premiums, and banks now have a wider number of specialist managers with whom to transact. However, there are still attractive premiums in the double digits to be earned.

As with actively managed strategies, care must be taken when evaluating and selecting a bank capital relief manager. The strategy remains niche and in our view requires a specialist skill set with considerable experience implementing and structuring these transactions. We believe manager selection is therefore critical to successful investing in this area.

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Direct Lending: An Investment Opportunity Within Private Debt

March 2018

Empower Results®

Executive Summary

- This paper discusses direct lending, a growing segment of the private debt market, which Aon Hewitt Investment Consulting, Inc. (AHIC) believes could be a potential fit for certain portfolios.
- Private debt includes a wide range of illiquid credit strategies, including distressed debt, direct lending, mezzanine debt, special situations, and venture debt.
- U.S. banks have significantly scaled back their middle-market lending activities post-2008 and the subsequent introduction of more stringent banking regulations. Since the beginning of 2009, we have seen European banks restrict their middle-market lending activities as well. The lack of "traditional" bank lending in this space has created the opportunity for attractive risk-adjusted investment opportunities.
- Direct lending strategies are typically accessed by investors through closed-ended vehicles with an expected life of seven to 10 years. Because of the illiquid nature of small- and middle-market loans—which are the segments of the market primarily targeted by direct lending strategies—our capital market assumptions for a typical leveraged direct lending fund has similar expected returns as public equity.

Market Overview

What Is Private Debt?

Private debt can be broadly defined as any non-publicly traded debt financing of a company and typically references companies in the small- and middle-market segment. The debt of large-market companies is more commonly traded in the public markets. Private debt includes a wide range of investment strategies, which offers investors access to a broad opportunity set that is capable of meeting varying risk/return goals. While private debt may be considered a stand-alone asset class today, many of the underlying investment strategies are not new to institutional investors and have historically been classified under different asset classes such as private equity, hedge funds, and real estate. Investment strategies that fall within the private debt asset class include distressed debt, direct lending, mezzanine debt, special situations, and venture debt. This paper will focus on direct lending, which is defined as the origination of loans by nonbank lenders to primarily non-investment-grade small- and middle-market companies.

Macro Trends Impacting Private Debt

Within the U.S., we see increased demand for alternative investments among institutional investors, including driving growth across the private debt segments. Historically, distressed debt investment strategies have accounted for the largest portion of annual fundraising within the private debt asset class. This trend has shifted over the past several years as direct lending strategies have accounted for a larger portion of fundraising. As shown in Exhibit 1, Preqin[1] reported that private debt funds raised an aggregate $92.6 billion of capital globally in 2016 with direct lending funds accounting for $23.2 billion of the aggregate capital.[2] Demand for capital from nonbank lenders continues to increase as private equity dry powder has reached unprecedented levels. In contrast to the U.S., European middle-market lending remains a bank-dominated market with approximately 80% of the lending market share held by banks. However, direct lending has grown significantly as an asset class in Europe over the past several years as banks have reduced lending volumes, particularly to middle-market companies.

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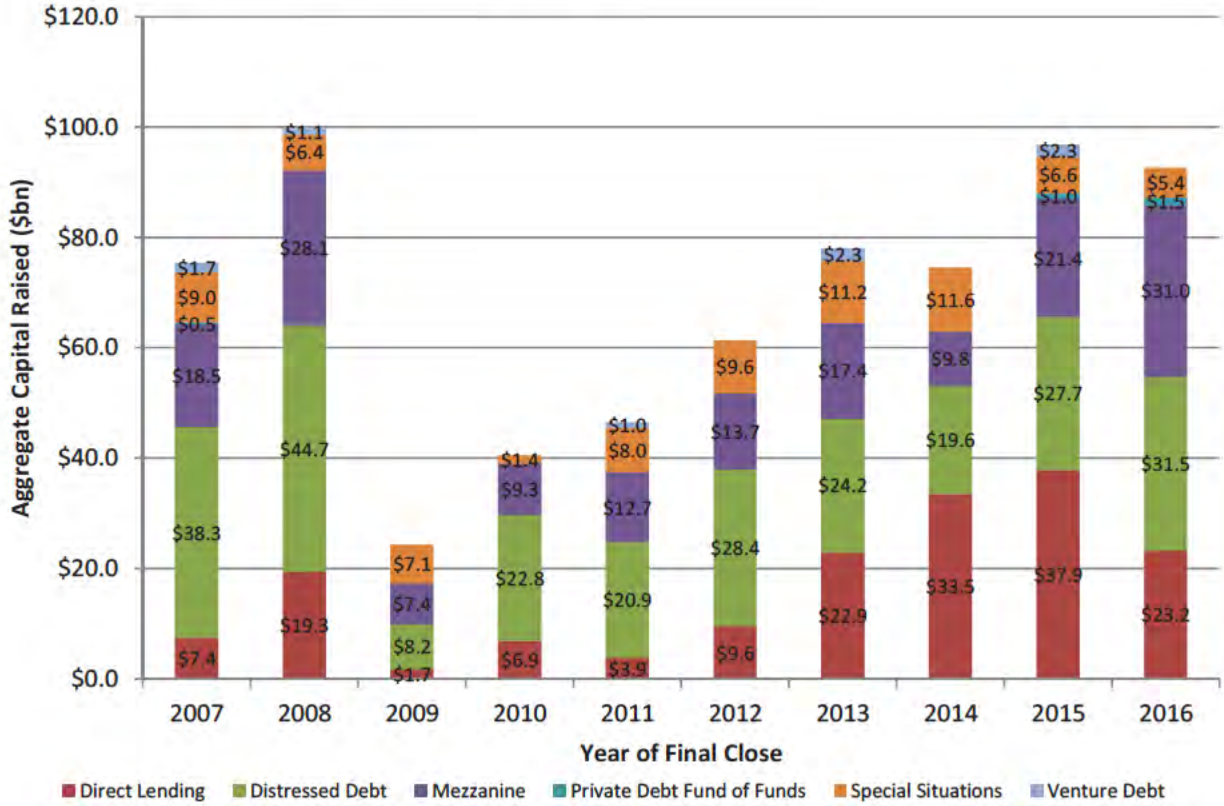
[1] Preqin provides data and information on the private equity, real estate, hedge fund, infrastructure, private debt, and natural resources asset classes at preqin.com.
[2] 2017 Preqin Global Private Debt Report.

Exhibit 1: Annual Private Debt Fundraising by Type



Source: 2017 Preqin Global Private Debt Report

Direct lending experienced significant growth in capital raised between 2009 and 2015. While capital commitments to direct lending funds declined significantly in 2016, the fundraising outlook remains promising for this segment of private debt. Preqin reported that 129 direct lending funds were in the market targeting an aggregate of $50 billion of capital as of the beginning of 2017.[3]

The political, economic, and regulatory backdrops point to nonbank lenders maintaining or growing market share in the U.S. and particularly in Europe.[4] However, banks have not disappeared entirely from middle-market lending. As shown in Exhibit 2, banks remain active in senior debt lending despite being constrained by the size of loan they can make.[5] Some banks work with direct lenders to co-originate loans, while others have developed loan referral arrangements with direct lenders as they look to retain profitable nonlending relationships with borrowers. Still other banks have sold loan portfolios to direct lenders, enabling the latter to build scale quickly.

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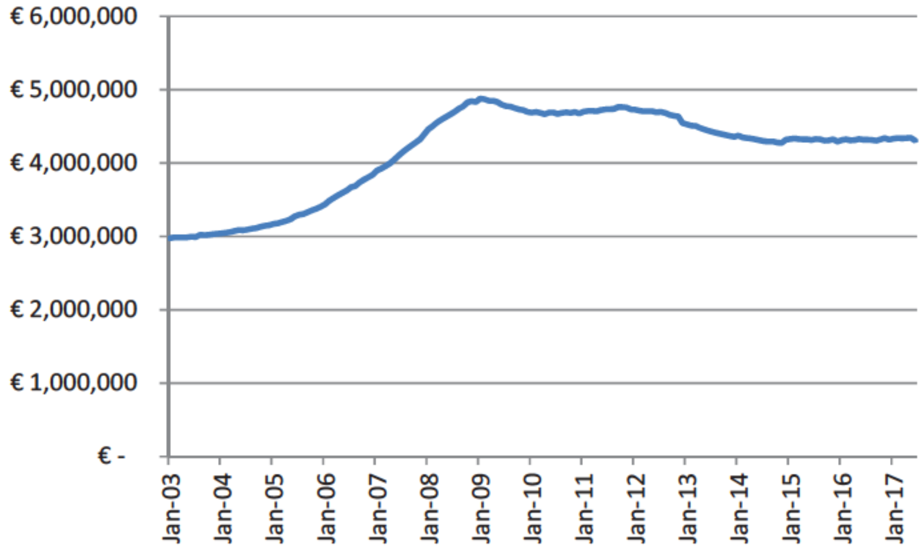
[3] 2017 Preqin Global Private Debt Report.
[4] Governments and regulators globally have introduced rules to make the financial system more robust and stable coming out of the recent financial crisis, including implementing the Dodd-Frank Act (U.S.) and Basel III (Europe).
[5] European Central Bank.

Exhibit 2: Eurozone Bank Lending to Nonfinancial Corporates (€mn)



Source: European Central Bank

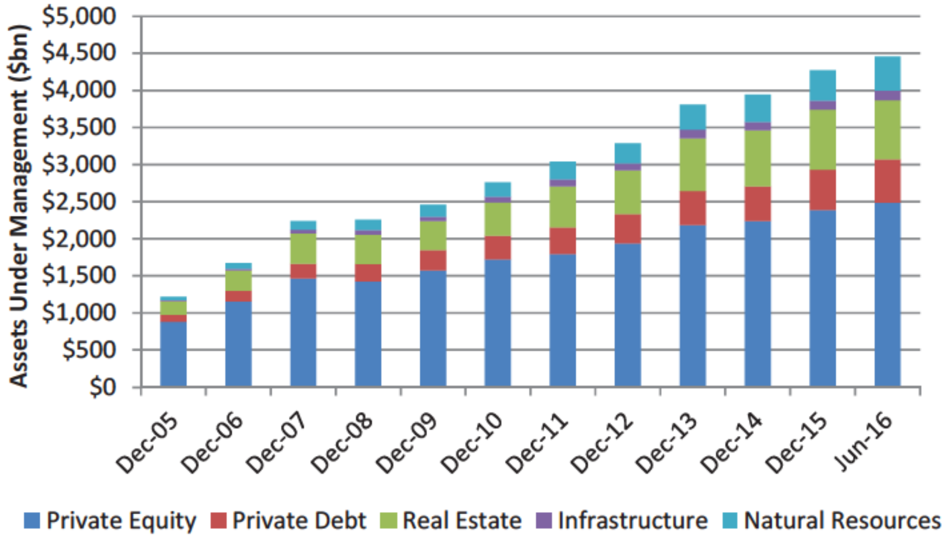
We believe direct lending will continue to be a significant portion of private debt moving forward given the shift from banks to nonbanks that has occurred within the U.S. middle-market leveraged lending market and is occurring within Europe as well. In addition, we believe direct lending will be less cyclical in nature when compared to distressed debt, mezzanine debt, and special situations. The remainder of this paper focuses on direct lending as an investment opportunity.

Rise of Direct Lending

There has been significant growth in interest for private debt over the past decade as shown in Exhibit 3, with assets under management increasing from approximately $90 billion in 2005 to approximately $590 billion in 2016.[6] Private debt assets under management accounted for approximately 13% of all private capital assets under management as of June 30, 2016.[6] We have seen a significant increase in fundraising for direct lending investment strategies, which accounted for slightly more than 25% of all private debt assets under management as of June 30, 2016. In 2007, direct lending accounted for less than 10% of all private debt capital raised.[6]

[6] Preqin.

Exhibit 3: Private Market Assets Under Management by Asset Class



Source: Preqin

Direct lending has existed for decades in the U.S., and it has been slowly growing in scale since the 1990s as banks' share of corporate loans began to shift to nonbank financial sources.[7] As a result, small- and middle-market companies have increasingly been able to look toward nonbank lenders to finance their business needs. We saw a tremendous jump in this trend post-2008 and the global financial crisis as banks quickly retreated from their lending businesses, which allowed nonbank lenders to significantly gain scale in a short period of time. Flexibility is one aspect of direct lending strategies that should allow nonbank lenders to keep hold of their market share gains in the future.[8]

Loan Structures

There are various loan types targeted by direct lending strategies, including the following:

- First lien loans (or senior secured loans)
- Unitranche loans (or one-stop loans)
- Second lien loans
- Mezzanine debt (or subordinated debt)

The most common loan type originated through a direct lending strategy is a senior secured loan, which pays a floating rate coupon and matures in five to seven years. Borrowers typically pay upfront fees or issue at a discount to par, which enhances returns for investors. Senior secured loans often will include a covenant package, which gives the lender specific rights of action should a borrower's financial profile deteriorate. Financial

[7] "The Importance of the Nonbank Financial Sector", remarks by Stanley Fischer, Vice Chairman, Board of Governors of the Federal Reserve System, March 27, 2015 (federalreserve.gov).

[8] Flexibility in this instance references the ability of nonbank lenders to provide financing solutions to borrowers that encompasses the entire debt portion of the capital structure, including first lien loans, unitranche loans, second lien loans, and mezzanine debt.

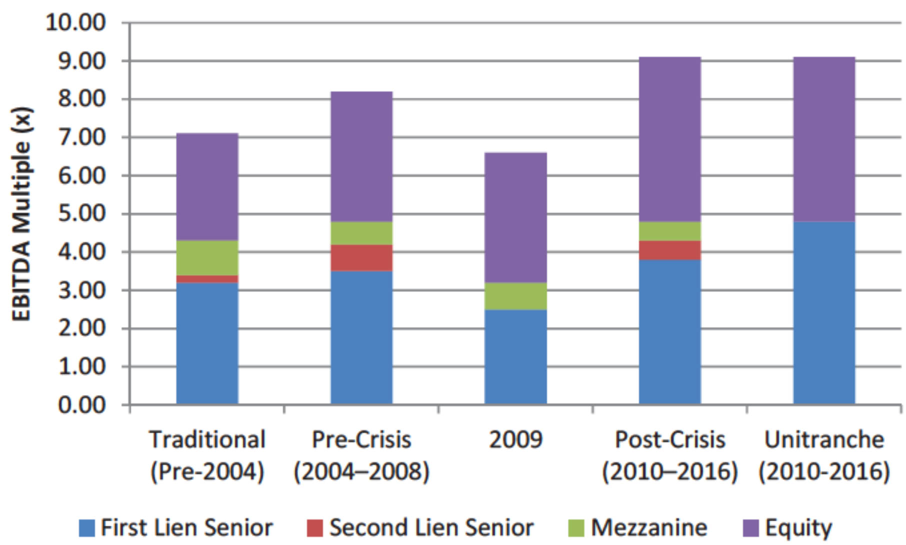
covenants may incentivize a borrower to focus on financial discipline and prevent them from pursuing business strategies that may result in an increase in leverage on the balance sheet.

Mezzanine debt and second lien loans do not offer the same structural protection as senior loans, are issued at higher leverage multiples, and, consequently, are issued with significantly higher coupons relative to senior loans. In some cases, mezzanine loans are issued with a combined cash pay and payment-in-kind coupon. Some direct lending strategies that focus on senior secured loans also will permit investment in non-senior secured loans to a limited extent.

Historically, the capital structure of a middle-market company would have included a strip of mezzanine debt below the senior debt tranche; however, we have seen an evolution in the market to unitranche structures in recent years. Unitranche loans are becoming an increasingly popular route of financing middle-market companies. These are senior secured loans that are issued at higher leverage multiples compared to "traditional" senior loans and effectively blend a combined senior and junior loan structure into one loan.

In our opinion, there are advantages for borrowers to go down the unitranche loan route. These include the lower administrative burden of having to issue just one loan (potentially to one investor) and the speed of executing a transaction. Unitranche loans typically offer higher coupons compared to traditional senior loans on account of higher leverage levels. Illustrative capital structures are shown in the chart below. The chart shows that post-crisis capital structures exhibit lower leverage (on a percentage basis) on average as compared to pre-crisis capital structures.

Exhibit 4: Evolution of Middle-Market Capital Structures



Source: S&P Global Market Intelligence, Leveraged Commentary & Data M&A Stats, December 2016.

Competitors

Historically, nonbank lending has been dominated by several types of players, including collateralized loan obligations (CLOs), specialty finance companies, business development companies (BDCs), and hedge funds.

- CLOs use funds received from the issuance of debt and equity to acquire a diverse portfolio of senior secured bank loans. U.S. CLO issuance tends to be cyclical and has declined significantly from its high in 2014 as new banking regulations around risk retention have made investing in the middle-market less appealing for many CLO managers.
- Increasing banking regulations have also impacted the ability of specialty finance companies, such as GE Capital, to lend to middle-market companies.
- BDCs provide financing for small- and middle-market companies and generally provide investors, who purchase shares in the BDC, more liquid access to private credit than the traditional private equity-style funds through either publicly traded vehicles that are listed on an exchange or unlisted, nontraded vehicles. BDCs are dependent on equity markets to raise growth capital, and the vast majority of the vehicles are facing share prices that trade below their net asset value (NAV), which leaves them unable to raise new capital from investors.
- Poor performance and redemptions from hedge funds during the global financial crisis resulted in many managers stepping back from direct lending as the asset/liability mismatch with the open-ended vehicle forced hedge managers looking to remain active in direct lending to shift to a more private equity-style closed-ended vehicle. All together, this adds up to less competition for private, equity-style direct lending vehicles in the current environment.

Investment Considerations

Return Expectations

Middle-market loans typically offer a spread premium as well as higher upfront fees (or original issue discount) compared to broadly syndicated leveraged loans. The spread premium comprises (1) an illiquidity premium as middle-market loans are typically buy-and-hold investments; and (2) a “smaller company” risk premium. Loans sometimes have LIBOR[9] floors, which may bolster returns in a low-rate environment, as well as call protection features. Some managers have the ability to purchase broadly syndicated loans if attractive investment opportunities present themselves. For example, some direct lenders have taken “anchor” stakes in hung syndications (where the underwriting investment banks have been unable to sell a deal) buying broadly syndicated loans at a significant discount.

Performance is difficult to benchmark for direct lending managers as currently there is no public index that tracks the middle-market private loan space. Most middle-market loans are extended to companies that are too small for U.S. market analysts to efficiently cover and track. As well, most of the loans originated through direct lending strategies will be held by the lenders and not made available on the secondary market—essentially there is no secondary market for middle-market loans today.

The industry has used the public market indices tracking broadly syndicated loans as a proxy for direct lending strategies. While the broadly syndicated loans are similarly focused on the senior tranches like middle-market loans, the companies included in the indices are much larger (generally borrowing greater than $100 million) and the loans are typically traded on the open market and not held to maturity. We certainly recognize the differences between the broadly syndicated loans and middle-market loans—but with correlations greater than 0.9, there is enough similarity to warrant the comparison.

[9] The London Interbank Offered Rate (LIBOR) is a benchmark rate many of the world’s leading banks charge each other for short-term loans.

Exhibit 5: Actual Correlation Matrix (10 Years Ending June 30, 2017)

	Cliffwater Direct Lending Index	S&P/LSTA Leveraged Loan Index	Credit Suisse Leveraged Loan Index	Bloomberg Barclays U.S. Aggregate Bond Index	BofA Merrill Lynch Global High Yield Index	Russell 3000 Index + 300 bps
Cliffwater Direct Lending Index	1.0000					
S&P/LSTA Leveraged Loan Index	0.7751	1.0000				
Credit Suisse Leveraged Loan Index	0.8043	0.9966	1.0000			
Bloomberg Barclays U.S. Aggregate Bond Index	(0.3119)	(0.2112)	(0.2307)	1.0000		
BofA Merrill Lynch Global High Yield Index	0.7081	0.9155	0.9130	(0.0456)	1.0000	
Russell 3000 Index + 300 bps	0.7049	0.6882	0.7177	(0.2914)	0.7819	1.0000

Source: Aon Monthly Benchmark and Index Report and Cliffwater Direct Lending Index Report (cliffwaterdirectlendingindex.com).

Our current long-term (10-year), forward-looking assumptions for a typical leveraged direct lending fund have similar net-of-fee expected returns as public equities.[10] This reflects a 1-2% illiquidity premium (yield spread over bank loans), which is lower than it has been historically. We believe private debt remains attractive relative to broadly syndicated loans.

Exhibit 6: Manager Survey of Market Yields (As of December 31, 2016)

	U.S.	Europe
Senior Debt	LIBOR+475-600 bps	LIBOR+500-650 bps
Unitranche Debt	LIBOR+650-800 bps	LIBOR+700-800 bps
Mezzanine Debt	LIBOR+850-1300 bps	LIBOR+850-1100 bps

Source: AHIC surveyed four direct lending managers that had either been Buy rated previously or selected to manage separately managed accounts on behalf of Aon clients for their market pricing experiences as of December 31, 2016.

[10] The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

The table below highlights historical performance of direct lending relative to several public market indices. As shown, direct lending has consistently generated alpha relative to the broadly syndicated loan indices and the broad fixed income markets.

Exhibit 7: Comparative Performance (as of June 30, 2017)[11]

	1 Year	3 Years	5 Years	10 Years	15 Years
Cliffwater Direct Lending Index	10.41%	8.28%	10.13%	9.01%	8.24%
S&P/LSTA Leveraged Loan Index	7.42%	3.35%	4.58%	4.49%	5.03%
Credit Suisse Leveraged Loan Index	7.49%	3.49%	4.83%	4.16%	5.00%
Bloomberg Barclays U.S. Aggregate Bond Index	-0.31%	2.48%	2.21%	4.48%	4.48%
BofA Merrill Lynch Global High Yield Index	12.40%	3.34%	6.88%	7.37%	9.14%
Russell 3000 Index + 300bps	22.01%	12.35%	17.98%	10.46%	11.90%

Source: Aon Monthly Benchmark and Index Report and Cliffwater Direct Lending Index Report (cliffwaterdirectlendingindex.com).

Risks Associated With Direct Lending

The primary risks associated with direct lending strategies are credit, interest rate, illiquidity, and regulatory risk.

Credit Risk

Credit risk references the likelihood that a borrower will default in the payment of principal and/or interest. Credit risk is something that many fixed income investors face, particularly those investing in lower-quality investments. Credit risk is higher for direct lending strategies compared to traditional broad market fixed income strategies given that the focus in direct lending strategies is on below-investment-grade issuers. Credit risk will vary depending on the loan type. For example, a traditional first lien senior loan would have less credit risk associated with it than a unitranche loan (a combination of the first lien and second lien debt tranches), which carries less credit risk than a mezzanine debt or subordinated loan. Credit risk will also be driven by underlying business risks such as customer concentration, cyclicality, product obsolescence, quality and experience of management, etc. As part of the underwriting process, direct lending managers assess financial and business risks and seek to structure their loans in a manner that appropriately aligns the expected return from the loan with the perceived risk.

Direct lenders, and especially those taking a controlling stake in a loan, can structure a loan that affords them certain rights should a borrower's financial condition deteriorate. Direct lenders may also be able to negotiate a board seat or board observer seat with the borrowing entity, which gives the lender additional oversight. In the event of a default, the senior lender may be able to take control of the restructuring and equitize their position within the company's new capital structure with a view toward selling the business rather than being forced to liquidate the underlying assets. S&P Capital IQ's Leveraged Commentary & Data (LCD) has produced default statistics for the U.S. leveraged loan market that show a lower default rate and higher recovery rates for middle-market borrowers compared to the broadly syndicated loan market. In Europe, default statistics are not widely available largely due to this being a nascent strategy.

[11] Past performance is no guarantee of future results. Unmanaged index returns assume reinvestment of any and all distributions and do not reflect our fees and expenses. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client.

Interest Rate Risk

Interest rate risk (also known as duration risk) references the measure of sensitivity to valuation changes from interest rate movements. As interest rates change, they may affect the value of outstanding debt. Generally, rising interest rates will negatively impact the price of a loan, and falling interest rates will positively impact the price of a loan. Floating rate debt, which is the most common approach used by direct lending managers, reacts to interest rate changes in a similar manner, although typically to a lesser degree. Floating rate debt reduces the duration risk associated with a rising rate environment. Interest rate sensitivity is generally larger and less predictable in debt with uncertain payment or prepayment schedules. In addition, direct lending strategies are not actively traded portfolios; therefore, duration risk is less of a factor as it would be in a more liquid fixed income portfolio.

Illiquidity Risk

In the majority of cases, private debt investments either directly originate from or are purchased through a secondary transaction and held until maturity (or a repayment event). In a distressed situation, loans are typically held until bankruptcy or a restructuring event occurs that provides an exit opportunity either through the debt or because of a newly structured equity position. There is limited ability to trade these loans on the public market due to the fact that issuers are generally small and consequently not well-known. Lenders have to perform lengthy due diligence to familiarize themselves with an issuer as there will typically not be third-party research (e.g., rating agency or investment bank credit reports) available to assist them as part of their investment process. Moreover, loan documentation can be complex and differ considerably across the middle-market loan universe.

The typical private debt strategy will be structured such that its fund life terminates after 10+ years due to the illiquid nature of the hold-to-maturity style of the underlying strategies. In situations where there is an event prior to the loan reaching maturity, private debt strategies are designed to maximize value for investors through operational and/or financial support that may take several years to result in a desirable outcome. Direct lending strategies are typically structured such that the fund life terminates within six to eight years, on average. The shorter lifecycle for direct lending strategies is yet another reason why their popularity has increased in recent years.

Exhibit 8: Direct Lending Terms vs. Other Private Debt Terms

	Direct Lending	Other Private Debt (Distressed/Special Situations)
Fund Term	6–8 years, on average	10 years, on average
Investment Period	1–3 years	3–5 years
Liquidity Provision	None; underlying loans mature in 5–7 years; underlying loans typically repaid within 1–3 years	None; underlying investments vary in terms of maturity
Distributions	Income distributed quarterly; principal distributed as investments mature or repayment occurs	Income distributed quarterly; principal plus proceeds distributed as investments mature or an event occurs
Recycling Provision[12]	Yes; during the investment period	Yes; applies only to investments returned within 18–24 months of the date of acquisition
Leverage Usage	Yes; typically 0.5:1.0 to 2.5:1.0	Yes, typically up to 1.0:1.0

Source: Summary of market intelligence gathered by AHIC research team through normal course of diligence.

Regulatory Risk

Regulatory risk refers to the potential impact that legislative or regulatory changes involving the U.S. or European capital markets, banking industry, and investment fund industry could have on direct lending strategies. Any changes that could potentially impact income tax rates with respect to income expected to be generated by direct lending strategies may have a material effect on the after-tax returns of investors in direct lending strategies. Typically, there is a period of time allowed before any legislative or regulatory changes take effect that provides investors some time to consider whether the impact would offset the potential attractiveness of an investment in a direct lending strategy.

Role in Portfolios

While strategies such as direct lending may offer returns with relatively low levels of market risk compared to equities, the lower return target can be a drag on returns within a traditional private equity portfolio. That said, investors have typically funded private debt allocations from their private equity or other alternative strategy allocations. We are aware of a number of large institutional investors who have classified their direct lending strategies either as an illiquid fixed income allocation or as part of a stand-alone private debt or opportunistic credit portfolio. Investors should give careful consideration to the timing of investments given the closed-ended nature of the asset class.

In terms of how direct lending should be categorized within portfolios, we believe lower-return target strategies (e.g., senior only or unitranche direct lending) are best considered as fixed income-alternative strategies that should be bucketed in a separate private debt or opportunistic credit portfolio or as an illiquid fixed income allocation. Whereas, we believe higher-return target strategies (e.g., mezzanine, distressed debt, and special situations) are best bucketed within a more traditional private equity portfolio.

[12] A recycling provision is intended to allow a general partner to recycle (or reinvest) the capital invested in an investment that is exited within a defined period of time.

Before committing to a direct lending fund, investors need to give some thought to the liquidity profile of the assets that will be liquidated to fund drawdowns during the investment period. The nature of those assets will, to some extent, depend on tolerance to risk (e.g., if risk tolerance is low, drawdowns could be funded from cash accounts or low-risk absolute or total return bond funds). If investors fund direct lending drawdowns directly from more volatile asset classes such as equities, they could be subject to increased market risk and, hence, the possibility that they could be forced to sell equities during an unfavorable period of time.

Access to Opportunity

In the U.S., investors can invest in direct lending through multiple vehicle types, including limited partnerships, CLOs, and BDCs. In addition, most direct lending strategies within the U.S. tend to employ leverage to enhance returns. There is no comparable BDC market in Europe; hence, investors invest mainly through limited partnerships. Limited partnerships are closed-ended vehicles offering zero liquidity, and an investor's capital is therefore locked away for the term of the fund, which is approximately six to eight years (and may be up to 10 years in some instances). Fees comprise a combination of a management fee, which can be based on invested or committed capital, and a performance fee (carried interest), which is paid to the manager once a hurdle rate has been achieved for investors.

Exhibit 9: Private Equity Vehicle vs. Liquid Alternative Vehicle

	Private Equity Vehicle (Less Liquid)	Liquid Alternative Vehicle (More Liquid)
Fund Term	6–8 years, on average	5 years or less
Investment Period	1–3 years	1–2 years
Management Fee	1.00%–1.50% on invested capital[13]	1.00%–2.00% on invested capital
Incentive Fee (Carried Interest)	10%–20%	15%–20%
Hurdle Rate (Preferred Return)	5%–8%	5%–8%
Liquidity Provision	None	90-days' notice; liquidity provided as loans are repaid
Distributions	Income distributed quarterly	Income distributed quarterly
Recycling Provision[14]	Yes; during the investment period	Yes; details can vary
Leverage Usage	Yes; typically 0.5:1.0 to 2.5:1.0	Yes, but not typical

Source: Summary of market intelligence gathered by AHIC research team through normal course of diligence.

As direct lending gains acceptance by the institutional investor universe, global funds are becoming more common and offer a wider investment opportunity set for managers. It is important for managers to have sufficient scale and expertise on a global basis to ensure that they are able to source high-quality loans.

[13] Invested capital typically refers to the sum of the aggregate amount of capital contributions made by a limited partner less any capital contribution refunds and less any capital contributions returned with respect to realized investments. Invested capital does not typically include capital contributions for the payment of management fees and organizational expenses.

[14] A recycling provision is intended to allow a general partner to recycle (or reinvest) the capital invested in an investment that is exited within a defined period of time.

Conclusion

AHIC believes that for many portfolios, investing in private debt—and more specifically in direct lending—could be beneficial. Careful manager selection remains paramount, as is awareness of the potential risks, for building a successful portfolio. In summary:

- The current market dynamics are favorable for direct lending as historical players are leaving the market, driven partially by shifting regulations.[15]
- Certain investors may find that direct lending offers attractive risk-and-return characteristics relative to other private debt strategies.
- Direct lending may provide a stream of current income.
- Middle-market loans have historically generated lower default rates and higher recovery rates than broadly syndicated loans.
- Direct lending offers investors a substitute for traditional fixed income (if current income is a goal), but investors must be willing to accept illiquidity and understand there is little potential for capital appreciation through such a strategy.
- Manager selection is key to success as the market offers a range of risk/return expectations.

[15] The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

Cliffwater Direct Lending Index: An index that seeks to measure the unlevered, gross of fee performance of U.S. middle market corporate loans, as represented by the asset-weighted performance of the underlying assets of Business Development Companies (BDCs), including both exchange-traded and unlisted BDCs, subject to certain eligibility requirements. The CDLI Total Return Index includes three components: Income Return, Realized Gain/Loss and Unrealized Gain/Loss.

S&P/LSTA Leveraged Loan Index: An index designed to track the market-weighted performance of the largest institutional leveraged loans based on market weightings, spreads and interest payments.

Credit Suisse Leveraged Loan Index: An index designed to mirror the investable universe of the U.S. dollar denominated leveraged loan market.

Bloomberg Barclays U.S. Aggregate Bond Index: A market value-weighted index consisting of government bonds, SEC-registered corporate bonds and mortgage-related and asset-backed securities with at least one year to maturity and an outstanding par value of $250 million or greater. This index is a broad measure of the performance of the investment grade U.S. fixed income market.

BofA Merrill Lynch Global High Yield Index: An index designed to track the performance of USD, CAD, GBP and EUR denominated below investment grade corporate debt publicly issued in the major domestic and Eurobond markets.

Russell 3000 Index: A capitalization-weighted index consisting of the 3,000 largest publicly traded U.S. stocks by capitalization. This index is a broad measure of the performance of the aggregate domestic equity market.

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E. Q1 2019 Economic and Investment Views

Investment Views January / Q1 2019

Last updated: 01/16/2019

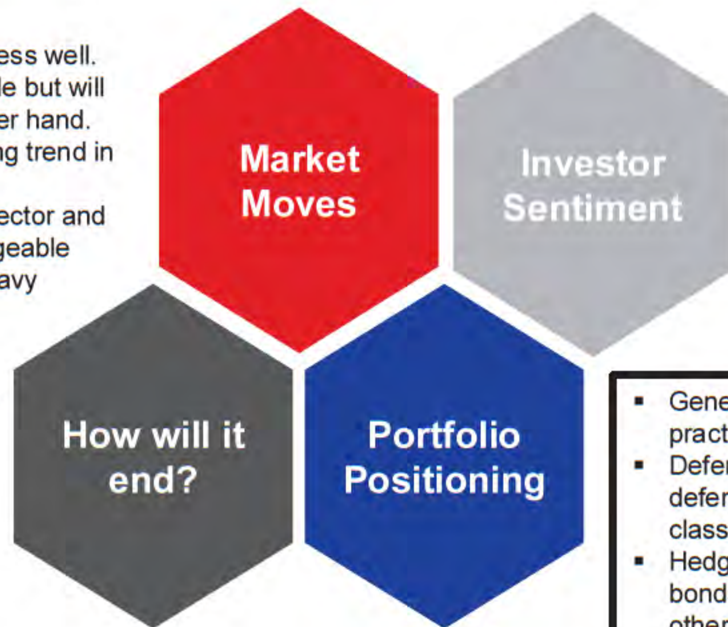
Data as at 12/31/2018 unless otherwise stated.

Empower Results®

Market transition is advancing

Our view is that we are well advanced in a transition phase in global markets from a period where risky assets have outperformed bonds, to one where bonds will start outperforming on a more sustained basis. As we advance along this market path, views can change quickly. Our views on what to expect and portfolio positioning recommendations are below. This broad market view is reflected through the rest of this document.

- Risky assets perform less well. Bonds can also struggle but will gradually gain the upper hand.
- More volatility, flattening trend in returns
- Market leadership at sector and stock level more changeable
- Drawdowns can be heavy



- Markets nervous about end of cycle triggers
- Periods of optimism followed by pessimism become common

- Transition phase is likely to see more corrections, though large scale capital losses can be some time away… timing will depend on data flow and how quickly liquidity tightens..
- …Tightening financial conditions, escalating trade conflict or an unpredictable event could be the trigger.

- Generally advisable to de-risk where practical to more attractive assets
- Defense becomes more important and defensive approaches within asset classes
- Hedges for risk assets – long duration bonds, non-directional hedge funds, other hedges for equities and credit

High Level Views

We see markets currently taking us more definitively towards a fully risk-off regime. Equities will outperform bonds for certain periods of time but less and less convincingly.

Interest Rates

US bond yields have come off their highs for 2018 in response to some softer economic data, a turn in risk preferences, and some ambiguity about the future path of interest rate hikes. Q4's volatility also pulled yields lower. Yields are close to our views, leaving us about neutral on duration. Near term yields could rise but the upward move is unlikely to be sustained. Expected returns from bonds are improving as we advance through the current market transition phase.

Credit

Credit spreads have moved higher in investment grade and high yield. Spreads, while marginally better value, still are not offering good compensation for the risks being taken in credit markets. The yield pick up over treasuries is fragile. In our view, overweight credit positions need reining back significantly. Credit weakness is normally a leading indicator to a deterioration in overall market conditions.

Equities

Equity markets are volatile and have suffered a decline which given our outlook has not been entirely unexpected. Strong earnings in early 2018 were largely discounted, future expectations have been revised lower, while higher bond yields are a check and trade/politics are also pushing volatility up. EM equities have reasonable fundamentals and we believe that, combined with cheap valuations, these will be realized in higher returns over the medium-term. We continue to believe in incremental equity de-risking constraining equity beta close to the benchmark. The implementation of this will be important and will depend on other assets available in portfolios.

Alternatives

The message on alternatives is that good manager and strategy selection leaves some opportunities alive, notwithstanding growing overcrowding in this space. With equities finding it hard going, non-directional approaches should be preferred (including option hedging strategies). Real estate is exposed to rising rates and late cycle risk suggests defensive real estate is now better.

Currency

The changed outlook for US policy interest rates from the US Federal Reserve sees us with a revised view on earlier weakness emerging in the US dollar. We believe that over the medium-term EM currencies should recoup some of the ground lost during 2018.

Medium-Term Views: 1 to 3 Year Time Horizon

Medium-term Views Express our desired over/under weights relative to a diversified long-term strategic benchmark.

January 2019 Medium-Term Views (1/16/2019)

	---	--	-	=	+	++	+++	Changes and Actions
High Level Asset Class Views			USD, High Grade Bonds	Equities, Return Seeking Bonds	Alternatives			Look to be reining back equity positions. Bonds (duration exposure) are offering more competition, and alternatives still offer some reasonable choices, particularly where return from manager skill and lower correlations with equities and credit are available. Constrain equity beta close to benchmark.
Equity Regions				US Small, EAFE, US Large	Emerging			EM equity is still preferred. We do not have a preference between US and non-US markets now. We still like valuations, but recognize that economic and market conditions are making it trickier to translate into performance.
Developed Market Equity Styles				GlobalGrowth, Global Value	Global Low Vol, Global Quality			We have introduced a small preference for low volatility equities, whilst maintaining a preference for quality orientated factors.
Return Seeking Fixed Income			USD EMD, US High Yield	Local EMD, Bank Loans				We maintain a negative stance on high yield bonds despite recent spread widening, and a neutral stance on bank loans. Local EMD offers scope to benefit from a clawback of some oversold EM currencies.
High Grade Fixed Income			Inv. Credit, US Treas.	TPS				All in yields have moved higher. Credit spreads could easily move higher still, Break-even inflation has improved TIPS relative valuations to nominal bonds prompting an upgrade to the view.
Alternatives			Direc. Hedge Funds	Commodities, Real Estate	Non-Direc. Hedge Funds			Non-directional low correlation strategies, for example global macro and some CTA strategies, should be preferred for risk mitigation. Rising interest rates pose some risk to real estate and defense should be built into real estate portfolios. Rates are not quite high enough yet to be a major problem.
USD vs. Currency			Sterling, Euro, Yen, EM					We think that the US$ rebound that we saw over 2018 may now be over although we do not expect much weakness against the euro. EM currencies should recoup some recently lost ground.

Market Aware Implementation (MAI): Less Than 1 Year Horizon

Market aware implementation should be used to accelerate or decelerate towards desired market tilts. They have a shorter time horizon versus Medium-Term Views. They are not for appropriate for every client.

01/15/2019 MAI

Market Aware Implementation (MAI)

	Negative	Neutral	Positive
Equity Regions	• Non-US Equity (EAFE) • US Small Cap Equity	• US Large Cap Core • Emerging Market Equity	
Developed Market Equity Styles	• Non-US Growth • US Low Volatility	• US Growth	• Non-US Quality • Non-US Low Volat • Non-US Value • US Quality • US Value
Return Seeking Fixed Income		• Bank Loans • High Yield Bonds	• Emerging Market • Emerging Market
High Grade Fixed Income	• Investment Grade Credit	• US Government Bonds • Treasury Inflation-Protected Securities	

Changes and Actions

Near-term our views on Non-U.S Developed Market equities are negative.

Near-term there is a more defensive tone to our positioning outside of the US.

Neutral on floating rate and high yield bonds. Local EMD and USD EMD remain positive. High yield bonds have been upgraded from negative to neutral, owing to improved yield levels near-term.

Reward per unit of risk is now attractive at the front-end of the curve after a sizable move higher in rates, however rates at the long-end are likely to rise faster than what's currently priced into the forward curve .

MTV vs. MAI

Below is a graphical representation of MTVs against MAI where views exist over both time horizons. This calls out our **highest conviction views**.

Medium-Term Views 01/16/2019

Key: FI – Fixed Income, EQ – Equity, RSFI – Return Seeking Fixed Income

Medium Term Views represents AHIC's outlooks on capital markets and economies over the next several years. These views are constructed based on our framework of analyzing fundamental, valuation and near-term drivers of capital markets.

Economic Overview

Economic Highlights

There were clear signs of slowdown in the Japanese and Eurozone economies, whilst US growth is starting to lose momentum too. The story in markets grabbed the headlines of course, with most assets falling back sharply, including oil. We believe the US is in the late stages of its economic cycle and this slower trajectory is likely to continue going forward.

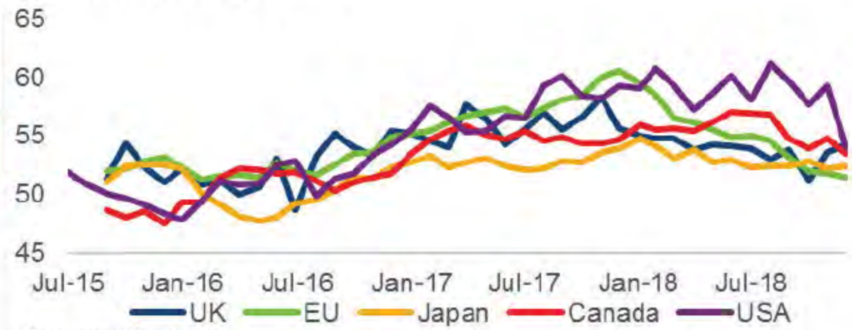
Palpable Japanese and Eurozone slowdown, not in US

Quarterly annualized GDP growth

Source: Factset

But US activity is starting to show cracks

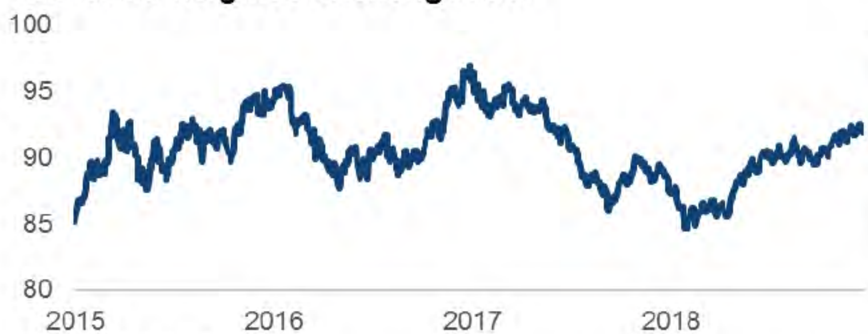
Manufacturing PMIs



Source: Factset

The US dollar resumed its assent over Q4

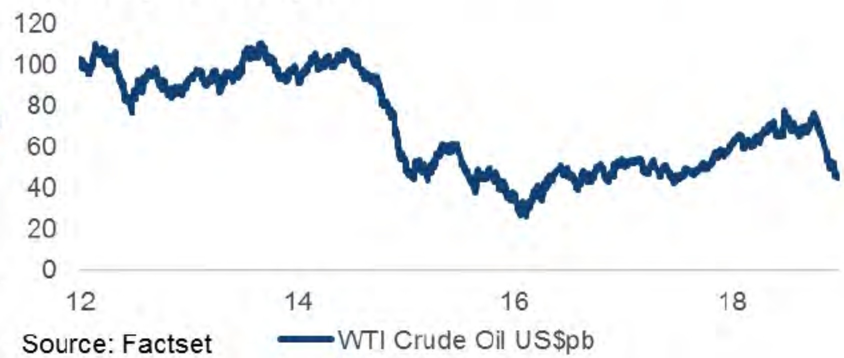
US trade weighted exchange rate



Source: Factset

Oil prices plunge sharply over the fourth quarter

WTI oil price US$pb



Source: Factset

US Economy

The US economy remained relatively strong over the last quarter of 2018 but there were increasing signs of slowing momentum. Meanwhile, political tensions rose again, this time due to a partial government shutdown and open criticism of Fed policy. We expect a weaker economic trend over time but not immediately, despite the signals from the markets.

US economic growth slowed from a very strong 4.2% in Q2 to a still strong 3.4% in Q3. More concerning, however, was the large fall back in the December manufacturing sector ISM index, from 59.3 to 54.1. Whilst this is still in expansion territory, this is the lowest reading since October 2016.

There were also clear signs of slowdown in the housing and retail sectors. New and existing home sales dipped strongly into contraction territory over Q4 (although the latter fell for much of 2018) and the National Association of Home Builders index of activity fell back sharply over November and December. The pattern can be seen in retail sales growth too (see top chart for the latter).

The biggest developments over Q4 were not economic, however, but political. Tensions between the US and China continued to rumble on, with signs of improvement followed by more hardline statements. Also, ongoing disagreements in Congress came to a head in late December, resulting in a partial government shutdown.

The other controversy was with monetary policy. The Fed raised its policy rate for the fourth time in 2018 to 2.5%, which was widely trailed and expected but market turmoil and Presidential criticism called the move into question. However, the Chair also mentioned in a November speech that policy was moving close to neutral and that future moves would be more data dependent.

We expect the tailwind of fiscal impulse to fade and growth to slow from its current pace towards its long term trend of around 2% over the next few years.

Retail sales slowed over Q4

Source: Factset

Headline inflation eased while the Fed hiked in December

Source: Factset

Non-US Economy

Economic growth continued to weaken over the second half of 2018, with inflation trends also moderating. Japanese GDP growth was particularly hurt by natural disasters. In Europe, UK political turmoil intensified as the March 2019 deadline approached, whilst a deal was reached on the Italian budget with the EU. The prospects for the EAFE region will continue to be dominated by politics and driven by the strength of global trade.

Non-US developed world economic activity continued on its broadly weaker trend over Q3 and Q4, although the spread of data was quite wide. UK GDP growth continued its rebound from a very weak Q1 with growth of 2.5% in Q3 while Japan suffered its second quarterly, albeit non-consecutive, contraction in output in the same quarter. The latter was attributed largely to a series of major natural disasters, which disrupted the exports and retail sectors, and the expectations are for a rebound in the Q4 data. We expect broad trend growth in the major EAFE countries over the medium term.

On the political front, the Italian budget negotiations and Brexit continued to make the headlines outside of the US – the first seemingly reaching a resolution whilst the second far from it. The transition deal agreed between the UK Prime Minister and the EU has yet to be voted on in the UK Parliament with all the signs pointing to failure when the vote is eventually held. If this occurs, the future path is highly unpredictable. Meanwhile, the Italian budget was finally agreed with the EU. Protests in France and the consequent increase in government spending may have played a role in persuading the EU to reach a compromise with Italy.

In terms of monetary policy, the main development was the end to the European Central Bank's Quantitative Easing programme in December. Moderating growth and inflation imply that EAFE central banks will remain broadly on the sidelines, at least in the early months of 2019.

Slowdown in European activity is widespread

Source: Factset

Inflation seems to have peaked recently

Source: Factset

EM Economy

Emerging market growth continued to be broadly positive over the quarter, and there were few indications that the US-China trade dispute is beginning to have an adverse impact, at least in terms of the macroeconomic data. The near-term outlook is volatile given the indeterminate current trajectory of US yields and the dollar. In contrast, superior demographics, catch-up productivity dynamics and the emergence of a middle class consumer, especially in Asia, keep us positive on EM economic performance over the medium term.

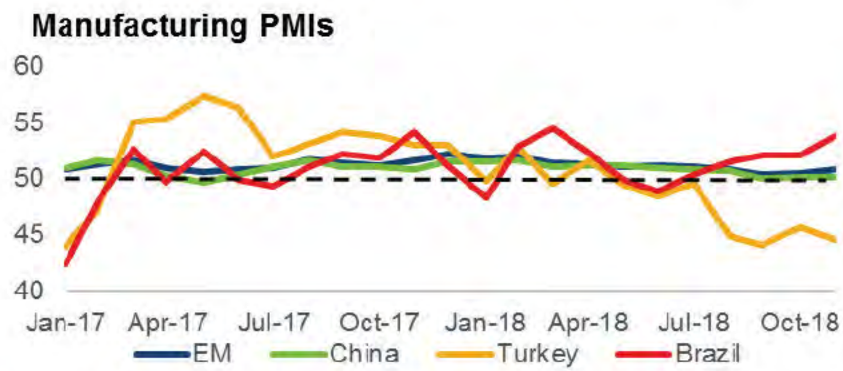
Despite several challenges to emerging economy growth performance, activity remained positive and stable in many countries. These major challenges included the trade war rhetoric between the US and China, and sharply fluctuating oil prices. In terms of the former, Chinese GDP growth slowed to 6.5% in Q3, the weakest in a decade, but we cannot say that new tariffs have had much of an impact as yet.

Oil prices have been on a rising trend for most of 2018 but they dived sharply in Q4. As a result, the economic impact on the prominent resource exporting countries, such as Russia and Brazil, was not apparent as the year came to a close. Persistently lower prices will likely create an additional headwind to these economies.

One positive development is that the currency crises of Turkey and Argentina have been largely contained with limited spillover to other emerging market countries. Furthermore, while market turmoil is not necessarily conducive to emerging market performance, lower US Treasury yields are helpful for the externally indebted countries. We think yields will trend moderately higher but downside risks have clearly increased.

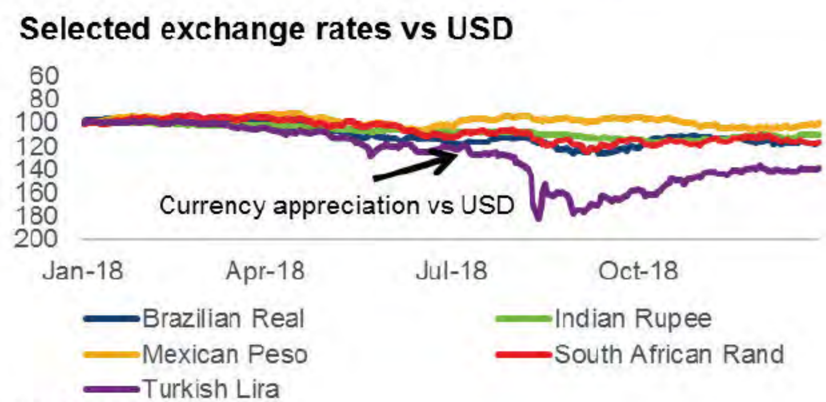
We think near term volatility and stronger headwinds to the key EM economies, not least China, are quite possible. Despite these headwinds, the long-term advantages of Emerging Markets remain in place and are unlikely to go away soon.

Turkey's crisis stands out but resilience elsewhere



Source: Factset

...the Turkish lira stabilized over Q4, however



Source: Factset

Investment Views

US Large Cap Equities

MTV	MAI
=	Neutral

Medium-Term View:

A slower U.S. economy has already largely been discounted by financial markets. Going forward, a more dovish U.S. Federal Reserve alleviates some concern of over-tightening while providing some support to equities as financial conditions should not be as prohibitive as previously anticipated. This may partially offset the effects of a fiscal drag. We see the economy slowing to trend growth rather than anything worse, such as an outright recession. There are risks in the near-term given the trade war threat and ongoing Federal government shutdown, both of which is likely to continue to impair sentiment.

Fundamentals remain largely intact. 2019 earnings growth expectations have moderated with lower margin expansion anticipated due to tight labor markets, rising input costs and interest expense. Earnings revisions, despite being on a downward trend, remain positive.

However, following the recent market sell-off and consequent de-rating, U.S. valuation risk looks less striking with the exception of normalized earnings valuation measures such as CAPE where it remains elevated.

Should markets deteriorate from this point, U.S. markets may outperform due to their lower-beta. On balance, competing forces do not present strong rationale to over/under-weight.

Market Aware Implementation:

We are cautious on the U.S. equity market over the near-term amid the signs of stress we are observing in the weak technicals, widening credit spreads and widespread weakness across stocks.

These signs could be a result of technical correction and are likely driven by geopolitical uncertainty.

The economic backdrop remains supportive and we continuously monitor sentiment indicators for signs of support or stress.

U.S. markets are already pricing in economic slowdown

Source: Factset

Our near-term indicators are more cautious now

Near-Term Indicator	+/-	Near-Term Indicator	+/-
Correlation	-	Market Breadth	-
Volatility Skew	+	PMI	+
Volatility Breadth	-	Financial Conditions	-
Volatility Cross	-	Currency	-
Momentum	-	Credit Spreads	-
Valuation Spread	+	Industrial Production Growth	+

Source: Aon, 1/1/2019

US Small Cap Equities

MTV	MAI
=	Negative

Medium-Term View:

Small caps lived up to their high beta nature in the market declines through the tail end of 2018, and rally in early 2019. We continue with a neutral view on small cap stocks for the time being.

Relative valuations are not going to be a deciding factor versus large caps, where both markets have become cheaper.

Looking ahead small cap stocks may continue to be at risk to slowing growth momentum and the Fed hiking cycle. Historically, fed hiking cycles and slowing momentum have not been extremely favorable to small caps. The higher leverage of small caps also makes them riskier than their larger counterparts.

Going forward, we expect small cap performance will be driven by sensitivities to trade policy, and the performance of the equity market more broadly.

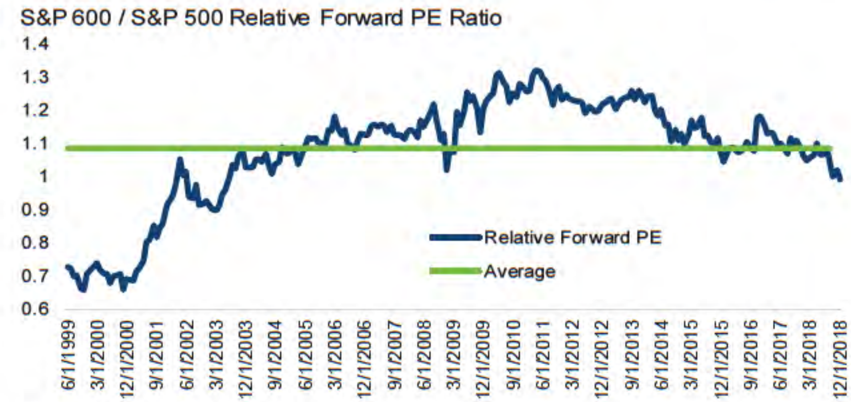
Market Aware Implementation:

Our view on US small cap stocks is relative to the large cap companies. Our fundamental view on the small cap stocks remain unchanged (neutral) from the last quarter.

However, we believe that the vulnerability of small caps to a market correction outweigh the positive traits of small caps at this point in the cycle making us negative in portfolio context.

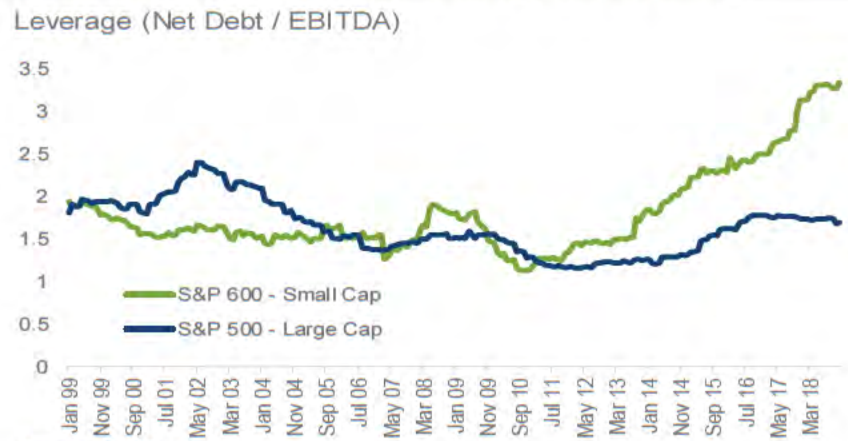
At the same time, it seems that a divergence between large and small cap stocks has reached a critical level and we would not be surprised to see a reversal in relative performance.

Despite heavy falls, valuations remain indecisive



Source: FactSet

Small Caps relatively higher leverage is concerning



Source: FactSet

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Non-US Equities

MTV	MAI
=	Negative

Medium-Term View:

Economic data releases have been disappointing for core European countries – for example, German industrial production fell back significantly, while the France consumer confidence index has started to reflect the recurrent waves of the "gilets jaunes" protest movement. Global trade tensions are having a strong impact on Eurozone economic activity, as highlighted by the declining trade surplus. Furthermore, political risk is still present in Europe with the Brexit deadline approaching and Japanese economic struggles over Q4. Globally, investor and economic sentiments for the Eurozone have deteriorated.

Earnings and margins growth have been slowing over the last 9 months for EAFE companies. However, valuations for EAFE equities still look reasonably attractive, which is an important counterbalance. We maintain a Neutral view over the medium term as we don't believe they will outperform a global benchmark.

Market Aware Implementation:

We remain negative on Non-US developed equity markets as our fundamental and technical indicators display weakness across the spectrum.

These markets also keep showing up on the lower end of our relative strength scores which reinforces our cautious view.

Revisions ratios still in negative territory but stabilizing

Source: Factset, Aon

Near-term indicators have weakened further

Near-Term Indicator	+/-	Near-Term Indicator	+/-
Correlation	-	Market Breadth	-
Volatility Skew	-	Economic conditions	-
Volatility Breadth	-	Financial Conditions	-
Volatility Cross	-	Currency	-
Momentum	-	Credit Spreads	-
Valuation Spread	+		

Source: Aon, 1/1/2019

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EM Equities

MTV	MAI
+	Neutral

Medium-Term View:

Emerging Markets have outperformed since September when world indices peaked. We think that undemanding valuations have been supportive, and should drive outperformance on a 3-year view. A pause in the Fed Funds rate hiking cycle also could be supportive for EM assets.

Shorter-term headwinds remain. We're worried that macroeconomic news out of China continues to get worse before it gets better and that earnings revisions will remain negative.

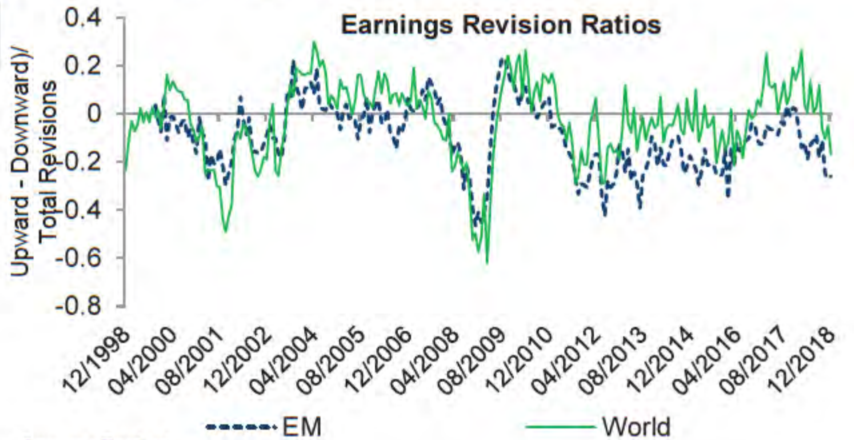
Risks remain though. An aging global cycle poses a risk at a 1-2 year horizon. Emerging markets tend to be higher beta and despite being 'cheaper' could still underperform more expensive but less cyclical markets.

Market Aware Implementation:

Our indicators continued pointing to weakness in both external and internal drivers. Technical, currency, and volatility signals are not supportive over the near-term, but improvements in valuation spreads point to the possibly of short-term reversals.

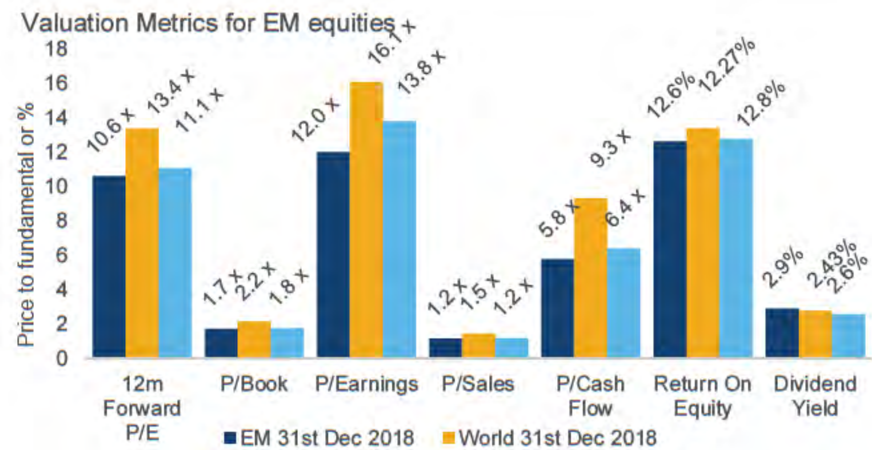
Despite weak fundamental indicators and a low ranking on the relative strength spectrum, we moved EMs to neutral as we think that emerging markets could have been oversold amid uncertainty surrounding the US trade policy developments.

Revisions still negative but DM catching up



Source: Factset

EMs look cheap



Source: Factset

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Factor Investing

Medium Term View:

Value: A neutral view on value versus growth over the medium term. Economic growth is supportive in the US but less so elsewhere. It is also increasingly threatened by external risks. We still expect interest rates to rise over the medium term, which should be helpful, but recent falls in yields highlight the increasingly volatile nature of the environment, hence our reticence to take a strong view.

Low. Vol: Positive view. Valuations are less expensive and low vol. equities are more resistant to volatile markets, which we expect to be a more persistent feature. Whilst we think that a sustained downturn in markets and yields may not be imminent, our expected elevated volatility makes it the right time to move to a moderate overweight.

Quality: Positive view on quality stocks. We are aware that there is added risk from high technology exposure but quality stocks should be more resilient in a market downturn, especially now that tech stocks have fallen back recently.

Market Aware Implementation:

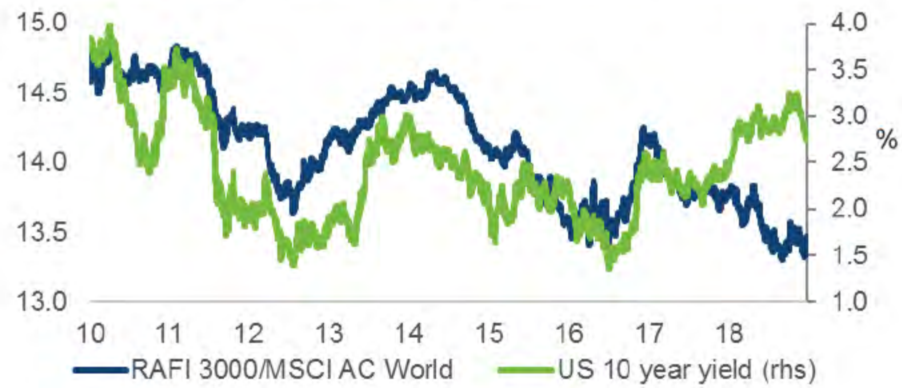
Our short-term factor positioning is driven by diverging views on US and Non-US equities.

Even though we still have cautious views on both regions, we see more clarity in drivers underlying the recent volatility in the US markets and therefor are more comfortable being a bit opportunistic. We are overweight Value as we expect the style to outperform given recent sell-off and extreme divergence between Value and Growth.

We still favor Quality given late cycle dynamics.

Our view on the Non-US developed factor positioning is dictated by the risk-off market environment as well as number of political drivers. We are favoring more defensive exposure and are underweight pro-cyclical styles

Yields fall back in Q4 and RAFI continues to underperform



Source: Factset

Factor Views

Medium Term View			
Low Vol	+	**Growth**	=
Quality	+	**Value**	=

	US (LC)	EAFE
Value	positive	positive
Growth	neutral	negative
Quality	positive	positive
Defensive	negative	positive

Source: Aon, 1/1/2019

High Yield Bonds

MTV	MAI
-	Neutral

Medium-Term View:

High yield spreads moved higher through the quarter – moving from 322bps at the start of the quarter to 533bps by year end and falling back to 455bps at 1/11/19.

Spreads moved higher because of the turn in risk aversion and briefly were close to our long-term fair values. Despite the recent improvement in valuations, we are holding on to our negative view on high yield. High volatility is creating a tough environment to capture improved valuations, and more importantly, that many of the excesses in the broad credit environment remain to be worked out of the system and spreads at current levels do not offer compensation for these risks, where the benign credit environment is likely to turn.

The volatility is likely to stay over the medium-term as we progress through the current environment, and the best returns are likely behind us on a longer-term view.

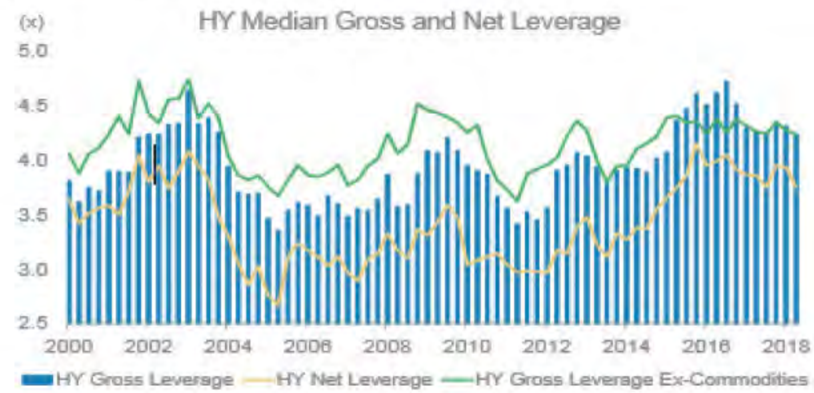
Market Aware Implementation:

In November we downgraded our MAI view from neutral to negative, and now upgraded back to neutral in January. Our negative outlook had been driven by our credit regime model which suggests caution, a view that we are late in the credit cycle, and the belief earnings would decelerate meaningfully in 2019. However, spreads moved materially wider in December and our outlook on defaults is benign given strong fundamentals, limited upcoming maturities, and a still low probability of recession. While 2019 can offer attractive returns, we recognize the risk/reward trade-off is skewed to the downside longer-term hence our neutral view.

High Yield spreads moved higher but are not cheap

Source: FactSet

Leverage is elevated but not extreme



Source: Morgan Stanley Research, Bloomberg, Capital IQ

US Bank Loans

MTV	MAI
=	Neutral

Medium-Term View:

We downgraded bank loans to neutral in Q3 on the back of full valuations and concern over an over-heated market. These two factors caused the loan market to tumble in the last two months of the year amidst concern over slowing US growth, increasing market expectation that the rate hiking cycle may be drawing to an end and volatile risky asset markets. Q4 losses resulted in a 1.1% overall 2018 return (Credit Suisse Leveraged Loan Index). Losses were exacerbated by retail investor sales and low end-year liquidity, rather than a more fundamental concern over the default outlook. Loan prices and returns have since recovered strongly in January.

Loans outperformed high yield bonds in Q4 and 2018 overall. We are maintaining our preference for loans but continue to suggest that investors do not make new allocations, given the current stage in the credit cycle and loans' reduced credit quality. In line with this view, we continue to also prefer AAA CLOs to other credit sectors.

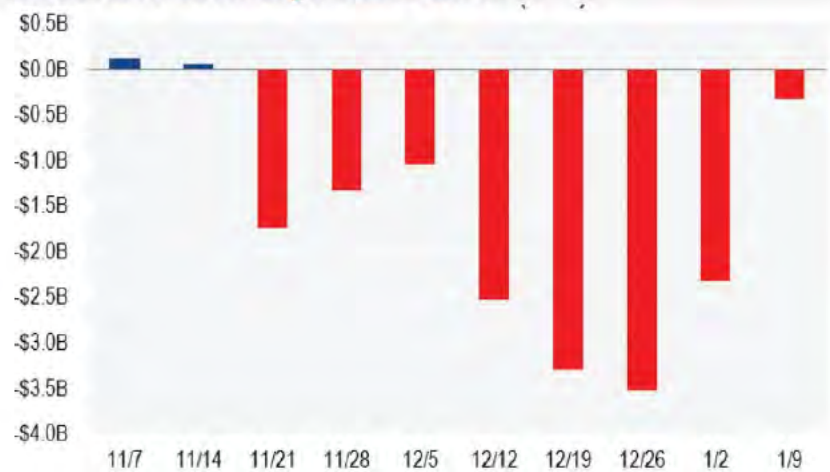
Market Aware Implementation:

A decline in fundamentals, from a surge in loan-only issuance and covenant-lite deals led us to downgrade loans in August 2018 from positive to neutral. The issuer friendly terms will ultimately lead to lower recovery rates than seen historically when the cycle eventually turns. However, with a very benign maturity wall and solid earnings, defaults are expected to remain low and valuations are reasonable and we are not yet at the "end of the cycle". The sell-off in Q4 was largely technical in nature given large retail outflows and limited CLO issuance. However, the weak fundamentals and late cycle dynamics limit our enthusiasm and hence the neutral rating.

US loans performed badly in November and December

Source: Credit Suisse

There have been large retail outflows



Source: Lipper

Case ID: 221102792

USD EMD

MTV	MAI
-	Positive

Medium-Term View:

Pressure on EMD credit spreads continued up until the end of 2018 as global growth concerns resulted in a broad credit sector sell-off. However, Emerging debt held up relatively well compared to other credit sectors in spite of disappointing Chinese economic data and commodity weakness. Falling US treasury yields from November also supported USD EMD returns, although USD EMD still underperformed local EM debt.

Our sanguine view on Emerging markets and view that the US Federal Reserve will pause hiking interest rates this year are supportive of USD EMD returns. We are less negative on USD EMD than back in January when we first turned negative in advance of the move up in credit spreads. However, we remain cautious on the global economic and credit environment so we are maintaining a small underweight allocation.

Market Aware Implementation:

The sell-off in USD EMD in 2018 appears overdone, creating attractive valuations for the asset class. EM yields are still attractive relative to the developed world. EMD USD is heavily driven by US rates, but spreads are elevated relative to both history and fundamentals. A more dovish Fed and strong EM currencies should be supportive in 2019, while the potential for trade war escalation limits our enthusiasm. (Re)convergence of global growth will be critical for further upside (we are expecting the EM growth differential to widen over DM over the next 12 months).

EMD credit spreads widened in 2018

EMD impact of rising US treasury yields expected to fade

Local EMD

MTV	MAI
=	Positive

Medium-Term View:

It is tempting to move more positive in local EMD as we take the view that the threat from rising US interest rates and a stronger US dollar has retreated.

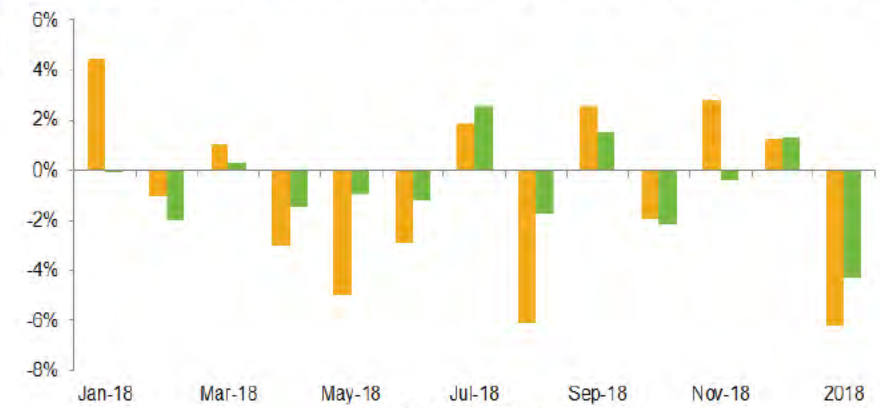
Local denominated EMD fell by 6.2% over 2018, underperforming USD EMD as a result of weak EM currencies. However, local EMD returned 2.1% in Q4, outperforming USD EMD, despite developed equity market turmoil, as both local EM bond and currency markets were stable.

Nevertheless, there remain plenty of global risks in 2019, such as trade tensions and slowing global growth, which could hurt local EMD and prevents us from taking an overweight allocation. Our positive view on EM fundamentals is instead reflected in our continued preference for local EMD over USD EMD as we think that EM currencies are undervalued.

Market Aware Implementation:

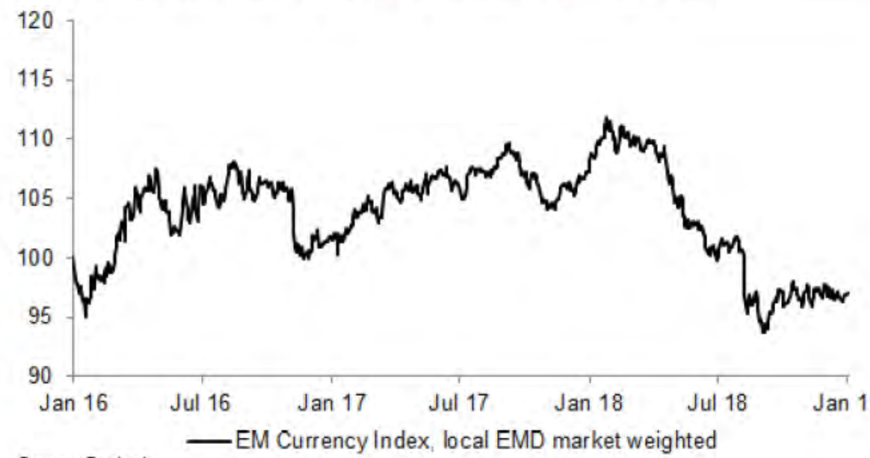
The sell-off in local EMD in 2018 appears overdone, creating attractive valuations for the asset class. EM yields remain attractive relative to the developed world. A more dovish Fed and strong EM currencies should be supportive in 2019, while the potential for trade war escalation limits our enthusiasm. (Re)convergence of global growth will be critical for further upside (we are expecting the EM growth differential to widen over DM over the next 12 months). Our positive view on local EMD is primarily driven by the view of stronger EM currencies in 2019.

Local EMD outperformed USD EMD in Q4..but not over 2018



Source:JPMorgan

Major EM currencies appear to have stabilized



Source: Factset

Commodities

MTV	MAI
=	N/A

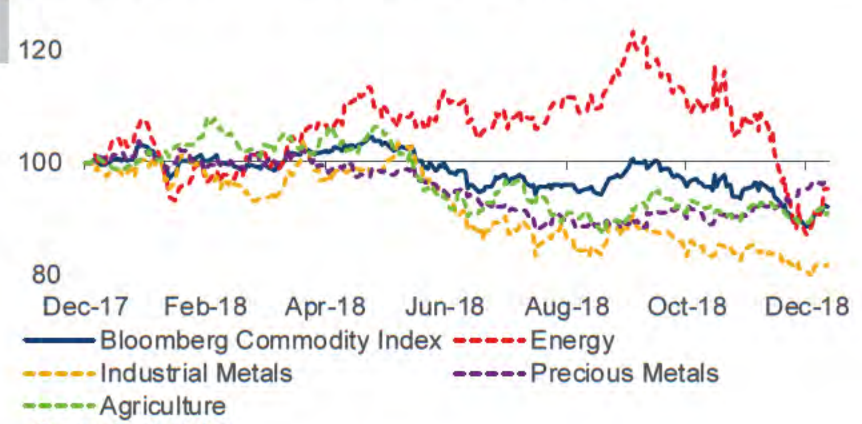
Medium-Term View:

During the first three quarters of the year commodities were the best performing asset class, but Q4 has seen a particularly sharp collapse in prices. The sell-off started with oil prices. Since their peak in October, the WTI and Brent indexes have fallen by 32% and 30% respectively. These falls have been driven by a combination of factors: (1) the U.S. unexpectedly granted eight Iranian oil importers waivers from the sanctions, at least for another six months (2) U.S. inventories rose faster than expected and faster than the range of the last 5-years on the back of large U.S. production and (3) the oil price's slide has also coincided with a sharp selloff in equity markets, which in turn has coincided with mounting fears over the U.S.-China trade war, rising interest rates, the strong dollar and fears that the expansion is over and we're close to recession.

While some of the factors above indicate that the current environment is more fragile than a few months ago, we believe they do not justify current prices. Globally, fundamentals are still relatively strong, with decent growth expectations for the biggest oil consumers (US, Europe, China and India). Furthermore, in December, OPEC members and Russia agreed to cut their production by 1.2 million barrels per day in order to balance the market.

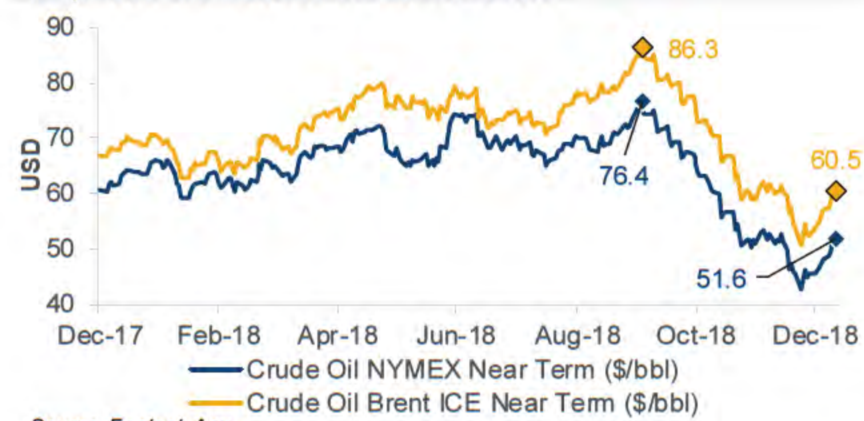
Even if we think that current oil prices, and by extension global commodities, are relatively attractive and could offer some short term outperformance, we maintain a neutral view over the medium term.

Energy prices fell sharply during Q4 2018



Source: Factset, Aon

Oil prices are back to attractive levels



Source: Factset, Aon

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Hedge Funds

Sector	MTV	MAI
Non-directional	+	=
Directional	-	=

Medium-Term View:

Volatility and bouts of risk aversion are very likely to punctuate markets over the coming couple of years and selected hedge fund strategies are well placed to profit. Performance has picked up on a relative basis during the sharp equity market falls of Q4, which attests to our longstanding view. We see merit in certain non-directional strategies, such as Global Macro / Managed Futures (CTAs) as effective risk mitigation tools but we cannot expect strong participation should equity markets rally. Additionally, investors should take care to choose managers whose philosophy and targets align with their aims.

Market Aware Implementation:

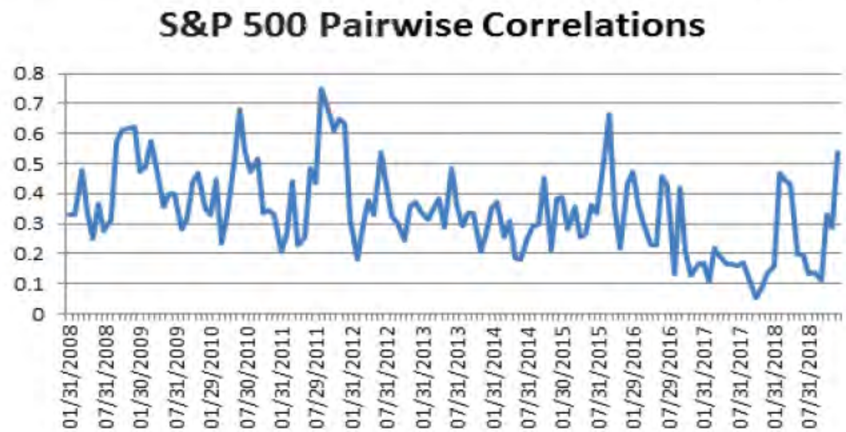
Stock correlations increased in late 2018, reducing the near-term appeal of equity market-neutral strategies. We continue to like other low-directional strategies such as global macro. Discretionary managers find opportunities in directional rate trades or relative value rate ideas between regions or across the US curve. CTAs tend to do well in high-volatility environments, and while risk declined post year-end, it is still elevated, and we continue to like CTAs for their diversifying impact.

We remain less constructive on equity long-short and event-driven strategies. In high-yield, we saw yield approach 8% in December, but it has come back in since. Despite low default expectations, we think it is early to increase exposure to event-driven credit, as risk to yields is to the upside.

Market volatility spikes sharply higher in Q4

Source: Factset

Pairwise correlations have also risen sharply recently



Source: Bloomberg, Aon

US Corporate Bonds

MTV	MAI
-	Negative

Medium-Term View:

Both long-credit and intermediate-credit spreads moved higher over the quarter, driven by the risk aversion affecting most markets late in 2018. Intermediate spreads are close to fair value, and long spreads are above fair value.

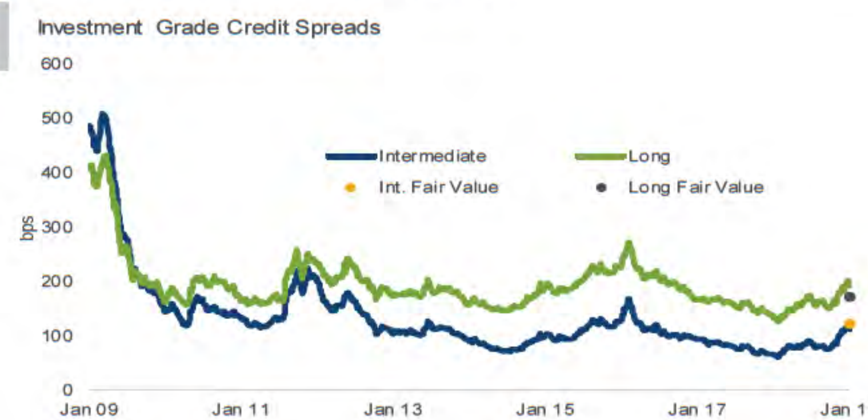
Despite improvements in valuations, we are not yet ready to move to a more positive view on credit. Despite a balanced near-term outlook, aggressive re-leveraging trends, elevated issuance, along with M&A activity that tends to correspond to late credit cycle behavior are causes for concern. Excesses remain in the corporate credit system, and current valuations do not offer compensation for them.

Spreads will be susceptible to bouts of volatility as we have seen throughout 2018. We continue to prefer long credit spreads to intermediate credit spreads.

Market Aware Implementation:

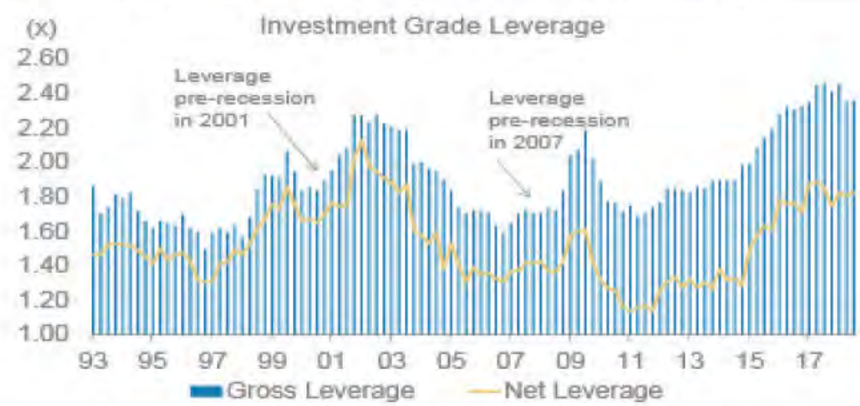
We downgraded our view on credit spreads in November 2018. While spreads appear attractive relative to history, leverage remains quite high even after stellar earnings in 2018. Late cycle dynamics, where both volatility and spreads rise from low levels is our biggest cause of concern, as evidence suggests we may have entered Phase 3 of the Credit Clock.

Spread valuations have improved



Source: FactSet

Leverage has remained high and this is concerning



Source: Morgan Stanley Research, Bloomberg

Empower Results®

US Government Bonds

Sector	MTV	MAI
Treasuries	-	Negative
TIPS	=	Negative

Medium-Term View:

Q4 2018 was a quarter of two halves for US Treasury yields. Yields rose through the first half hitting multi-year highs, only to fall dramatically in the second half and give a large amount of gains through 2018. The fall in yields was caused by a turn in risk appetite in investment markets and the fear that the Fed had overdone tightening at a time when other stresses, ignored for much of the year, came to the surface. The market is now pricing in zero rate hikes for 2019, compared to 2 hikes at the beginning of November 2018. We believe that the market has become a little too pessimistic on the path of interest rates, although the Fed is likely to be on pause for some time before resuming hiking rates. Breakeven inflation has fallen, meaning that TIPS are now better priced relatively – real rates are now neutral in our view so have upgraded our view on the asset class.

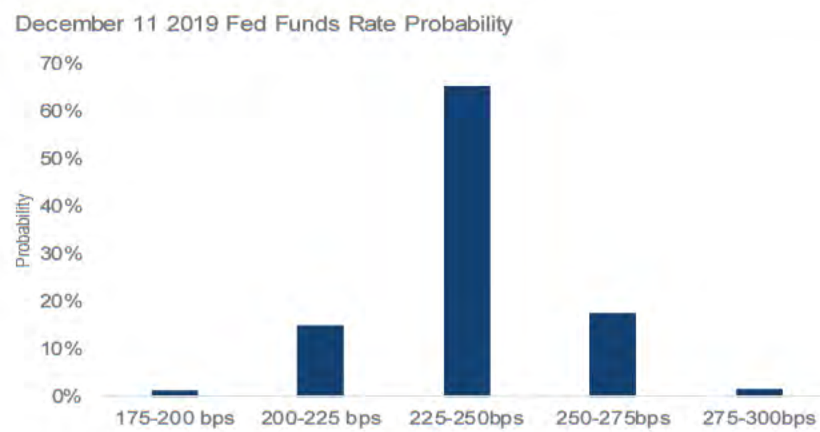
Market Aware Implementation:

We upgraded our view on Treasuries from Negative to Neutral in early November (although still modestly negative on long Treasuries). The front-end of the curve now offers decent risk-adjusted return potential. Negative technicals resulting from expansionary fiscal policy being conducted late in the cycle is a cause for caution and inflationary forces are likely to increase modestly from here—as the labor market continues to show exceptional strength, and the oil market stabilizes. High quality government debt should continue to perform well during "risk-off" periods.

Q4 2018 – A quarter of two halves

Source: FactSet

Market pricing is for zero hikes in 2019



Source: CME, 1/13/2019

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US Dollar

MTV	MAI
-	N/A

Medium-Term View:

The 11% US dollar rebound in 2018 recovered two thirds of its previous year's depreciation against the euro. Against a broader basket of currencies (DXY), the dollar gained 10%. USD/EUR is currently back to key 2015/16 levels around $1.15. The dollar (vs € and DXY) remains in its 10-year uptrend but may be at a key juncture after this length of time, in our view.

The US Fed's lowering in December of its 2019 rate projections and its long-term neutral rate from 3 to 2.75% as well as a weaker US economy in Q4 2018 call into question whether the dollar can continue to appreciate. Much higher US interest rates have failed to provide much support for the dollar and our view is that the US rate premium over the Eurozone may start to shrink.

That is not to say that we expect Eurozone policy rate hikes for a while as the Eurozone economy is weak. Furthermore, political concerns in the US are matched with Eurozone existential concerns, highlighted by Italy's budget and Brexit.

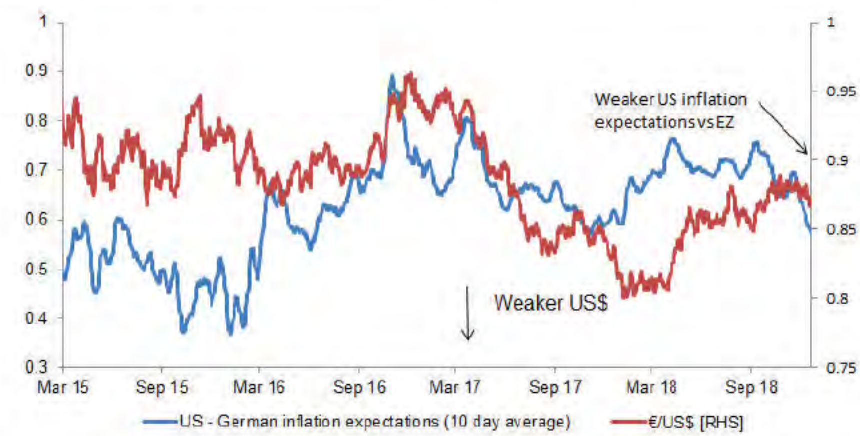
However, taking into consideration that the US suffers from twin deficits and a somewhat expensive currency valuation (based on purchasing power parity vs € and yen), we have decided to move from neutral to a weak negative dollar stance against major currencies.

The dollar appreciated against the yen for most of 2018 before the yen staged a recovery in Q4 and we expect that the yen could continue to have a positive bias, supported by the Japanese current account and some dollar strength. EM currencies are cheap and we also think they are likely to appreciate, after standing up well in recent market volatility.

The US dollar vs euro longer-term trend looks precarious

Source: Bloomberg

US inflation expectations have fallen relative to Eurozone



Source: Bloomberg

Aon Empower Results®

Case ID: 221102792

Appendix:
Investment View Framework

Investment View

Fundamental

Analyze the core economic and underlying drivers of an asset class. For example:

- Economic Growth
- Earnings Growth
- Default Risk

Valuation

Establish if the asset class is cheap or expensive given our fundamental outlook. For Example:

- P/E Ratio
- Credit Spreads
- Yield Levels

Market Awareness

Establish if near-term drivers for the asset class are positive or negative. For Example:

- Technical Indicators
- Sentiment Surveys
- Futures/Options Positioning

Appendix:
Medium-Term Views (MTV) vs. Market Aware Implementation (MAI)

	Medium-Term Views	Market Aware Implementation
Investment Time Horizon	1 to 3 years	Less than 1 year
Coverage	Most Assets Classes	Liquid Asset Classes
Governance Structure	Typical Client	Fast Moving / Enhanced Governance
Update Schedule	Monthly	Weekly

- Market Aware Implementation is not applicable in all client circumstances.
- Market Aware Implementation is not a substitute for Medium-Term Views. They are complementary.

Appendix:
Using Medium-Term and Market Aware Implementation Together

The table below is an example of how MTVs and Market Aware Implementation can work together.

Stand alone MTV action / MTV +STV action		Medium-Term View: Negative	Medium-Term View: Neutral	Medium-Term View: Positive
Market Aware Implementation	Positive	Underweight / Delay Implementation or Reduce Underweight	Neutral / Move Overweight	Overweight / Extend Overweight
	Neutral	Underweight	Neutral	Overweight
	Negative	Underweight / Extend Underweight	Neutral / Move Underweight	Overweight / Delay Implementation or Reduce Overweight

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Appendix:
Index Definitions

MSCI All Country World Index - A capitalization-weighted index of stocks representing approximately 46 developed and emerging countries, including the U.S. and Canadian markets.

MSCI Emerging Markets Index - A capitalization-weighted index of stocks representing 22 emerging country markets.

MSCI US - A market capitalization-weighted index that is designed to measure the equity market performance of stocks in the USA.

JPM EMBI Global Diversified – Comprised of dollar-denominated Brady bonds, traded loans and Eurobonds issued by emerging market sovereign and quasi-sovereign entities. The Diversified version limits the weights of the index countries by only including a specified portion of those countries' eligible current face amounts of debt outstanding, providing for a more even distribution of weights within the countries in the index.

JPM GBI-EM Global Diversified - Designed to provide a comprehensive measure of local currency denominated, fixed-rate, government debt issued in emerging markets.

BofA Merrill Lynch High Yield - A market capitalization-weighted index that tracks the performance of U.S. dollar-denominated, below investment grade corporate debt publicly issued in the U.S. domestic market.

Trade weighted US Dollar (Federal Reserve) - A weighted average of the foreign exchange value of the U.S. dollar against a broad index currencies that circulate widely outside the country of issue.

VIX Index – Tracks the market's expectation of 30-day volatility. It is constructed using the implied volatilities of a wide range of S&P 500 index options.

MSCI World Index - A free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets, representing 24 developed market country indices.

Russell 1000 Index - An Index that measures the performance of the largest 1,000 stocks contained in the Russell 3000 Index.

Russell 2000 Index - An Index that measures the performance of the smallest 2,000 stocks contained in the Russell 3000 Index.

MSCI EAFE Index - A capitalization-weighted index of stocks representing 22 developed countries in Europe, Australia, Asia, and the Far East.

HFRI Fund Weighted Composite Index – The HFRI Fund Weighted Composite Index is a global, equal-weighted index of over 2,000 single-manager funds that report to HFR Database. Constituent funds report monthly net of all fees performance in US Dollar and have a minimum of $50 Million under management or a twelve (12) month track record of active performance. The HFRI Fund Weighted Composite Index does not include Funds of Hedge Funds.

S&P/LTSA Leveraged Loans Index – The S&P/LSTA Leveraged Loan Index is the first index to track the investable senior loan market. This rules-based index consists of US loan facilities in the syndicated leveraged loan universe.

Bloomberg Barclays Corporate Bond Index - An unmanaged index considered representative of fixed-income obligations issued by U.S. corporates.

Bloomberg Barclays Credit Index - An unmanaged index considered representative of fixed-income obligations issued by U.S. corporate, specified foreign debentures, and secured notes.

ML MOVE Index - The Merrill lynch Option Volatility Estimate (MOVE) Index is a yield curve weighted index of the normalized implied volatility on 1-month Treasury options which are weighted on the 2, 5, 10, and 30 year contracts

ISM Purchasing Managers Index - The PMI® is a composite index based on the diffusion indexes of five of the indexes with equal weights: New Orders (seasonally adjusted), Production (seasonally adjusted), Employment (seasonally adjusted), Supplier Deliveries (seasonally adjusted), and Inventories. Diffusion indexes have the properties of leading indicators and are convenient summary measures showing the prevailing direction of change and the scope of change.

Appendix:
Index Definitions

HFRI Macro (Total) Index – Macro: Investment Managers which trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets. Managers employ a variety of techniques, both discretionary and systematic analysis, combinations of top down and bottom up theses, quantitative and fundamental approaches and long and short term holding periods. Although some strategies employ RV techniques, Macro strategies are distinct from RV strategies in that the primary investment thesis is predicated on predicted or future movements in the underlying instruments, rather than realization of a valuation discrepancy between securities. In a similar way, while both Macro and equity hedge managers may hold equity securities, the overriding investment thesis is predicated on the impact movements in underlying macroeconomic variables may have on security prices, as opposes to EH, in which the fundamental characteristics on the company are the most significant are integral to investment thesis.

HFRI Macro: Systematic Diversified Index – Systematic: Diversified strategies have investment processes typically as function of mathematical, algorithmic and technical models, with little or no influence of individuals over the portfolio positioning. Strategies which employ an investment process designed to identify opportunities in markets exhibiting trending or momentum characteristics across individual instruments or asset classes. Strategies typically employ quantitative process which focus on statistically robust or technical patterns in the return series of the asset, and typically focus on highly liquid instruments and maintain shorter holding periods than either discretionary or mean reverting strategies. Although some strategies seek to employ counter trend models, strategies benefit most from an environment characterized by persistent, discernible trending behavior. Systematic: Diversified strategies typically would expect to have no greater than 35% of portfolio in either dedicated currency or commodity exposures over a given market cycle.

Citi Economic Surprise Indexes - The Citigroup Economic Surprise Indices are objective and quantitative measures of economic news. They are defined as weighted historical standard deviations of data surprises(actual releases vs Bloomberg survey median).

FTSE RAFI 3000 - The FTSE RAFI™ All World 3000 Index is a measure of the largest 3,000 companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value), across both developed and emerging markets.

MSCI Value - The MSCI World Value Index captures large and mid cap securities exhibiting overall value style characteristics across 23 Developed Markets (DM) countries*. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield

MSCI Growth - The MSCI World Growth Index captures large and mid cap securities exhibiting overall growth style characteristics across 23 Developed Markets (DM) countries*. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.

MSCI Minimum Volatility - The MSCI World Minimum Volatility (USD) Index aims to reflect the performance characteristics of a minimum variance strategy applied to the MSCI large and mid cap equity universe across 23 Developed Markets countries*. The index is calculated by optimizing the MSCI World Index, its parent index, for the lowest absolute risk (within a given set of constraints). Historically, the index has shown lower beta and volatility characteristics relative to the MSCI World Index.

MSCI Quality - The MSCI World Quality Index is based on MSCI World, its parent index, which includes large and mid cap stocks across 23 Developed Market (DM) countries*. The index aims to capture the performance of quality growth stocks by identifying stocks with high quality scores based on three main fundamental variables: high return on equity (ROE), stable year-over-year earnings growth and low financial leverage. The MSCI Quality Indexes complement existing MSCI Factor Indexes and can provide an effective diversification role in a portfolio of factor strategies.

S&P 500 - The Standard & Poor's **500**, often abbreviated as the **S&P 500**, or just the **S&P**, is an American stock market index based on the market capitalizations of **500** large companies having common stock listed on the NYSE or NASDAQ. The **S&P 500**index components and their weightings are determined by **S&P** Dow Jones Indices.

S&P 500 Buyback Index - The S&P 500® Buyback Index is designed to measure the performance of the top 100 stocks with the highest buyback ratios in the S&P 500.

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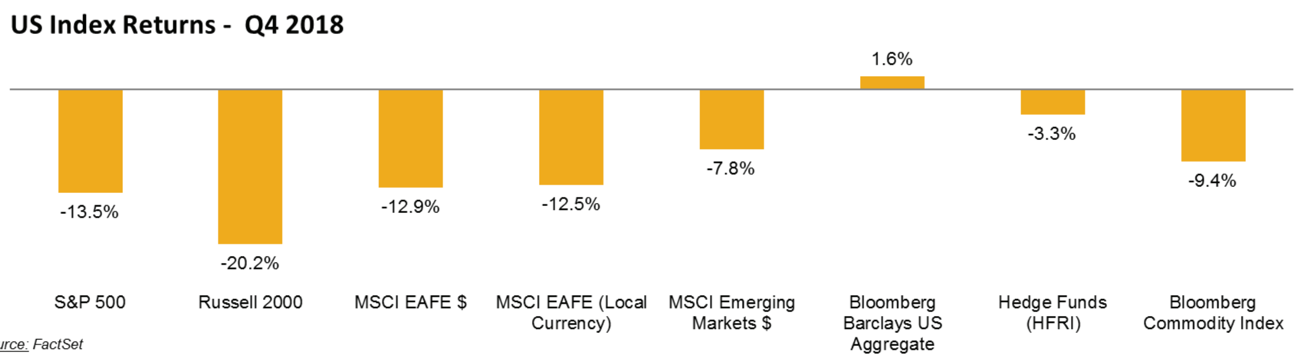
F. Quarterly Investment Outlook – January 2019

Quarterly Investment Outlook

January 2019

January 25, 2019



Source: *FactSet*

Indices cannot be invested in directly. Unmanaged index returns assume reinvestment of any and all distributions and do not reflect fees or expenses. **Past performance is no guarantee of future results**

Summary

- ‘Late cycle’ worries will keep coming back. Market volatility is correctly reading the several threats to the current economic expansion.
- The Federal Reserve is caught between headwinds for economic growth and late cycle pressures of limited capacity, pulling opposite ways. This makes a policy mistake more likely.
- Though US bond yields overshot on the way down towards the end of last year, our view is that they have very likely already peaked for the current economic cycle.
- Credit still faces daunting headwinds. Spreads have moved higher, but the rises have been modest by historic standards.
- Better high yield prices are not a buying opportunity given the effects of high leverage, weaker covenants and testing economic conditions.
- We now see the US dollar turning down sooner rather than later. Emerging market currencies are a probable beneficiary.
- Valuations are better, but we are inclined to continue seeing equity market rebounds as mainly an opportunity to reduce risk. ‘Buying the dip’ will no longer work.
- Low yielding government bonds could still be necessary protection in these volatile times. Private markets offer selective shelter too.
- The tendency for volatility expectations to run ahead of realized market volatility is potentially creating some opportunities.

A dreadful quarter for equities

Equity markets were beset by worries near the year end. Perceptions of economic conditions worsened drastically, much more so than underlying news-flow would suggest. As the Eurozone and Chinese economies softened, markets worried that a similar fate awaited the US. There were also concerns about more US interest rate rises going into a slowdown. Virtually all equity markets fell very sharply, and for once, the US was not spared. Equity market falls also echoed in credit where spreads over government bonds widened and commodity prices fell. Only government bonds held their own.

‘Late cycle’ worries

We have discussed the advanced age of the US business expansion before; in a few months, it will become the longest since records began. This may be one reason why ‘late cycle’ worries abound in markets now. Expansions used to end because of higher interest rates or other policy tightening in response to higher inflation. However, the last two recessions (in 2001 and 2007/8) were different, as worsening financial market conditions ended the expansions. What is it to be this time? The current business cycle does have some unique features. Policy is tightening, but different to previous cycles, we also have a major liquidity reversal going on as central banks rein back the massive excess money creation, particularly in US dollars ($3 trillion extra liquidity) seen after the global financial crisis. Given this is quite unprecedented, there is no route map for how this should work, but there is little doubt that it has already been a major stress for markets in 2018. Economic and geopolitical stresses are also present – more protectionism (also not seen for many decades), difficulties in China, and European tensions from Italian politics/Brexit and the broader drift away from the political center globally. Collectively, if not on their own, these can indeed halt the expansion.

So far, the economic slowdown is not suggesting an outright decline in output but rather a slowdown of the kind seen in early 2016 (see chart). When might a bigger and broader economic rollover come? This is hard to call given all the imponderables above. Even if we avoid recession in 2019, we cannot be confident that the market will not fall on fears that a recession will happen sooner or later. Overall, we think that late cycle anxieties will stay in financial markets. Key uncertainties will come back, maintaining high volatility and a defensive bias to markets.

A Fed 'pause' or a peak?

Seeing domestic economic conditions soften after the fiscal stimulus effects had passed through and considerable market volatility, the US Federal Reserve made plain late last year that it was putting interest rates on hold. This has given markets some support, but the big question is whether this is a temporary halt or whether interest rates have peaked. The answer will of course depend on how much softening is seen in US data through early 2019. The Federal Reserve faces a tricky dilemma. The complex effects of financial market volatility, earlier interest rate rises, and higher tariffs will be working to slow the economy. Yet, it is also clear that with such a low unemployment rate, labor market pressures are building, going by the evidence of a wage tracker index that picks up the higher wage growth that is being earned by those changing jobs (see chart). It is possible that the US economy slows at a time when inflation is still firm or even rising, putting pressure on the Fed to resume raising rates.

This is the dilemma that markets are concerned about – that faced with these two opposing trends, the Federal Reserve makes a mistake, either 'overtightening' and increasing recession risk for the economy, or not raising interest rates sufficiently to keep inflation to target. A slowdown with rising inflation and the Fed under pressure will not be well received in the markets.

US bonds – yields may have already peaked for this cycle

It was no surprise that a period of sharp market sell-offs should see US treasury bonds doing well as in Q4. If the economy's path slows only to about what we should expect as trend or underlying growth rates – i.e. around 2%, the sharp fall in yields at year end should continue to reverse in the way we have seen through January which may well have been an overshoot. We do expect some more by way of yield recovery near-term, but we do not see it likely that yields will recoup the last peak seen in early November of last year when yields were about 50 bps higher than at present. In other words, yields may have already peaked for this cycle.

Why would this be? The answer is that looking ahead, even if we are talking 2020 and not this year, the risks to the economy are still tilted to the downside and this is bound to be reflected in bond yields. The yield curve has flattened noticeably in a way that has almost always signaled much slower growth to come. Though inversion, with long duration yields falling behind short-dated has yet to happen, it is still sending an unambiguous signal of much weaker growth to come. A move to outright inversion would strongly signal a recession to come (on average a year ahead), but the key message is that regardless of the technicalities of inversion, yields now have limited room to rise, and in a year or two's time could be rather lower than at present.

The problem with credit

Credit market valuations have improved. The question is whether this should now prompt a change of view. As markets price in risks that we have discussed earlier, is this not sufficient to improve the credit return outlook? The answer is not quite. For one thing, compared with previous sell-offs in credit markets, the back-up in spreads in the US investment grade market is very modest by historic standards, more of a hiccup to the strong trend of falling spreads since 2011 rather than a reversal (see chart below).

More of an issue is that rising corporate debt levels become more of a concern given the onset of weaker economic conditions. We need to remember that leverage ratios for US companies (excluding banks) are at an all-time high and suggest that vulnerabilities are very much with us. Overall, pricing improvement notwithstanding, credit headwinds will likely continue. Better buying opportunities should come later.

Leverage and covenant slippage hurt high yield more

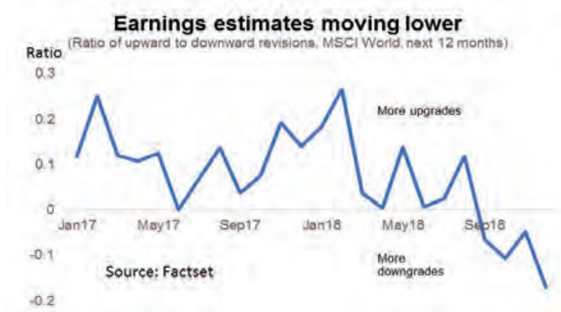
With US corporate leverage so high and the slippage of covenant standards over many years, concerns about sub-investment grade bonds and loans could easily intensify in this economic environment. Yes, with much of the rise in interest rates now behind us, pressures on issuers may be bearable, but it will not be easy looking ahead. Recently lower prices show the market trying to take less attractive conditions into account. If the broader environment improved, these lower prices would make a different story, but this is unlikely. Also, though the effect of looser covenants is unknown it probably carries risks for bond holders. Overall, even with better prices, we do not see current conditions to be a buying opportunity. Loans are in a better place than high yield bonds, but both are at best a 'hold' today.

US dollar weaker sooner – emerging currencies to benefit?

The US economic slowdown that began late last year and the effects of the government shutdown appear to have led the US Federal Reserve to halt interest rate rises for now. This suggests that earlier US dollar appreciation is now more likely to reverse. Previously, we had expected the US dollar to weaken on a two to three-year horizon rather than near-term. It is now possible that creeping dollar weakness could begin soon. This could be helpful for currencies that had retreated earlier on dollar strength. Emerging market currencies should benefit, helping local currency emerging market debt. The currency component of the standard JP Morgan local emerging market debt index is still about 13% below its five-year average. Furthermore, creeping dollar weakness should support returns in non-US markets (assuming unhedged). It even looks possible that dollar softness will give the Brexit-beleaguered pound some help.

Equity valuations better but we remain wary

Much like credit, equity market valuations have improved. Even the relatively expensive US market's twelve-month forward Price to Earnings ratio is now down to a more reasonable 15x against highs of close to 19x early last year. Longer-term and 'deeper' valuation measures like the Cyclically Adjusted Price-Earnings Ratio (CAPE) have also corrected, though at 28x this is still very elevated. An improvement is also indicated by a rise in our long-term equity return assumptions. Yet, the medium-term outlook for equities is still very cloudy. Late cycle economic conditions carry all kinds of risks for equity markets. Higher bond/cash yields might weaken demand from risk-averse investors. Also, US corporate profit margins are liable to be squeezed. An indication of pressure is already evident in sharp downward revisions to earnings estimates recently (see chart).



How to deal with portfolio risk – more conservatism and looking differently at bonds

What to do with equities in these challenging conditions is not a 'one size fits all' solution. For already well buffered and diversified portfolios, there is no strong rationale for reducing equity allocations substantially, if only because there is no competing asset class that is much more attractive to hold instead. Other portfolios more reliant on equity risk to drive return have more to do and should use market rebounds to lower risk. Overall, we see the lower rewards for risk typical of such market environments indicating a need for more portfolio conservatism. This includes lower risk strategies in equities and credit. It also implies seeing government bonds differently. Yes, yields are at quite low levels especially outside the US. Yet, the December 2018-type event of bonds being the only 'performing' asset everywhere could all too easily recur.

Diversifiers and a volatility opportunity

Bonds aside, there remains scope to diversify some equity risk away. Private markets can do this for those with spare liquidity available, though selectivity is essential given overcrowding in some areas. Diversification into less directional absolute return strategies is another possibility. Finally, this higher volatility environment can make funds that use option-writing strategies more attractive. Returns come from the tendency for the market's expectation of volatility to run ahead of realized volatility. Our investment manager research team have fund ideas in all these areas.

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Appendix: Index Definitions

S&P 500 Index – The market-cap-weighted index includes 500 leading companies and captures approximately 80% of available market capitalization.

Russell 2000 Index - The Russell 2000 Index measures the performance of the small-cap segment of the U.S. equity universe. The Russell 2000 Index is a subset of the Russell 3000® Index representing approximately 10% of the total market capitalization of that index. It includes approximately 2000 of the smallest securities based on a combination of their market cap and current index membership. The Russell 2000 is constructed to provide a comprehensive and unbiased small-cap barometer and is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set.

MSCI EAFE Index $ - The MSCI EAFE Index is designed to measure the performance of the large and mid-cap segments of developed European Australasian and Far East Markets. The index covers approximately 85% of the free float-adjusted market capitalization and is measured in USD dollar terms.

MSCI EAFE Index (Hedged) - The MSCI EAFE hedged Index is designed to measure the performance of the large and mid-cap segments of developed European Australasian and Far East Markets. The index covers approximately 85% of the free float-adjusted market capitalization and is measured in hedged dollar terms.

MSCI Emerging Markets Index – The MSCI Emerging Markets Index captures large and mid-cap representation across Emerging Markets (EM) countries. The index covers approximately 85% of the free float-adjusted market capitalization in each country and is measured in USD terms.

Bloomberg Barclays Capital Aggregate Index - The Barclays U.S. Aggregate Index represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities.

HFRI: The Hedge Fund Research, Inc. Monthly Indices (HFRI) are fund-weighted (equal-weighted) indices. Unlike asset-weighting, the equal-weighting of indices presents a more general picture of performance of the hedge fund industry. Any bias towards the larger funds potentially created by alternative weightings is greatly reduced, especially for strategies that encompass a small number of funds. All single-manager HFRI Index constituents are included in the HFRI Fund Weighted Composite, which accounts for over 2000 funds listed on the internal HFR Database.

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This Quarterly Investment Outlook is intended solely to report on various investment views held by Aon Hewitt Investment Consulting ("AHIC"). The opinions, estimates, forecasts, and statements of financial market trends are subject to change without notice due to changes in the market or economic conditions. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. This material has been prepared for informational purposes only and should not be considered investment, accounting, legal or tax advice. It is not intended as an offer or a solicitation with respect to the purchase or sale of a security, and it should not be interpreted as such. Aon Hewitt Investment Consulting, Inc. is a federally registered investment advisor with the U.S. Securities and Exchange Commission. AHIC is also registered with the Commodity Futures Trade Commission as a commodity pool operator and a commodity trading advisor, and is a member of the National Futures Association.

G. AHIC's Code of Ethics

Aon Hewitt Investment Consulting, Inc.

Standards of Business Conduct and Code of Ethics

Effective July 1, 2016

As Amended August 22, 2017

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SECTION 1
STANDARDS OF BUSINESS CONDUCT AND OVERSIGHT

Aon Hewitt Investment Consulting ("AHIC") provides investment consulting services and manages assets for its clients as an investment adviser registered with the U.S. Securities and Exchange Commission ("SEC"). AHIC also acts as a Commodity Pool Operator ("CPO") and Commodity Trading Adviser ("CTA") registered with the Commodity Futures Trading Commission ("CFTC"), and is a member of the National Futures Association ("NFA").The nature of particular client assets also subjects AHIC, at certain times, to the provisions of the Employee Retirement Income Security Act of 1974 ("ERISA").

In these roles, AHIC and its employees and any other persons deemed to be subject to AHIC's supervision (collectively "Covered Persons") are fiduciaries and owe clients the utmost duty of care and loyalty. AHIC expects all Covered Persons to demonstrate the highest standards of conduct for continued employment or engagement with AHIC. Additionally, AHIC is an indirect, wholly owned subsidiary of Aon plc ("Aon") and, as such, all AHIC Covered Persons are employees of Aon. Therefore, in addition to being subject to AHIC's Code of Ethics, AHIC Covered Persons are also subject to Aon's Code of Conduct, both of which may be amended from time to time.

AHIC takes the issue of regulatory compliance seriously and places great value on ethical conduct. Covered Persons must act with integrity at all times, in a manner that upholds the best interests of clients and in accordance with regulatory requirements and these Policies and Procedures ("Policies and Procedures").

These Policies and Procedures provide guidance regarding the:

- Standards of conduct that apply while employed or engaged by AHIC;
- Practices and procedures that have been implemented by AHIC; and
- Framework for oversight and supervision within AHIC for compliance with federal securities regulation and other applicable laws.

Covered Persons are encouraged to seek the advice of AHIC's Chief Compliance Officer ("CCO") or another member of AHIC Compliance for any questions about these Policies and Procedures or how they apply to individual circumstances. Covered Persons should also understand that compliance with these Policies and Procedures is a high priority and that failure to abide by these Policies and Procedures may expose AHIC and/or you to significant consequences, including disciplinary actions, termination, regulatory sanctions, and/or civil and criminal penalties.

STANDARDS OF BUSINESS CONDUCT/CONFLICTS OF INTEREST

These Policies and Procedures are designed to establish standards of behavior and implement controls that reduce conflicts of interest and promote fair and equitable treatment of clients. It is the responsibility of each Covered Person to:

- Understand and operate in keeping with fiduciary standards;
- Place the interests of clients first, before those of AHIC and before your own personal interests or gain;
- Avoid conflicts of interest in the course of serving clients,
- Act in accordance with internal procedures, and
- Report inappropriate actions and violations, whether perceived or actual, to the CCO or another member of AHIC Compliance, in a timely manner.

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REGULATORY REQUIREMENTS

As a registered investment adviser under the Investment Advisers Act of 1940 ("Advisers Act") and a Commodity Pool Operator and Commodity Trading Adviser under the Commodity Exchange Act ("CEA"), AHIC is subject to a large variety of regulatory requirements. To help ensure compliance with federal securities regulation and in keeping with Rule 206(4)-7 under the Advisers Act and National Futures Association ("NFA") Compliance Rule 2-9 and 2-36, these Policies and Procedures and Code of Ethics ("Code") are designed to prevent and detect violations of regulatory requirements and are comprised of various sections, each governing different areas of compliance. These Policies and Procedures emphasize AHIC's fiduciary duty to its investment advisory clients and the obligation of the firm's personnel to uphold that fundamental duty.

These Policies and Procedures and Code apply to all AHIC *Covered Persons*. For the purposes of AHIC's investment adviser operations, Covered Persons shall include all AHIC employees and any other person who provides investment advice on behalf of AHIC and is deemed to be subject to AHIC's supervision and control.

Further, Rule 206(4)-7 requires that each SEC registered adviser:

- Adopt and implement written policies and procedures reasonably designed to prevent violation of Federal Securities Laws;
- Review, on at least an annual basis, the adequacy and effectiveness of these Policies and Procedures of the investment adviser;
- Designate a Chief Compliance Officer who is responsible for administrating the Policies and Procedures; and
- Maintain records of the Policies and Procedures and annual reviews conducted to determine their effectiveness.

AHIC and all of its *Covered Persons* are bound to obey all applicable federal securities laws, and any other laws and regulations that govern AHIC's investment adviser operations and activities. Rule 204A-1 of the Advisers Act defines "federal securities laws" as: "the Securities Act of 1933, the Securities Exchange Act of 1934, the Sarbanes-Oxley Act of 2002, the Investment Company Act of 1940, the Advisers Act, Title V of the Gramm-Leach-Bliley Act, any rules adopted by the SEC under any of these statutes, the Bank Secrecy Act as it applies to registered investment companies and advisers, and any rules adopted thereunder by the SEC or the Department of the Treasury."

Elements of AHIC's compliance program include the designation of a chief compliance officer, adoption and annual review of these Policies and Procedures, training, and recordkeeping. These Policies and Procedures are reviewed and updated on a periodic basis to be current with AHIC's business practices and regulatory obligations.

Every *Covered Person* of AHIC *is* expected to fully understand and actively comply with these Policies and Procedures. These Policies and Procedures also incorporate the Aon Code of Conduct, and govern the activities of all Covered Persons who work with or for AHIC. A copy of the Aon Code of Conduct is located on Aon Avenue or upon request from Aon Corporate Compliance.

FRAMEWORK FOR OVERSIGHT AND SUPERVISION

Each Covered Person is charged with knowing, understanding, and abiding by these Policies and Procedures. AHIC's Investment Executive Committee ("USIEC") is responsible for setting a culture of compliance within AHIC and for ensuring adherence to these Policies and Procedures across the firm. As an affiliate of Aon plc and its family of affiliated firms, Covered Persons report through various corporate structures and firms for purposes of oversight and supervision. At all times, persons providing investment advice on behalf of AHIC are supervised by an AHIC employee.

RESPONSIBILITY FOR POLICIES AND PROCEDURES

The applicable AHIC business line is responsible for implementation of the Policies and Procedures that apply to its business area. The CCO or his/her designee is responsible for updates to these Policies and Procedures and for implementation and execution of a program for oversight of business supervisory functions on a regular basis.

MAINTENANCE OF RECORDS

AHIC Compliance will maintain and preserve at a minimum an electronic copy of these Policies and Procedures and any amendments.

SECTION 2
INSIDER TRADING POLICY AND CODE OF ETHICS

AHIC is required to adopt a Code in accordance with Rule 204A-1 under the Advisers Act. Additionally, Section 204A of the Advisers Act requires all registered investment advisers to have policies and procedures to detect and prevent insider trading. AHIC has adopted a Code in compliance with the requirements of the Advisers Act.

AHIC also is registered as a CTA and CPO with the CFTC, and is a member of the NFA. While there is no specific CFTC or NFA rule that addresses insider trading, that type of activity is covered generally under the provisions of NFA Rule 2.4, which requires observance of high standards of commercial honor and just and equitable principals of trade in the conduct of a member's commodity futures business activity.

This Code sets forth standards of conduct expected of Covered Persons and is designed to, among other items, govern personal securities trading in the accounts of Covered Persons, immediate family/household accounts and accounts in which a Covered Person has a beneficial interest. Furthermore, this Code is designed to help each Covered Person understand his/her obligations to comply with the highest ethical standards maintained by Aon and AHIC.

At the time of joining AHIC or being deemed a Covered Person, and subsequently thereafter, each Covered Person is required to:

1. **Acknowledge** receipt of this Code through AHIC's electronic personal trading platform within 10 calendar days;
2. **Certify** annually that you have read, understand, and will comply with this Code;
3. **Retain** a copy of the Code or know where to locate the Code;
4. **Seek** advice of AHIC's CCO and/or another member of AHIC Compliance for any questions about these Policies and Procedures or how they apply to individual circumstances.

This Code is to be referenced in conjunction with Aon's global policies and procedures and the Aon Insider Trading Policy which are available on *Aon Avenue*. In situations in which there is inconsistency and more restrictive provisions exist in this Code than in Aon's global policies and procedures, ***the provisions of this Code shall prevail***.

A BREACH OF THIS CODE, INCLUDING AON'S GLOBAL CODE OF CONDUCT AND INSIDER TRADING POLICY, IS CAUSE FOR DISCIPLINARY ACTION, UP TO AND INCLUDING, TERMINATION OF EMPLOYMENT.

PROHIBITION AGAINST INSIDER TRADING

Covered Persons may not pursue any benefit from non-public information including trading, either personally or on behalf of others (including AHIC-managed accounts), while in possession of material, non-public information. Covered Persons also may not communicate material, non-public information to others.

While the law concerning insider trading is not clearly defined for all circumstances, it is generally understood that the law prohibits:

- Trading by an insider, while in possession of material, non-public information;

- Trading by a non-insider, while in possession of material, non-public information; in which the information either was disclosed to the non-insider in violation of an insider's duty to keep it confidential or was misappropriated;
- Communicating material, non-public information to others.

In the course of your employment at Aon, you may have access to or become aware of inside information regarding Aon or other companies, including our clients. Specifically when performing AHIC business, AHIC and its Covered Persons may have access to various types of material, non-public information about issuers, securities, investment managers, and/or the potential effects of AHIC's own securities recommendations and client securities holdings and transactions.

Confidentiality of Client Information/Proprietary Business Information

Material non-public information is not the only type of confidential information. Covered Persons may become aware of confidential information about clients and their business affairs when typing documents, faxing reports, filing papers, delivering opened mail, overhearing office conversation, and/or other activities. Regardless of the manner in which such information is obtained, confidential information must remain confidential. Confidentiality rules extend beyond the laws and regulations around insider trading and tipping. Confidential information can be learned about companies that are not reporting issuers or about individuals. The same onus of confidentiality applies to the latter as to the former.

Any information about a client or the investment activities of AHIC that has been obtained in the course of business must be held in the strictest confidence. Such information includes,

i. financial holdings or interests of AHIC, its affiliates, or a client;
ii. information relating to investment objectives, strategies or constraints of AHIC, its affiliates, or a client, to the extent not already publicly available; and/or
iii. client information (personal information relating to a client or former client).

Determination of Insider Status

Who is an Insider?

The concept of an "insider" is broad. It includes officers, directors, and employees of a company. Additionally, a person can be a "temporary" insider if he or she enters into a special confidential relationship in the conduct of a company's affairs and as a result is given access to information solely for that company's purposes. A temporary insider can include, among others, a company's attorneys, accountants, consultants, bank lending officers, and the employees of such organizations.

AHIC itself may become a temporary insider of a company if it advises the company or its principals and/or fiduciaries.

What is Material Information?

Information is material when there is a substantial likelihood that a reasonable investor would consider it important in making his or her investment decision. Generally, this includes any information that will have a substantial effect on the price of an issuer's securities. Material information does not need to only relate to a company's business. The SEC's position is that material non-public information relates not only to issuers, but also, among other items, to AHIC's recommendations, client securities holdings, and transactions.

What is "Inside" or "Non-Public Information?

"Inside information" is non-public information that has not been disseminated or communicated publicly in writing, by release to the media or delivered through other appropriate means of communication, including but not limited to, a news service, a national newspaper or a filing of corporate disclosure documents, such as a prospectus, proxy statement, or Form 10K/10Q. Inside information may involve information about a security or issuer of publicly-held securities from an internal or external source that is material to a determination as to whether to buy, sell, or hold the security.

For example, Covered Persons may receive information about a publicly traded company while engaged in providing investment advisory services to a public company or when a research analyst is conducting due diligence on a manager related to a manager's securities offerings, its lending activities, or other business activities. Safeguards may include information barriers to thwart access to non-public information.

You may, at some point, be uncertain about the application of the insider trading or other rules contained in this Code. Often, a single question can avoid disciplinary action or complex legal problems. Please contact AHIC's CCO if you have any questions about this Policy or if you have any reason to believe that a violation of this Code has occurred or is about to occur.

Identifying Inside Information

Before executing any trade for yourself or others, including funds or segregated accounts managed or advised AHIC ("Client Accounts"), you must determine whether you have access to material, non-public information. If you think that you might have access to material, non-public information, take the following steps:

- Ask yourself:
  - Is the information material?
    - Is this information that an investor would consider important in making his/her own investment decisions?
    - Will the information substantially affect the market price of the securities if generally disclosed?
  - Is the information non-public?
    - To whom has this information been provided?
    - Has the information been effectively communicated to the market by being placed on Bloomberg, The Wall Street Journal, a regulatory filing or other publications of general circulation, or some other widely recognized public source?

If after consideration of the above, the Covered Person believes that the information is or may possibly be material and non-public, or if questions remain about whether the information is material and non-public, the following steps should be followed:

- Report the information immediately to the CCO or a member of AHIC Compliance;
- Do not purchase or sell the securities on behalf of yourself or others, including Client Accounts;
- Do not communicate the information inside or outside the firm, other than to compliance;
- After the CCO has reviewed the issue, the firm will determine whether the information is material and non-public, and if so, what action the firm will take.

PERSONAL INVESTING POLICY

Persons employed in the financial services industry are subject to regulatory restrictions on the purchase and sale of securities for their own accounts. AHIC allows Covered Persons to maintain brokerage accounts and trade Reportable Securities (defined below) provided such trading in the accounts is consistent with AHIC's fiduciary duty to its clients and is consistent with regulatory requirements. As part of its obligations under the securities laws, AHIC is required to maintain information about the personal securities trading activity of its personnel. These restrictions and reporting requirements are imposed by the SEC and other regulators on the assumption that industry employees have a greater opportunity for access to material non-public information than do employees in other types of businesses, and, therefore, a greater potential to misuse that information.

Who is considered a Covered Person?

For purposes of this Code, in addition to all AHIC employees and any other person who provides investment advice on behalf of AHIC (e.g., Participating Affiliates and/or certain other affiliated employees who may have access to non-public information regarding any clients' portfolios and/or is involved in making securities recommendations to clients or has access to such recommendations) and is deemed to be subject to AHIC's supervision and control; categories of Covered Persons subject to the limitation on personal securities transaction in this Code include:

Related Persons generally include persons or accounts with a personal or financial relationship with a Covered Person of which a Covered Person has *Beneficial Ownership or Control*.

In general, a person has beneficial ownership of a security if such person has or shares (a) voting or dispositive power with respect to such security and (b) a direct or indirect pecuniary interest in such security, including through any contract, arrangement, understanding, relationship or otherwise. A person is presumed to be the beneficial owner of securities held by immediate family members sharing a person's household (which includes any child, stepchild, grandchild, parent, stepparent, grandparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law or sister-in-law, including adoptive relationships, domestic partnership (registered or unregistered) or civil union). The term includes:

- Accounts in your name, in whole or part, including any joint account, family account and self-directed account, that hold securities;
- Accounts in the name of your spouse, domestic partner, and minor children living in your household;
- Accounts of any other member of your household for which you exercise control or substantial influence;
- Accounts of any other relatives of you, your spouse, or domestic partner for which you exercise control or substantial influence;
- Trust accounts and similar arrangements for which you act as trustee or otherwise exercise substantial influence, such as UGMA/UTMA accounts for your children;
- Trust accounts and similar arrangements which benefit you directly or indirectly (but excluding accounts for which you do not substantially influence investment policy or other decisions, directly or indirectly);
- Corporate accounts controlled, directly or indirectly, by you, such as corporate pension, benefit or investment accounts; and
- Accounts in the name of unrelated third parties, such as a civic or religious organization or investment club, if you make investment decisions for those accounts.

Under the federal securities laws, relationships or accounts that fall into these categories are "Related Persons" and are subject to the same restrictions on trading as AHIC Covered Persons. **You are responsible for ensuring that your Related Persons comply with the provisions of the Code.**

<u>HOLDINGS REPORTING REQUIREMENTS</u>

Every Covered Person must file periodic Holdings Reports for each Reportable Security in which he/she has any Beneficial Ownership or Control. Reportable Securities are defined as, but not limited to, the following:

Reportable Securities

- Equity securities and bonds (e.g., IBM, Microsoft, Apple – both equity and debt);
- Initial and secondary public offerings;
- Private placement and limited offerings, including hedge funds;
- Interests in all registered investment companies, including both open-ended and closed-ended funds;
- Exchange traded funds (“ETFs”);
- Purchases made as part of a voluntary tender election; and
- Any option, future, forward contract, or other obligation involving a security or index of securities, including an instrument for which value is derived or based on any of the above.

This Code treats all securities as Reportable Securities, with the following exceptions designed to exclude securities that appear to present little opportunity for improper trading.

Non-Reportable Securities

- Transactions and holdings in direct obligations of the Government of the United States.
- Money market instruments — bankers' acceptances, bank certificates of deposit, commercial paper, repurchase agreements, and other high quality short-term debt instruments.
- Shares of money market funds.
- Transactions in units of a unit investment trust if the unit investment trust is invested exclusively in unaffiliated mutual funds.
- Securities held in accounts over which the access person has no direct or indirect influence or control (e.g., managed account).
- Shares of Aon, plc (or Related Persons’ company stock) obtained within a deferred compensation package or an employee stock option purchase plan.

Every Covered Person must disclose any account that holds, or could hold, Reportable Securities for the Covered Person’s direct or indirect benefit (“Reportable Securities”). However, the following accounts are not considered Reportable Accounts:

- 401(k) plans (or other similar plan) held with a current or previous employer, except that if a self-directed brokerage account or other similar capability is activated in the 401(k) plan or other such plan, then the exception does not apply and the account is required to be reported; and
- 529 plans.

Initial Holdings Report and Certification Requirements
Every Covered Person must file an Initial Holdings Report that discloses the following information for each Reportable Security in which he/she has any Beneficial Ownership or Control:

- The title and type;
- The exchange ticker symbol or CUSIP number (as applicable) for each *Reportable Security*;
- The number of shares or principal amount (as applicable) of each *Reportable Security*;
- The name of any broker, dealer, bank, or other entity with which the Covered Person maintains a *Reportable Account*; and
- The date the Initial Holdings Report is submitted by the Covered Person.

This Initial Holdings Report is due to AHIC Compliance within ten (10) calendar days after the person becomes a Covered Person and the information must be current as of a date no more than forty-five (45) calendar days prior to the date the person became a Covered Person.

A Covered Person must submit with his or her Initial Holdings Report a certification that he or she: (i) has read and understands the Code; (ii) recognizes that he or she is subject to the Code; (iii) will comply with the Code requirements; and (iv) has disclosed or reported all required Reportable Securities holdings and Reportable Accounts.

Quarterly Transaction Report and Certification Requirements

Every Covered Person must file a Quarterly Transaction Report that discloses the information below, about each *Reportable Security* transaction in which he/she has acquired or given up *Beneficial Ownership or Control* during the quarter.

In the absence of an electronic brokerage feed, monthly or quarterly account statements with the details of such statements entered manually into Schwab Technologies by the Covered Person, can be used to satisfy the Transaction Report disclosure requirements, provided the account statement(s) includes all transactions effected during the period and includes at a minimum, all of the following:

- The date of the transaction ("trade date");
- The title of the *Reportable Security*;
- The exchange ticker symbol or CUSIP number (as applicable);
- The interest rate and maturity date (as applicable);
- The number of shares or principal amount (as applicable);
- The nature of the transaction (i.e., purchase, sale, or any other type of acquisition or disposition);
- The price at which the transaction was effected;
- The name of any broker, dealer, bank, or other entity with or through which the transaction was effected;
- The date the Quarterly Transaction Report is submitted by the Covered Person.

Each Covered Person's Quarterly Transaction Report is due to AHIC Compliance through Schwab Technologies within thirty (30) calendar days after the end of each calendar quarter which includes all transactions made during the previous quarter. Each Covered Person's Quarterly Transaction Report must also include a certification that the submitted Quarterly Transaction Report includes all information required to be reported as identified above.

If no transactions in any securities required to be reported were effected during a quarterly period by a Covered Person, such Covered Person shall submit to AHIC via Schwab Technologies a quarterly transaction certification within the time-frame specified above stating that no reportable securities transactions were effected.

Private Securities transactions that are not effected through a broker-dealer or bank (e.g., purchases or sales of interests in a private investment fund) must also be reported.

Annual Holdings Report and Certification Requirements

Every Covered Person must file an annual holdings report, with the details of such statements entered manually into Schwab Technologies by the Covered Person, disclosing the following information:

- The title and type of each *Reportable Security* in which he/she have *Beneficial Ownership or Control*;
- The exchange ticker symbol or CUSIP number (as applicable) for each *Reportable Security*;
- The number of shares or principal amount (as applicable) of each *Reportable Security*;
- The name of any broker, dealer, bank, or other entity with which the Covered Person maintains a *Reportable Account*; and
- The date the Holdings Report is submitted by the Covered Person.

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Each Covered Person's holdings report is due to AHIC Compliance through Schwab Technologies within thirty (30) calendar days after the end of each calendar quarter and must be current as of a date no more than forty-five (45) calendar days prior to the date this information is filed.

With respect to the Annual Holdings Report, please note that securities holdings that were not acquired through a broker-dealer or bank (e.g., interests in a private investment fund) must also be reported through Schwab Technologies.

Exception to Reporting Requirements

Automatic Investment Plans: Holdings and Transaction Reports are not required with respect to securities held in accounts over which the Covered Person has no direct or indirect influence or control, or with respect to transactions pursuant to automatic investment plans (e.g., 401(k) plan, ESOPP).

Third-Party Manager Discretionary Authority: For purposes of this provision, **full investment discretion** means that the Covered Person is prevented from:

- Suggesting purchases or sales of investments to the trustee or third-party discretionary manager;
- Directing purchases or sales of investments within the account; or
- Consulting with the third-party manager or trustee as to the particular allocation of investment to be made in the account.

Accounts over which the Covered Person has granted full investment discretion to an outside third-party manager or trustee ("Discretionary Manager") adhering to the following procedure will not be required to complete transactions or holdings reports to Compliance, *but these accounts are still required to be disclosed* to Compliance:

1. Notify the CCO of the account's existence at the time of becoming a Covered Person or when the account is opened and annually thereafter;
2. Provide the CCO with a *"Certification of Managed Accounts"* Letter which has been executed by the Covered Person as well as the Discretionary Manager explaining the manager's relationship with Covered Person and Discretionary Manager. This letter will be prepared by AHIC Compliance and delivered to the Covered Person to provide to the Discretionary Manager;
3. Obtain from the CCO a written approval exception, relating to the account through the Schwab Technologies brokerage approval request; and
4. Complete a "Managed Account Quarterly Certification" in Schwab Technologies affirming that the Covered Person did not exercise direct or indirect influence or control over a Discretionary Manager account during the previous quarter.

Duplicate Account Statements and Confirmation Statements

All Covered Persons must direct their brokers to provide AHIC Compliance duplicate copies of their brokerage accounts and confirmation statements. When available, this requirement will be collected electronically through Schwab Technologies.

Method of Periodic Reporting

Every Covered Person should submit all holdings and transaction reports through the Schwab Technologies system unless notified otherwise. Further, AHIC Compliance will review and maintain reports through this same electronic system unless hardcopy statements are provided to Compliance.

Notice of Account Openings
Each Covered Person shall notify AHIC Compliance of any desire to open new accounts prior to opening a securities account for the direct or indirect benefit of such Covered Person. The notification can be completed through Schwab Technologies.

PRE-CLEARANCE OF TRANSACTIONS

Transactions in Covered Securities (as defined below) by Covered Persons **must be approved in advance by AHIC Compliance** as outlined below and executed in accordance with the pre-clearance procedures contained in this Code. Each approval, unless otherwise indicated, shall be effective for ***one (1)*** trading day after approval is granted. These preclearance requirements apply to all direct or indirect acquisitions or sales of Covered Securities, whether by purchase, sale, tender, stock purchase plan, gift, inheritance, or otherwise. Certain exceptions to this requirement are set forth below.

Clearance to trade is effective until the close of business on the day following the day on which clearance to trade is obtained. Open orders including stop loss orders, are generally not allowed due to the short pre-clearance effective period (unless such orders are terminated within the allotted time span). It is necessary to repeat the pre-clearance process for transactions not executed within the pre-clearance effective period.

Covered Securities
This pre-clearance requirement applies to the following securities, whether held long or short, and whether publicly or privately traded ("Covered Securities"), including but not limited to:

- Equity Securities and Bonds (e.g., IBM, Microsoft, Apple – both equity and debt)
- Initial and secondary public offerings,
- Private placement and limited offerings, including hedge funds,
- Interests in registered investment companies for which AHIC, or an AHIC affiliate, provides advisory services,
- Closed-ended funds,
- Exchange traded funds ("ETFs") other than those based on a broad index,
- Purchases made as part of a voluntary tender election, and
- Any option, future, forward contract, or other obligation involving a security or index of securities, including an instrument for which value is derived or based on any of the above.[1]

Securities or Instruments Not Classified as Covered Securities
The pre-clearance requirements of this Code do not apply to the following types of securities ("Non-Covered Securities"):
- Direct obligations of the Government of the United States (U.S. treasury bills, notes, and bonds);
- High quality (investment grade) debt instruments with a remaining term to maturity of one year or less;
- Money market instruments, such as certificates of deposit, bankers' acceptances, repurchase agreements, and commercial paper
- Shares of open-end registered investment companies (i.e., mutual funds) not advised or managed by AHIC or an AHIC affiliate;
- Shares of unit investment trusts that are invested exclusively in one or more open-end funds (none of which are advised or managed by AHIC or its affiliates);
- Physical commodities (including foreign currencies) or any derivatives thereof;
- Derivative transactions whose underlying value is based on an index as identified in Appendix A;

[1] Trading in put and call options, or short sales of securities, may raise unique issues. If the purchase or sale requires pre-clearance under the Code, it is highly likely that the closing of such positions also will require pre-clearance. In some circumstances, closing such a position may not be approved, and you could sustain losses.

- Sales made pursuant to odd lot tender offers where acceptance of the tender is discretionary on the part of the issuer. Purchases made as part of an odd lot tender election are subject to the Code (see "**Exceptions and Exemptions to the Pre-Clearance Requirement**" below); or
- Shares of Aon plc, (or Related Persons' company stock) purchased within an employee stock ownership purchase plan or as part of a deferred compensation package.

Pre-Clearance Procedures for Certain Aon plc Directors and Executive Officers related to transactions in Aon securities
In addition to the personal trading requirements outlined within AHIC's Code of Ethics, any current Aon Directors or Aon executive officers who are required to file reports under Section 16 of the Securities Exchange Act (each, an "Aon Section 16 Reporting Officer") and other members of Aon's Executive Committee (each, an "Aon EC Member") deemed to be AHIC Covered Persons must also ensure their adherence to ***Aon plc's Global Code of Conduct***. Any questions regarding that policy should be directed to Aon plc Corporate Compliance.

Pre-Clearance for Participation in IPOs. No Covered Person shall acquire any beneficial ownership in any securities in an initial or secondary public offering for his or her account without the CCO's prior written approval, after providing full details of the proposed transaction, including written certification that the investment opportunity did not arise by virtue of the Covered Person's activities on behalf of a client, and, if approved, will be subject to continuous monitoring for possible future conflicts. In deciding whether that approval should be granted, consideration will be given to whether the investment opportunity should be reserved for clients and whether the opportunity has been offered because of the person's relationship with AHIC, its affiliates, or its clients.

Pre-Clearance for Private or Limited Offerings. No Covered Person shall acquire any beneficial ownership in any securities in a private or limited offering for his or her account without the CCO's prior written approval, after providing full details of the proposed transaction, including written certification that the investment opportunity did not arise by virtue of the Covered Person's activities on behalf of a client, and, if approved, will be subject to continuous monitoring for possible future conflicts. In deciding whether that approval should be granted, consideration will be given to whether the investment opportunity should be reserved for clients, is on equal terms to that of the client, and whether the opportunity has been offered because of the person's relationship with AHIC, its affiliates, or its clients.

Participation in Investment Clubs. No Covered Person shall participate in an Investment Club without the prior written consent of the CCO.

Types of Transactions Exempt from the Pre-Clearance Requirements

- Purchases or sales that are non-volitional on the part of the Covered Persons, including mergers, recapitalizations, or similar transactions;
- The acquisition of securities through stock dividends, dividend reinvestments, stock splits, reverse stock splits, mergers, consolidations, spin-offs, or other similar corporate reorganizations or distributions generally applicable to all holders of the same class of securities;
- Exercise of an option or a single transaction to satisfy an option obligation, as long as the original option transaction was properly pre-cleared;
- Purchases effected upon the exercise of rights issued by an issuer pro rata to all holders of a class of securities to the extent such rights were acquired from such issuer, and sales of such rights so acquired;
- Purchases made as part of a 529 Plan. Rebalancing of investment alternatives in a 529 Plan, which can occur only once a year, also are exempt;
- Regularly scheduled and matching contributions to and withdrawals from a mutual fund or collective trust in a benefit plan;
- Periodic purchases and reinvestments in and withdrawals from a dividend reinvestment plan when the transactions are not subject to the discretion of the buyer or seller (in other words, the

transactions are periodic and automatic, and require no decision on the part of the buyer or seller);

- Acquisition of securities by gift or inheritance, although transactions in such securities after their acquisition are covered;
- Bona fide gifts of securities by you, unless you have reason to believe the recipient intends to sell the securities while possessing Material Non-public Information;
- Acceptance or vesting and any related stock withholding (for so-called "cashless exercises") of stock options, restricted stock, restricted stock units, phantom stock units, or other grants issued under incentive compensation plans; and
- Rebalancing or changes in allocation to an Aon Savings Plan (e.g., 401(k) plan) except in the case of security transactions in a self-directed brokerage account or other similar structure within the aforementioned plan.

Prohibited Transactions
Transactions with Clients. No Covered Person shall sell to or purchase from a client any security or other property.

Blackout Periods. AHIC reserves the right to impose trading blackouts from time to time on specified groups of its personnel, agents, or consultants when, in the judgment of the CCO, a blackout period is warranted. AHIC Compliance will notify those affected by such a blackout of when the blackout begins and when it ends. Those affected should not disclose to others the fact of such trading suspension.

No Liability for Losses
AHIC will not be liable for any losses incurred or profits avoided by any *Covered Person* resulting from the implementation or enforcement of the Code. *Covered Persons* must understand that their ability to buy and sell securities may be limited by this Code.

Hardships
Under unusual circumstances, such as a personal financial emergency, application for an exemption to make a transaction may be made to the CCO, which application may be denied or granted. To request consideration of an exemption, submit a written request containing details of your circumstances, reasons for the exception, and exception requested. A hardship exemption will not be granted after the fact.

The CCO may, in unusual circumstances, approve exceptions from the Code applicable to an individual, based on the unique circumstances of such individual and based on a determination that the exceptions can be granted (i) consistent with the individual's fiduciary obligations to Clients and (ii) pursuant to procedures that are reasonably designed to avoid a conflict of interest for the individual. Any such exceptions shall be subject to such additional procedures, reviews, and reporting as determined appropriate by the CCO in connection with granting such exception. Any such exceptions will be reported to AHIC's USIEC.

Review of Transactions
AHIC Compliance will review personal securities transactions and holdings of all Covered Persons periodically, but no less than quarterly.

PENALTIES FOR TRADING VIOLATIONS

Violations of the Code of Ethics may result in disciplinary action based on the perceived severity of the issue. The table below presents specific remedies for certain Code violations. However, extenuating circumstances may result in modifications to the indicated penalties.

CODE VIOLATION	PENALTY
Insider Trading	Up to termination after review of facts and circumstances
Personal Securities Transactions (within a rolling 12-month period) – Failure to pre-clear personal security transactions – Failure to complete quarterly transaction and/or annual certification reporting within 30 days. *Note: Required reports are time stamped when received.*	**1st violation** - written warning maintained in Compliance files and reported to the USIOC **2nd violation** – written warning with notification to NA Head of Investment Consulting maintained in the Compliance files, reporting to the USIOC, and consideration of additional sanctions as defined below. **3rd violation** - a written warning included in Compliance files and HR personnel file, reporting to the USIOC, and additional sanctions deemed appropriate as defined below. Additional sanctions also may be imposed including censures, monetary fines, disgorgement of profits, temporary suspensions of trading rights or other limitations regarding a Covered Person's authority to trade, negative reflection on individual risk assessments, termination of employment, and/or other penalty determined by Senior Management in consultation with the CCO. ***Note:*** *Subsequent consecutive violations may result in actions, additional warnings, and/or more stringent penalties depending upon the frequency and severity of the violation and other factors.*

REPORTING VIOLATIONS OF THE CODE

Any *Covered Person* who knows or has reason to believe that the Code has been or may be violated must bring such actual or potential violation to the immediate attention of the CCO. It is a violation of the Code for a *Covered Person* to deliberately fail to report a violation or deliberately withhold relevant or material information concerning a violation of the Code, unless doing so conflicts with a legal or regulatory right afforded to the *Covered Person.* No person will be subject to penalty or reprisal for reporting in good faith suspected violations of the Code by others.

RESPONSIBILITY FOR POLICY

The Chief Compliance Officer of AHIC, or his/her designee, is responsible for this Policy and for implementation and execution of a program for oversight on a regular basis.

H. Sample Investment Policy Statement

Investment Policy Statement Template

(Defined Benefit Pension Plan)

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CONTENTS

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I. OVERVIEW AND PURPOSE

General

The Board of Trustees of <Company name> is authorized and responsible to administer a Defined Benefit Plan (the "Plan") for its employees. Funding for benefits under the plan is provided by **(employee and employer contribution/ or employer contributions)** and earning on the investment of contributions.

This Investment Policy Statement ("Policy") defines the investment objectives, policies and procedures that have been established by the Board of Trustees (the "Board"). The objectives, policies and procedures outlined in this document were created as a framework for the management of the Plan and the statements contained in this document are intended to allow for sufficient flexibility in the investment process to capture opportunities, yet ensure prudence and care are maintained in the execution of the investment program. This Policy is intended to:

- Provide a mechanism to establish and review the Plan's investment objectives;
- Set forth an investment "structure" for managing assets. This structure includes various asset classes and investment styles that, in aggregate, are expected to produce a prudent level of diversification and investment return over time;
- Provide a single document identifying the roles of those responsible for selecting, monitoring, and reviewing the Plan's investments;
- Identify the criteria that may be used for selecting the investment funds (a collective reference as to investment managers, pooled investment funds and investment fund organizations);
- Establish measurement standards and monitoring procedures to be used in evaluating the performance of investment funds; and
- Establish procedures for evaluating investment funds.

The Board has arrived at this Policy through careful study of the returns and risks associated with the investment strategies in relation to the current and projected liabilities. This Policy has been chosen as the most appropriate policy for achieving the financial objectives of the Plan. The Board has adopted a long-term investment horizon such that the chances and duration of investment losses are carefully weighed against the long term potential for appreciation of assets. The assets will be invested in a manner that provides the safeguards and diversity that a prudent investor would adhere to.

II. INVESTMENT PHILOSOPHY

The following statements represent the investment principles and philosophy governing the investment of assets held by the Plan. These statements describe the core values and beliefs that will form the basis for investment decisions.

These commonly held fundamental investment beliefs are:

- One of the most important decisions that the Board makes is to determine the long-term asset allocation decision;
- The Board, with the aid of the Investment Consultant, will define a long-term strategic asset class allocation and rebalance to those allocations within specific ranges;
- The achievement of long-term investment goals is the result of sound strategic decisions and consistency in implementation. Ad-hoc asset or manager allocations are likely to result in poor outcomes;
- It is necessary to use long time frames and appropriate benchmarks to fairly evaluate active manager performance. Performance differences in asset classes, strategies, styles, and market capitalizations will have multi-year cycles. Therefore, even the most capable investment managers may have periods of under- and outperformance relative to their benchmarks;
- Investment implementation should be cost and resource effective; and
- Active investment management should be applied in asset classes and strategies where evidence of favorable value added potential exist. Otherwise, passive investment management will be applied.

III. ROLES AND RESPONSIBILITIES

- The **Board** will select investments based upon the criteria and objectives set forth in this Investment Policy Statement. The Board, in consultation with its independent investment consultant, is responsible for the selection and monitoring of the investments and service providers of the Plan. The Board is entitled to use the services of an investment consultant to assist in carrying out its responsibilities.

- With the approval of the Board, **staff** will recommend professional service providers to assist the Board in implementing investment policy. Staff, with the aid of the Investment Consultant, will also monitor and evaluate investment managers and establish effective communication and review procedures among the external service providers and the Board.

- The **Investment Consultant** will advise the Board on the management of the Plan's assets. This includes, but is not limited to, recommending appropriate strategic policy and implementation structure, conducting manager due-diligence, and assisting with manager searches and selection. The Investment Consultant will also aid the Board in adhering to the guidelines of the Investment Policy Statement and making recommendations regarding changes should they need to be made.

- **Investment Managers** have the responsibility for managing the underlying assets by making reasonable investment decisions consistent with its stated approach, and reporting investment results.

- The Board recognizes that accurate and timely completion of custodial functions is necessary to effectively monitor investment management activity. The **custodian's** primary function will be to hold in custody all the securities that each of the investment managers manage in their portfolios, except for commingled funds or mutual funds, which may be held elsewhere.

IV. INVESTMENT OBJECTIVES

The primary objective of Plan is to make investments for the sole interest of the participants and beneficiaries of the Plan. The Board receives advice from its investment consultant in selecting investments for the Plan. The Board reserves the right to close, add or change investments at any time at its discretion.

Time Horizon

The Board acknowledges that fluctuating rates of return characterize the securities markets, particularly during short-term time periods. Accordingly, the Board views interim fluctuations with an appropriate perspective.

Diversification

The Board believes that the likelihood of realization of the investment objectives is enhanced through diversification. The Board, with the aid of the Investment Consultant, will aim to diversify assets among various asset classes and investment managers to maintain acceptable risk levels and enhance long-term investment returns.

Fees and Expenses

The Board, with the aid of the Investment Consultant, will closely monitor fees and expenses associated with its investment activities and will strive to maintain fees at acceptable levels. From time to time, the Board will compare expenses with appropriate benchmarks of other defined benefit plans.

V. ASSET ALLOCATION GUIDELINES

It is not the intention of the Board to become involved in day-to-day investment decisions. Therefore, the assets will be allocated to professional investment managers in a manner consistent with the Policy's objectives. The guidelines for the allocation of assets to investment managers are as follows:

	Lower Limit	Target	Upper Limit
U.S. Equities			
Non-US Equities			
Global Equities			
U.S. Market Fixed Income			
Alternative			

BENCHMARKS AND PEER GROUPS

The primary benchmark for evaluating the performance of the total investment program is a Target Index consisting of broad market indexes for each asset class combined according to the asset-allocation targets.

Total Fund

U.S. Equity		
Non-U.S. Equity		
Global Equities		
Fixed Income		
Alternatives		

Rebalancing Guidelines

The asset allocation ranges established by this Policy represent the Board's appetite for risk and the Board's judgment of a portfolio mix that provides the greatest risk/return value.

Because the asset classes do not normally move in concert, deviations from the normal commitments will occur through normal market activity. The Upper and Lower Limits define the ranges within which market activity will be allowed to shift the allocations. The ranges are designed to allow for a reasonable period of time to elapse before rebalancing the portfolio.

Should actual allocations depart from the prescribed ranges, additions to funds will first be made to asset classes and individual manager portfolios that are below their respective target commitments. Withdrawals will first be made from asset classes and individual managers that are above their respective target commitments.

The Board / Staff will review the asset allocations periodically and rebalance to within the target asset allocation range at least quarterly if necessary.

Performance Objectives and Monitoring

Performance objectives have been established for the total fund and each asset class and investment fund in order to perform proper due diligence in monitoring and evaluating and it is clearly understood that these objectives are to be viewed over the long term. Rates of return will be compared with (1) the risk and return of an appropriate market index (2) the return of an appropriate style benchmark, where applicable, and (3) the returns of a universe of comparable funds or investment managers, where applicable. The Board, with the help of Staff and the investment consultant, will monitor these on a quarterly basis. The asset classes and investment fund types that fall under this purview can be found in the tables that follow.

Asset Classes and Investment Managers (customized)

Investment Style	Index Benchmark	Peer Group
Domestic Equity		
Large Cap		
Small Cap		
International Equity		
Large Cap		
Small Cap		
Emerging Markets		
Global Equity		
Fixed Income		
Real Estate		
Opportunistic		

VI. INVESTMENT GUIDELINES

General

All investments shall comply with all applicable guidelines governing the investment of the pension funds.

All securities transactions shall be executed by reputable broker/dealers or banks (including any bank acting as custodian) and shall be at a best price and best execution basis.

Investments shall possess value and quality corroborated by accepted techniques and standards of fundamental economic, financial and security analysis.

Proxy Voting

Retained investment managers will vote all proxy proposals on an individual basis. The manager's process in dealing with proxy issues should be both thorough and reasonable, and oriented toward achieving maximum long-term shareholder value. The manager is expected to discharge expected fiduciary duty by use of proxy voting policies and procedures solely in the interest of the participants and beneficiaries. To act prudently in the voting of proxies, the manager should consider those factors that would affect the value of the plan's investment and act solely in the interest of, and for the exclusive purpose of, providing benefits to participants and beneficiaries. The manager will not subordinate the interest of participants and beneficiaries in their retirement income to unrelated objectives. Managers will review and vote all proxies that are received. At the beginning of each proxy season the manager should notify the custodial bank of their responsibility to forward all proxy material. An ongoing review should be done to see that all expected proxies have been received, and if not, the bank should be directed to vote any proxy it receives in conformance with the manager's instruction.

On an annual basis, investment managers should send a report of its proxy voting activities. A brief explanation of votes against management, votes on controversial issues, and votes on issues that may be deemed to be of importance to the BOARD should be prepared and forwarded upon written request.

Commissions and Trading Costs

The Board understands its fiduciary responsibility with respect to transactions and hereby instructs its investment managers to seek best execution when conducting all trades.

VII. SELECTION AND MONITORING OF INVESTMENT MANAGERS

Pre-Selection

Criteria will be established for each manager search undertaken on behalf of the Board, and will be tailored to the specific needs of such a search. At a basic level, each manager hired by the Board should exhibit *skill*. From a qualitative standpoint skill includes, but is not limited to, uniqueness in the strategy or the ability of the manager, their process or philosophy, and their ability to analyze and process information. The Investment Consultant should identify the skill factor associated with a manager being considered for addition to the Plan, and should have conviction that the specific skill attributes will provide the manager with the ability to outperform their benchmarks over the long-term.

Investments selected shall have a reasonable fee level within their peer group. Past performance should be evaluated with the right perspective. Past performance should be analyzed relative to the risk undertaken and should be geared at evaluating the manager's potential to add value on a risk-adjusted basis, net of all fees. Further, in evaluating past performance, it should be ensured that the same team that generated a certain track record remains with the organization. Investment management should be a focus of the organization and should be evidenced by the allocation of resources towards the area. The organizational structure should ensure that the manager's interests are aligned closely with those of investors. The firm and its people should be reputable and firms with outstanding litigation should be subject to more thorough due-diligence if being considered.

In general, the minimum due diligence process for an investment manager's selection shall include, but not be limited to:

- **Regulatory oversight**: Each investment manager should be a regulated bank, an insurance company, a mutual fund organization, or a registered investment advisor.
- **Assets under management**: The product should have a sufficient and appropriate asset base.
- **Performance relative to assumed risk**: Competitive returns of investment options as compared to appropriate benchmark data at an acceptable level of volatility.
- **Consistency of holdings with style**: History of reasonable adherence to investment objectives.
- **Stability of the organization**: Established investment firm (experience and reputation of reliability).
- **Performance relative to peer groups**: The product's performance should be evaluated against the peer group's returns for the trailing 1-, 3- and 5- year cumulative periods; past performance should not, however, be the sole basis for selecting investment managers.

Post-Selection Review of Investment Managers

The Board, with the aid of the Investment Consultant, will monitor the performance of each manager quarterly, while retaining a long-term focus. Monitoring the performance relative to benchmarks will be an ongoing activity. The focus of the ongoing evaluation shall include:

- Assets under management (track substantial changes in total assets).
- Material changes to investment policy and objectives.
- Performance relative to assumed risk (benchmark comparison over five years).
- Holdings consistent with style.
- Stability of the organization and personnel turnover.
- Performance relative to peer group(s) (peer group comparison over three years).

Terminations

The Board retains the discretion to terminate an investment manager for any reason. Grounds for investment manager termination may include, but are not limited to:

- Failure to comply with stated guidelines.
- Significant deviation from the manager's stated investment philosophy and/or process.
- Loss of key personnel.
- Evidence of illegal or unethical behavior by the investment management firm.
- Loss of confidence by the Board and / or Consultant in the investment manager.
- Failure to achieve performance objectives specified in the manager's guidelines over reasonable measurement periods.
- A change in the Board's asset allocation policy that necessitates a shift of assets to a different investment style.

VIII. REVIEW AND AMMENDMENT OF THE POLICY

The Board, with the aid of the Investment Consultant, shall review this Policy at least annually to ensure that it continues to reflect the Board's objectives and meet the needs of the Plan's participants. The Policy may be modified, in whole or in part, by the Board at any point in time.

I. Sample Asset-Liability Study

SAMPLE REPORT

Asset-Liability Study Results

Client XYZ
Month 20XX

The information presented is for illustrative purposes only and should not be considered advice. None of the information presented has been calculated using the recipient's portfolio information.

Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc., an Aon Company.

Empower Results®

Table of Contents

Executive Summary

Executive Summary
Summary and Conclusions

Portfolio Analysis

- The current portfolio is well-diversified
- The expected return assumption for the current portfolio is 6.80% over the next 30 years
- XYZ should consider its desired balance between funding and investment returns in order to determine the ideal investment portfolio

Asset-Liability Projection Analysis

- Longer time horizons are expected to reward higher levels of risk; shorter time horizons are not
- The funded ratio is projected to trend toward full funding over the course of the projection period
- Adverse market experience could significantly impact the funded status of the Plan over the projection period

Liquidity Analysis

- The current asset allocation has sufficient liquidity in all economic scenarios modeled

Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Analysis

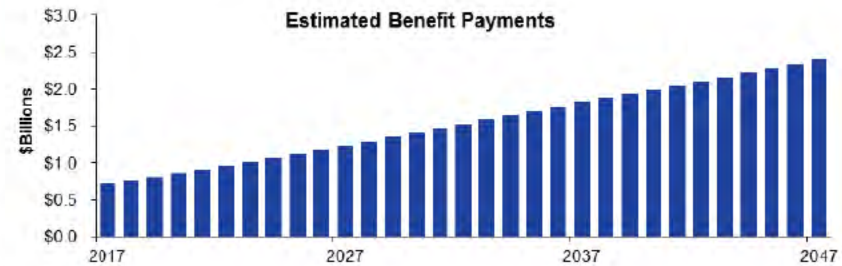
- Current State

Empower Results®

Current State Asset-Liability Profile

As of June 30, 20XX

Asset-Liability Snapshot as of 6/30/20XX		
Metric ($, Billions)	**Value**	**Fund %**
Market Value of Assets	$11.4	76.4%
Actuarial Value of Assets	$11.6	77.5%
Liability Metrics		
Actuarial Liability (AL) - Funding	$14.9[1]	



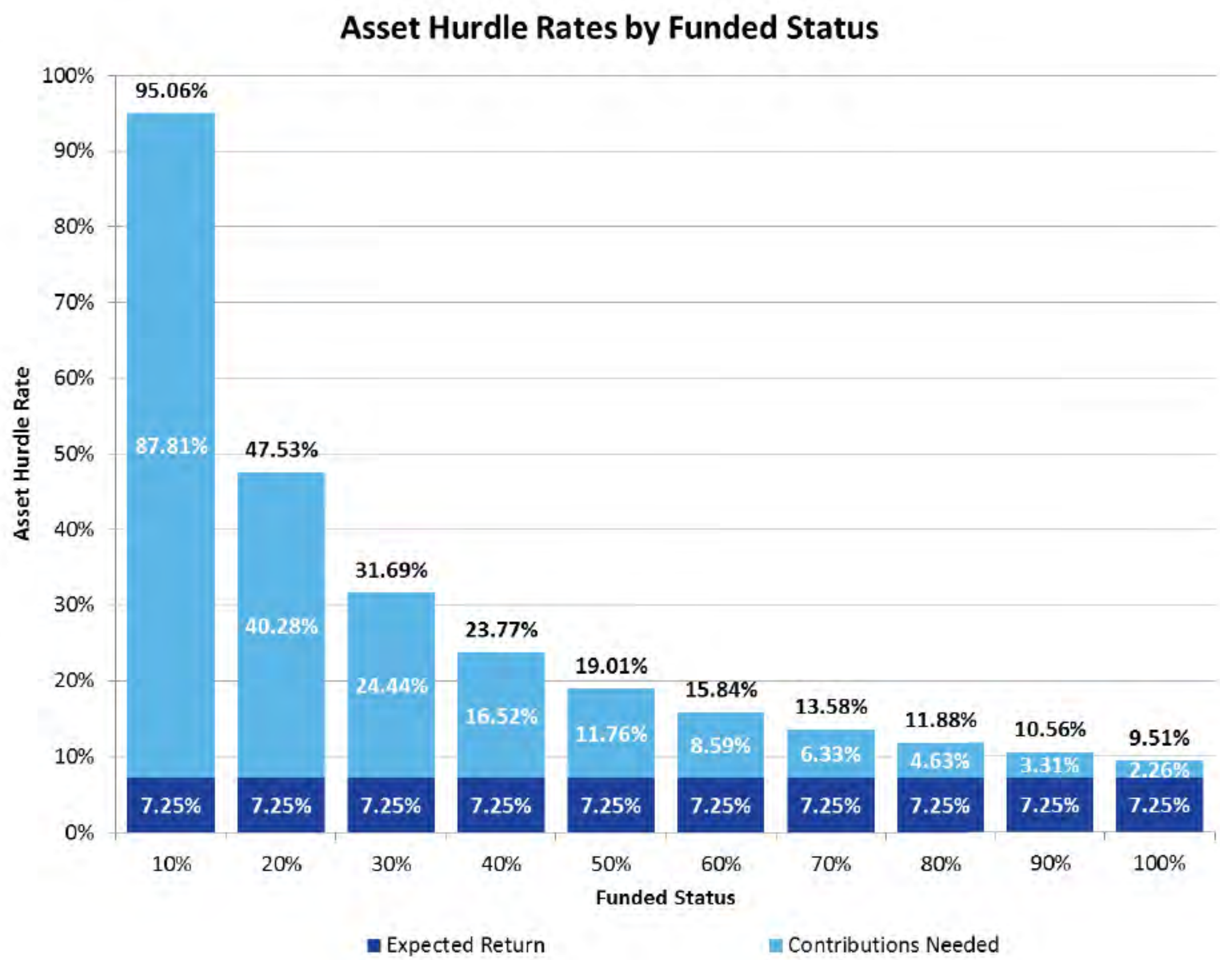
Asset-Liability Growth Metrics			
Metric ($, Billions)	**Value**	**% Liability**	**% Assets**
AL Discount Cost	$1.08	7.3%	9.5%
AL Normal Cost	$0.34	2.3%	3.0%
Total Liability Hurdle Rate	**$1.42**	**9.6%**	**12.5%**
Expected Return on Assets[2]	$0.78	5.2%	6.8%
Total Contributions	$0.68	4.6%	6.0%
Total Exp. Asset Growth	**$1.46**	**9.8%**	**12.8%**
Hurdle Rate Shortfall / (Surplus)	**-$0.04**	**-0.3%**	**-0.3%**
Est. Benefit Payments	$0.73	4.9%	6.4%

Target Asset Allocation as of 6/30/20XX		
Metric ($, Billions)	**Value**	**Alloc %**
Return-Seeking		
- U.S. Equity	$2.1	18%
- International Equity	$2.7	24%
- Global Equity	$0.3	3%
- Private Equity	$0.9	8%
- Real Estate	$1.0	9%
- Opportunistic	$0.9	8%
- Real Assets	$0.7	6%
- High Yield Bonds	$0.7	6%
- Total	$9.4	82%
Risk-Reducing		
- Intermediate Duration Fixed Income	$2.1	18%
- Total	$2.1	18%
Total	$11.4	100%

[1]Based on a 7.25% discount rate consistent with the June 30, 2017 valuation results.
[2]Using AHIC Q1 2018 30 year capital market assumptions
Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Asset Hurdle Rate

- **Asset Hurdle Rate** is the level of asset growth needed to keep pace with the growth of the Plan liabilities
  - Assets must grow at this rate or more in order to maintain or reduce the existing funding shortfall
- Assets can grow via:
  - Investment performance, and/or
  - Funding contributions
- Asset hurdle rates increase as funded ratio declines, as shown in the chart to the right



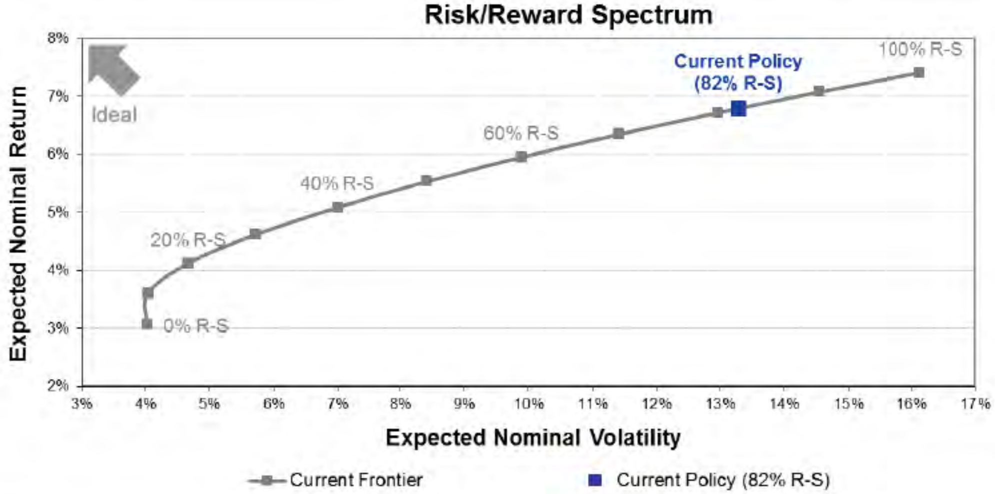
Empower Results®

Analysis

- Portfolio Analysis

Empower Results®

Portfolio Analysis
Risk/Reward Spectrum

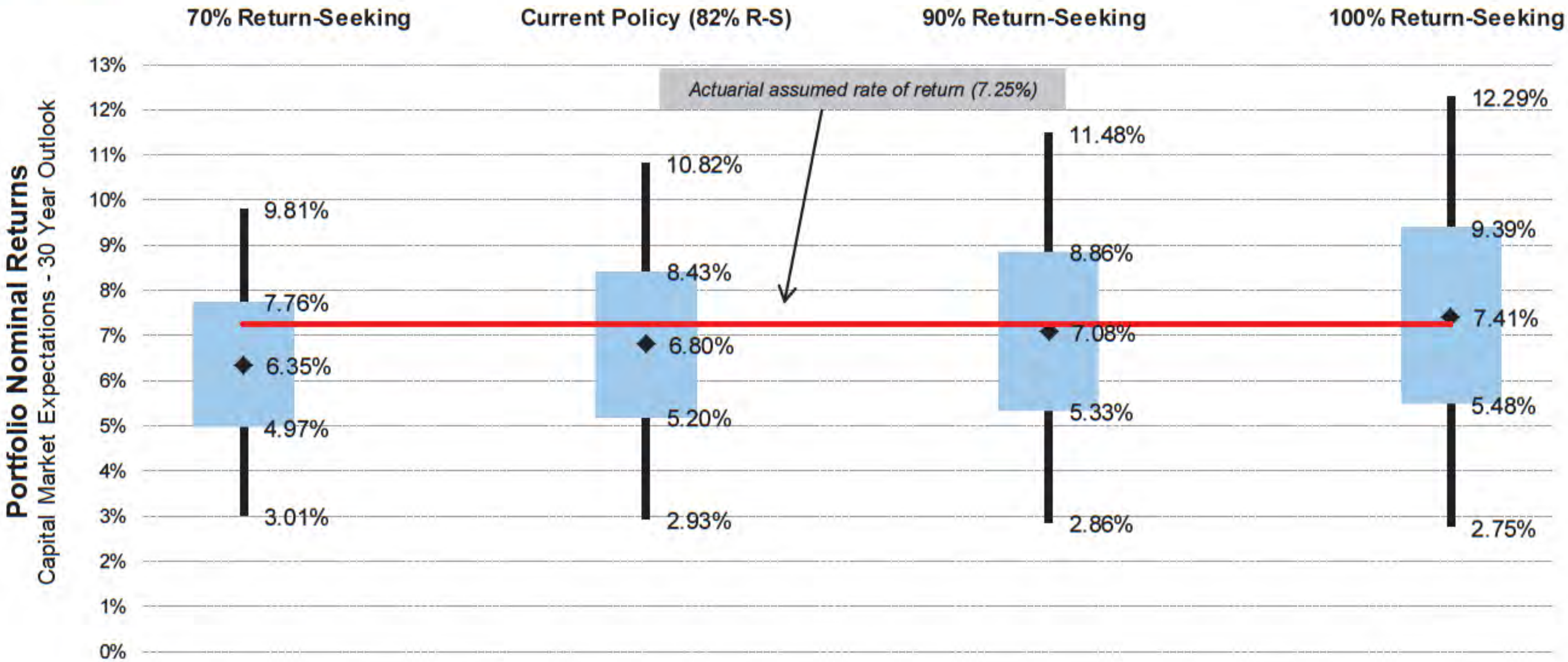


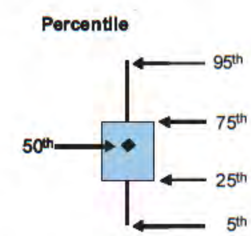
Key Takeaways:
- The current portfolio is well-diversified
  - Return-seeking assets are broadly diversified
  - Risk-Reducing asset allocation should withstand stressed markets

				Return-Seeking								Risk-Reducing	
	Expected Nominal Return	Expected Nominal Volatility	Sharpe Ratio	U.S. Equity	Non-U.S. Equity	Global Equity	High Yield Bonds	Real Estate	Real Assets	Opportu nistic	Private Equity	Interm. Duration Gov't Bonds	Interm. Duration Credit
Current Policy (82% R-S)	6.80%	13.28%	0.331	18%	24%	3%	6%	9%	6%	8%	8%	9%	9%
Current Frontier													
0% Return-Seeking	3.06%	4.02%	0.165	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%
10% Return-Seeking	3.61%	4.03%	0.299	2%	3%	0%	1%	1%	1%	1%	1%	45%	45%
20% Return-Seeking	4.13%	4.67%	0.370	4%	6%	1%	1%	2%	1%	2%	2%	40%	40%
30% Return-Seeking	4.62%	5.72%	0.388	7%	9%	1%	2%	3%	2%	3%	3%	35%	35%
40% Return-Seeking	5.09%	7.00%	0.384	9%	12%	1%	3%	4%	3%	4%	4%	30%	30%
50% Return-Seeking	5.53%	8.41%	0.373	11%	15%	2%	4%	5%	4%	5%	5%	25%	25%
60% Return-Seeking	5.96%	9.89%	0.359	13%	18%	2%	4%	7%	4%	6%	6%	20%	20%
70% Return-Seeking	6.35%	11.42%	0.346	15%	20%	3%	5%	8%	5%	7%	7%	15%	15%
80% Return-Seeking	6.73%	12.97%	0.334	18%	23%	3%	6%	9%	6%	8%	8%	10%	10%
90% Return-Seeking	7.08%	14.55%	0.322	20%	26%	3%	7%	10%	7%	9%	9%	5%	5%
100% Return-Seeking	7.41%	16.13%	0.311	22%	29%	4%	7%	11%	7%	10%	10%	0%	0%

Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Portfolio Analysis
Range of Nominal Returns





Key Takeaway:

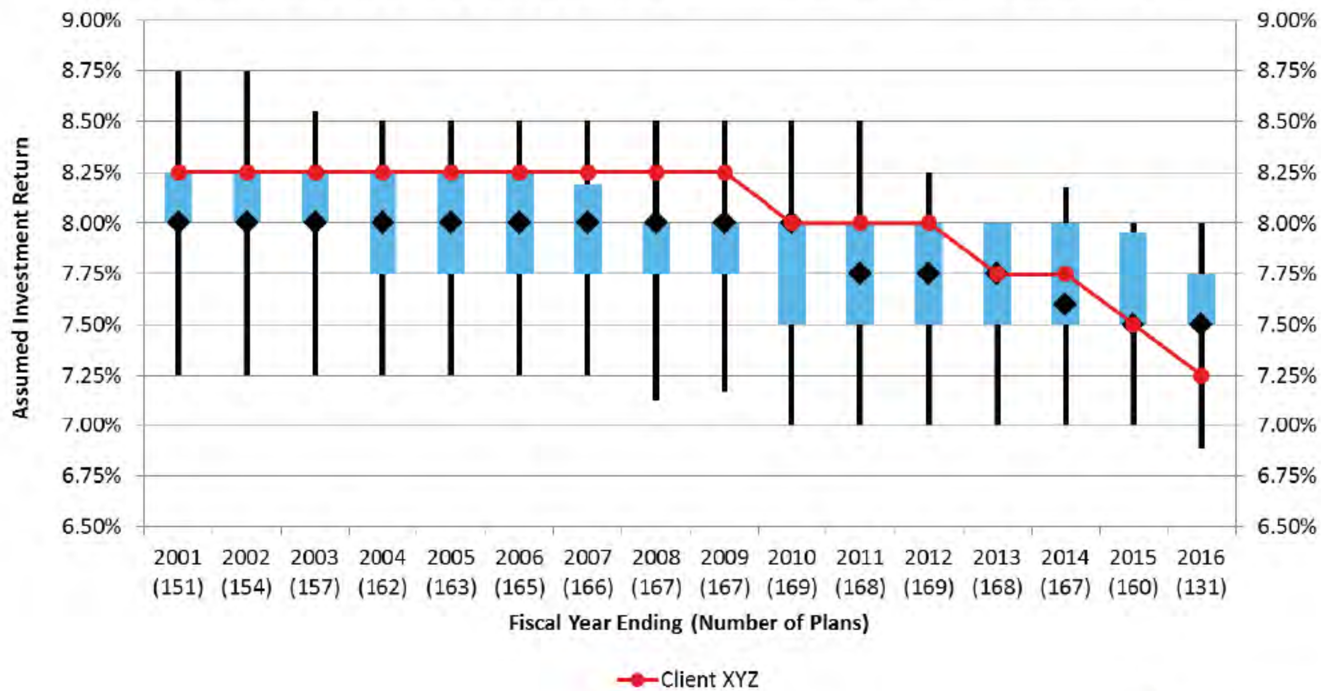
- Median expected returns for all policies below 100% return-seeking assets are projected to trail the actuarial assumed rate of return (7.25%) with higher risk portfolios trending closer to that assumption

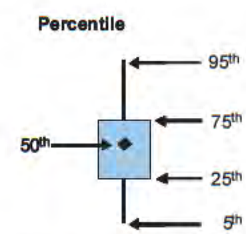
Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Portfolio Analysis

Expected Return Assumption versus Peers[1]

Distribution of U.S. Public Pension Investment Return Assumptions





Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Key Takeaways:

- The public pension peer median actuarial assumption for investment return has declined from 8.00% in 2001-2010 to 7.50% based on the latest survey data
- XYZ's assumption for FYE 2016 (7.25%) lied below the median relative to its peers
- If XYZ fails to achieve (or exceeds) the actuarial return assumption, higher (or lower) funding will be needed in future years

Sources: Public Plans Data (publicplansdata.org) as of July 2017; Expected Returns are the assumptions made by the plans included in the data set.
[1] Peers defined as public funds published within publicplansdata.org as of July 2017; Number of plans per year are shown in parentheses

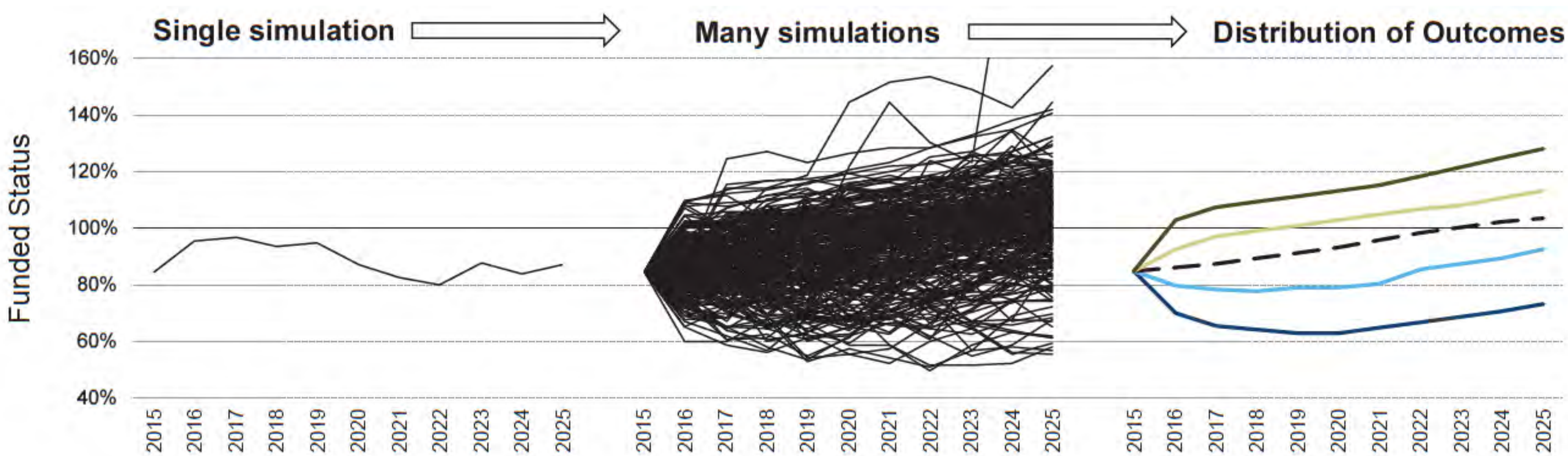
Case ID: 221102792

Analysis

- Asset-Liability Projection Results

Asset-Liability Simulation Overview

- Thousands of simulations plotted in one graph would be impossible to interpret
- Instead, we rank the simulations at each point over the future
- This produces a distribution of outcomes illustrating the degree of uncertainty of a plan's financial position over the projection period
- Different investment strategies will produce different distributions of outcomes



* The path of a given scenario will follow a much less smooth pattern than the distribution suggests, as illustrated above

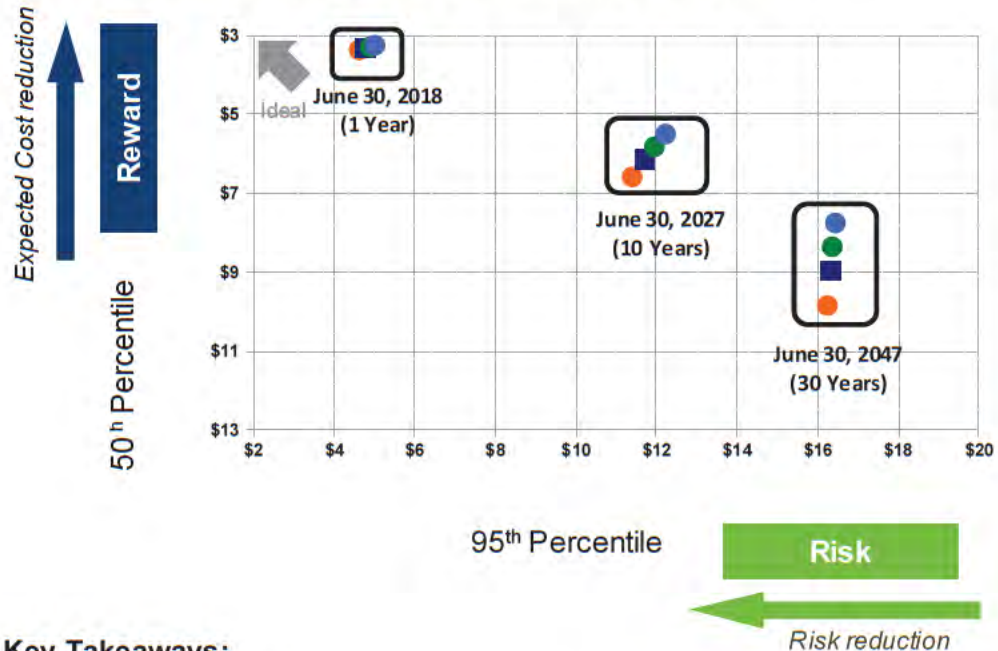
Case ID: 221102792

Asset-Liability Projection Results

Economic Cost Analysis—1-Year, 10-Year, and 30-Year Horizons

Economic Cost

Present Value of Contributions plus AL Funding Shortfall/(Surplus)* at 7.25%, $billions



Strategy ($Billions)	Economic Cost June 30, 2017 Cost	Risk
70% Return-Seeking	$3.4	$4.6
Current Policy (82% R-S)	$3.3	$4.8
90% Return-Seeking	$3.3	$4.9
100% Return-Seeking	$3.3	$5.0

Strategy ($Billions)	June 30, 2027 Cost	Risk
70% Return-Seeking	$6.6	$11.4
Current Policy (82% R-S)	$6.1	$11.7
90% Return-Seeking	$5.8	$11.9
100% Return-Seeking	$5.5	$12.2

Strategy ($Billions)	June 30, 2047 Cost	Risk
70% Return-Seeking	$9.9	$16.2
Current Policy (82% R-S)	$9.0	$16.3
90% Return-Seeking	$8.4	$16.4
100% Return-Seeking	$7.7	$16.4

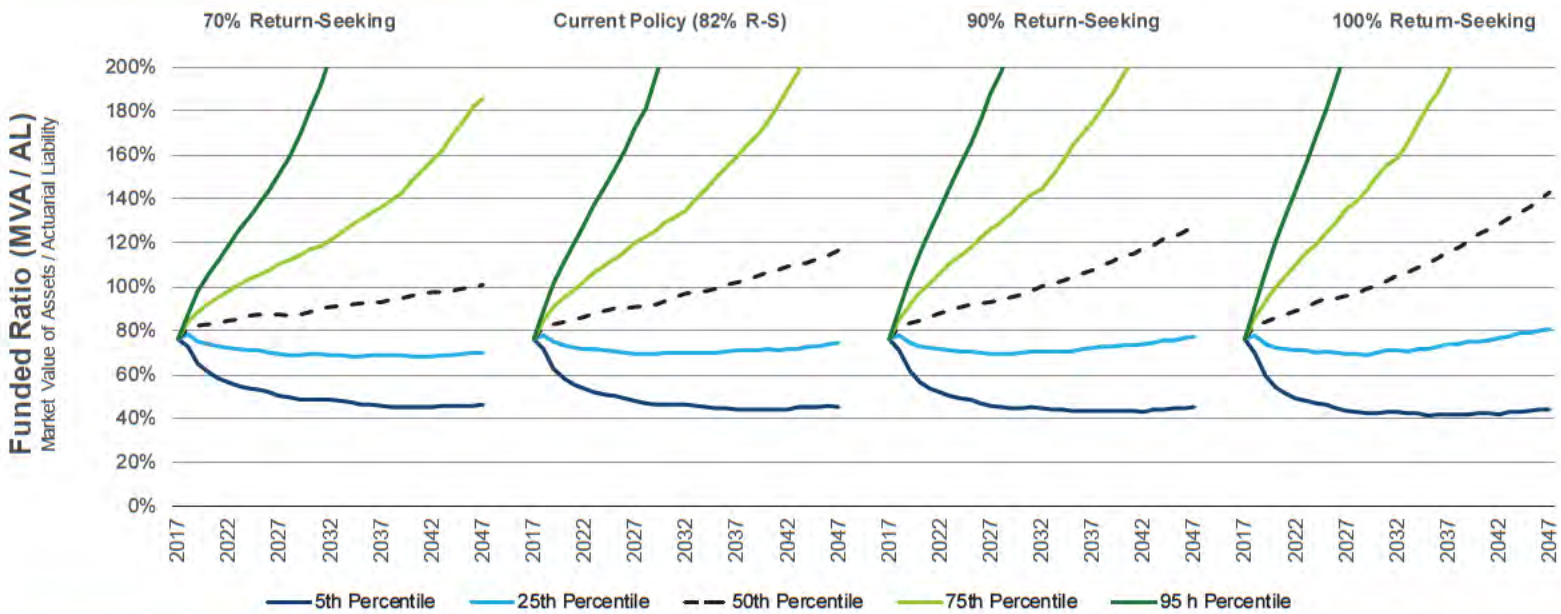
Key Takeaways:

- The magnitude of the risk/reward trade-off changes over a longer-term projection
- Under the Current Policy asset allocation over a 30-year time horizon, the expected Economic Cost is $9.0B and the potential risk is $16.3B
- Adjustments to the portfolio composition may have desirable risk/reward characteristics relative to the Current Policy

* Liability projections assume discount rates of 7.25% for all investment policies studied; Reflects a *utility function:* Excludes 50% of surplus in excess of 120% of Actuarial liability, and includes twice the shortfall below 30% of Actuarial liability, on a market value basis

Asset-Liability Projection Results

Market Value of Assets / Actuarial Liability Funded Ratio



Strategy	70% Return-Seeking			Current Policy (82% R-S)			90% Return-Seeking			100% Return-Seeking		
Year	2027	2037	2047	2027	2037	2047	2027	2037	2047	2027	2037	2047
5 h Percentile	50%	46%	46%	48%	44%	45%	46%	43%	45%	44%	42%	44%
25th Percen ile	69%	69%	70%	70%	71%	74%	70%	72%	77%	69%	74%	81%
50th Percen ile	87%	93%	101%	91%	102%	117%	93%	108%	128%	96%	116%	143%
75th Percen ile	110%	136%	186%	120%	159%	232%	126%	175%	269%	135%	197%	314%
95th Percen ile	151%	287%	622%	172%	345%	787%	188%	392%	939%	208%	467%	1151%
Probability > 100%	36%	46%	51%	42%	52%	60%	45%	56%	64%	47%	59%	67%

Key Takeaways:

- Plan is expected to achieve full funding in the Current Policy
- Higher (or lower) return-seeking strategies adjust the trajectory of the central expectation

* Liability projections assume discount rates of 7.25% for all investment policies studied

Asset-Liability Projection Results

Funded Ratio Analysis (Based on Market Value of Assets)

XYZ is projected to have the following probability of falling below key funded ratio thresholds:

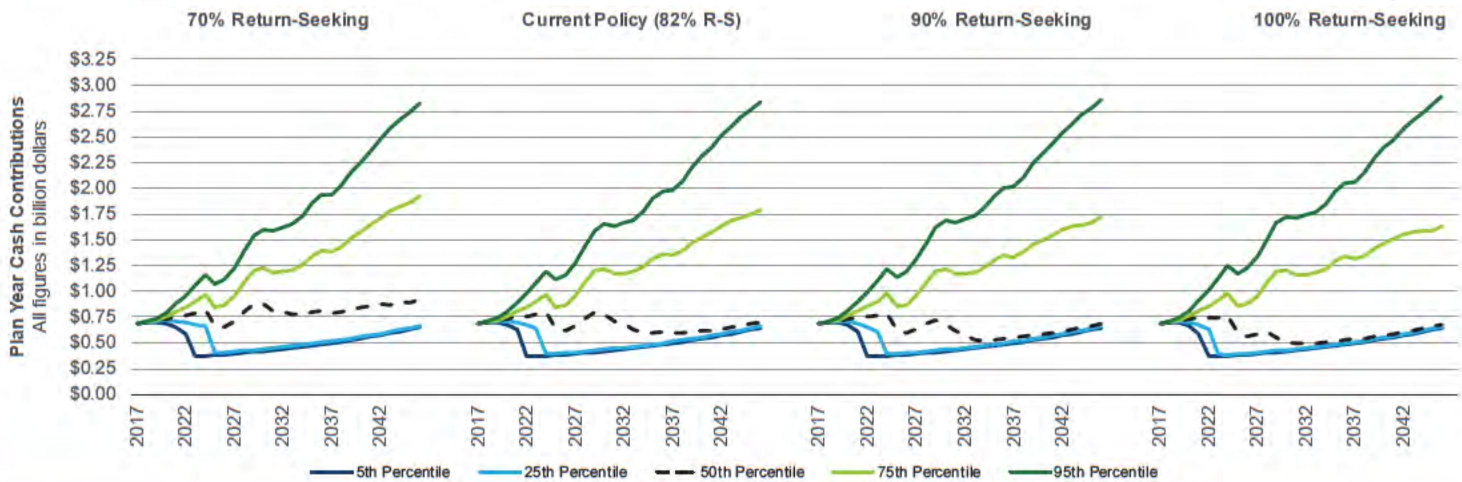
	After 5 Years					After 10 Years					After 30 Years				
Funded Status	20% R-S	40% R-S	60% R-S	Current Policy - 82% R-S	100% R-S	20% R-S	40% R-S	60% R-S	Current Policy - 82% R-S	100% R-S	20% R-S	40% R-S	60% R-S	Current Policy - 82% R-S	100% R-S
100%	100.0%	97.2%	84.6%	71.2%	63.8%	98.3%	88.5%	71.9%	59.4%	53.3%	78.4%	69.6%	56.0%	42.7%	35.2%
90%	99.7%	84.4%	66.7%	55.8%	51.1%	94.6%	75.1%	58.9%	49.1%	44.7%	73.1%	62.9%	48.9%	36.7%	30.0%
80%	79.7%	51.8%	42.6%	38.5%	37.0%	79.6%	55.1%	43.1%	37.9%	35.7%	65.6%	53.6%	40.4%	29.2%	24.6%
70%	13.6%	17.8%	20.4%	22.7%	23.8%	43.8%	30.3%	26.6%	25.4%	25.7%	53.5%	40.3%	28.9%	21.7%	18.7%
60%	0.2%	2.5%	6.0%	10.0%	12.4%	7.4%	9.4%	12.2%	14.4%	16.1%	34.2%	22.8%	17.2%	14.2%	12.9%
50%	0.0%	0.1%	1.0%	3.3%	5.5%	0.0%	1.1%	3.4%	6.3%	8.9%	9.2%	7.6%	7.3%	7.3%	7.4%
40%	0.0%	0.0%	0.0%	0.4%	1.6%	0.0%	0.0%	0.3%	1.7%	3.4%	0.2%	0.7%	1.6%	2.3%	3.5%
30%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.6%	0.0%	0.0%	0.1%	0.4%	0.8%
20%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
10%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

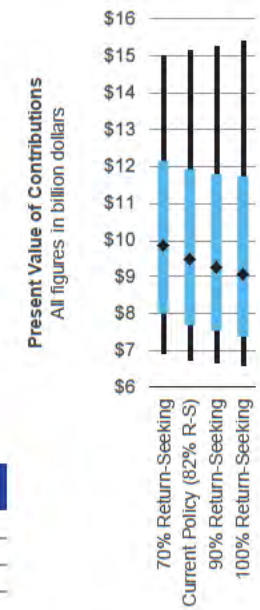
Key Takeaway:

- Higher risk portfolios will have more upside potential over longer periods of time while lower risk portfolios will have higher downside protection in the near-term

Asset-Liability Projection Results

Total Contribution Amount

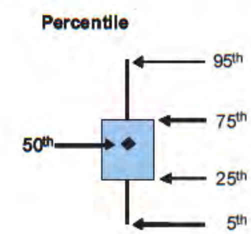




Strategy	70% Return-Seeking			Current Policy (82% R-S)			90% Return-Seeking			100% Return-Seeking		
Year	2026	2036	2046	2026	2036	2046	2026	2036	2046	2026	2036	2046
5th Percentile	$0.39	$0.48	$0.65	$0.38	$0.48	$0.64	$0 38	$0.48	$0.64	$0.38	$0.48	$0.64
25th Percen ile	$0.41	$0.50	$0.66	$0.40	$0 50	$0.66	$0.40	$0.50	$0.66	$0.40	$0 50	$0.66
50th Percen ile	$0.66	$0.81	$0.92	$0.62	$0.61	$0.70	$0 59	$0.54	$0.69	$0.56	$0 52	$0.68
75th Percen ile	$0.86	$1.39	$1.92	$0.87	$1 36	$1.79	$0 87	$1.35	$1.72	$0.87	$1 33	$1.63
95th Percen ile	$1.12	$1.93	$2.82	$1.16	$1 97	$2.84	$1.19	$2.01	$2.86	$1.22	$2 05	$2.90
Probability > $0.75B	39%	55%	67%	37%	45%	49%	36%	43%	48%	35%	43%	48%

Key Takeaway:

- The trajectories of the central expectations (50th percentile outcomes) decline with increased return-seeking allocations while the volatility of those amounts widens

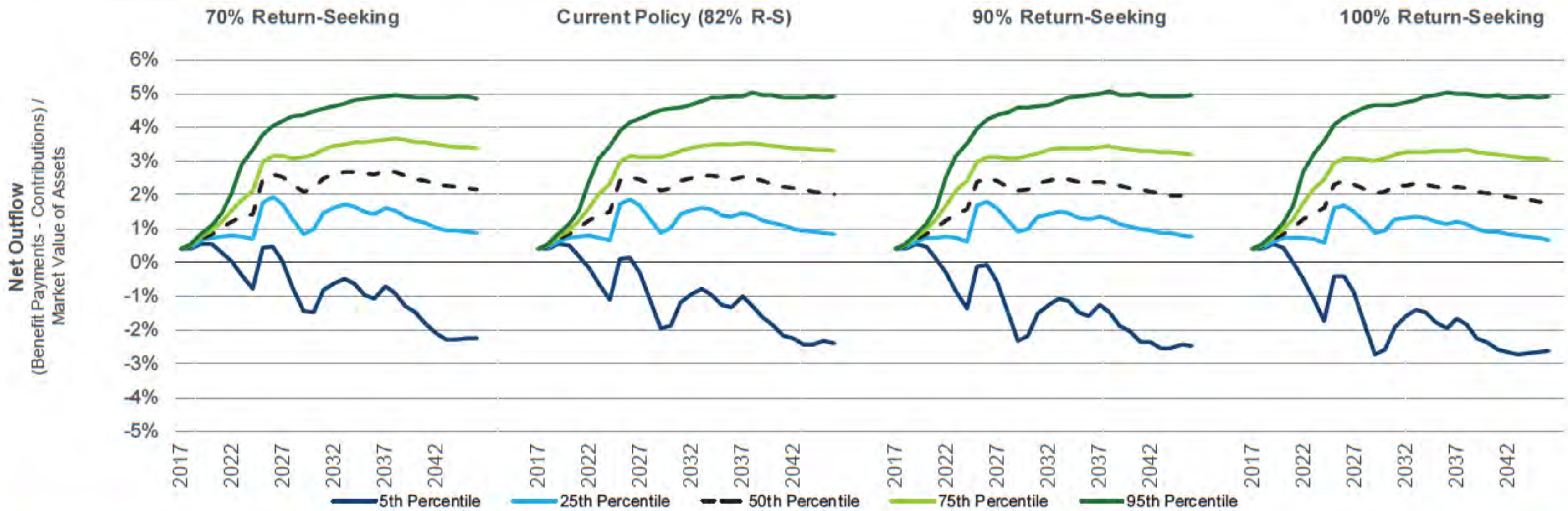


* Liability projections assume discount rates of 7.25% for all investment policies studied

Case ID: 221102792

Asset-Liability Projection Results

Net Outflow Analysis: (Benefit Payments less Contributions) / Market Value of Assets



Strategy	70% Return-Seeking			Current Policy (82% R-S)			90% Return-Seeking			100% Return-Seeking		
Year	2026	2036	2046	2026	2036	2046	2026	2036	2046	2026	2036	2046
5th Percentile	0.5%	-1.1%	-2.2%	0.1%	-1.3%	-2.4%	-0.1%	-1.6%	-2.5%	-0.4%	-1.9%	-2.6%
25th Percentile	1.9%	1.4%	0.9%	1.8%	1.4%	0.8%	1.8%	1.3%	0.8%	1.7%	1.1%	0.7%
50th Percentile	2.6%	2.6%	2.1%	2.5%	2.5%	2.0%	2.5%	2.4%	1.9%	2.4%	2.2%	1.8%
75th Percentile	3.2%	3.6%	3.4%	3.1%	3.5%	3.3%	3.1%	3.4%	3.2%	3.1%	3.3%	3.1%
95th Percentile	4.0%	4.9%	4.8%	4.1%	4.9%	4.9%	4.2%	5.0%	4.9%	4.3%	5.0%	4.9%
Probability > 3%	32%	40%	33%	31%	37%	31%	30%	34%	29%	28%	32%	26%

Key Takeaway:

- Net outflow is consistent across the policies modeled with central expectations (50th percentile outcome) in the 1-3% range

* Liability projections assume discount rates of 7.25% for all investment policies studied

Asset-Liability Projection Results

Summary and Conclusions

All Scenarios	30-year Economic Cost		30-year Present Value of Contributions		30-year Ending Funded Ratio (MVA / AL)	
$ billions	Expected[1]	Downside[2]	Expected[1]	Downside[2]	Expected[1]	Downside[3]
Current Policy (82% R-S)	$9.0	$16.3	$9.5	$15.2	117%	45%
0% Return-Seeking	$15.6	$17.4	$13.9	$15.1	61%	45%
10% Return-Seeking	$14.9	$17.0	$13.3	$14.8	64%	47%
20% Return-Seeking	$14.1	$16.7	$12.7	$14.6	68%	48%
30% Return-Seeking	$13.3	$16.5	$12.1	$14.6	72%	48%
40% Return-Seeking	$12.4	$16.4	$11.4	$14.7	77%	47%
50% Return-Seeking	$11.6	$16.3	$10.9	$14.8	83%	48%
60% Return-Seeking	$10.7	$16.3	$10.3	$14.9	91%	47%
70% Return-Seeking	$9.9	$16.2	$9.8	$15.0	101%	46%
80% Return-Seeking	$9.1	$16.3	$9.5	$15.1	114%	46%
90% Return-Seeking	$8.4	$16.4	$9.3	$15.3	128%	45%
100% Return-Seeking	$7.7	$16.4	$9.1	$15.4	143%	44%

Key Findings:

- Plan is expected to achieve full funding in the Current Policy
- Higher return-seeking strategies adjust the trajectory of the central expectation

[1] Expected = 50th percentile outcome or central expectation across all 5,000 simulations
[2] Downside = 95th percentile outcome across all 5,000 simulations
[3] Downside = 5th percentile outcome across all 5,000 simulations

Analysis

- Liquidity Analysis

Overview

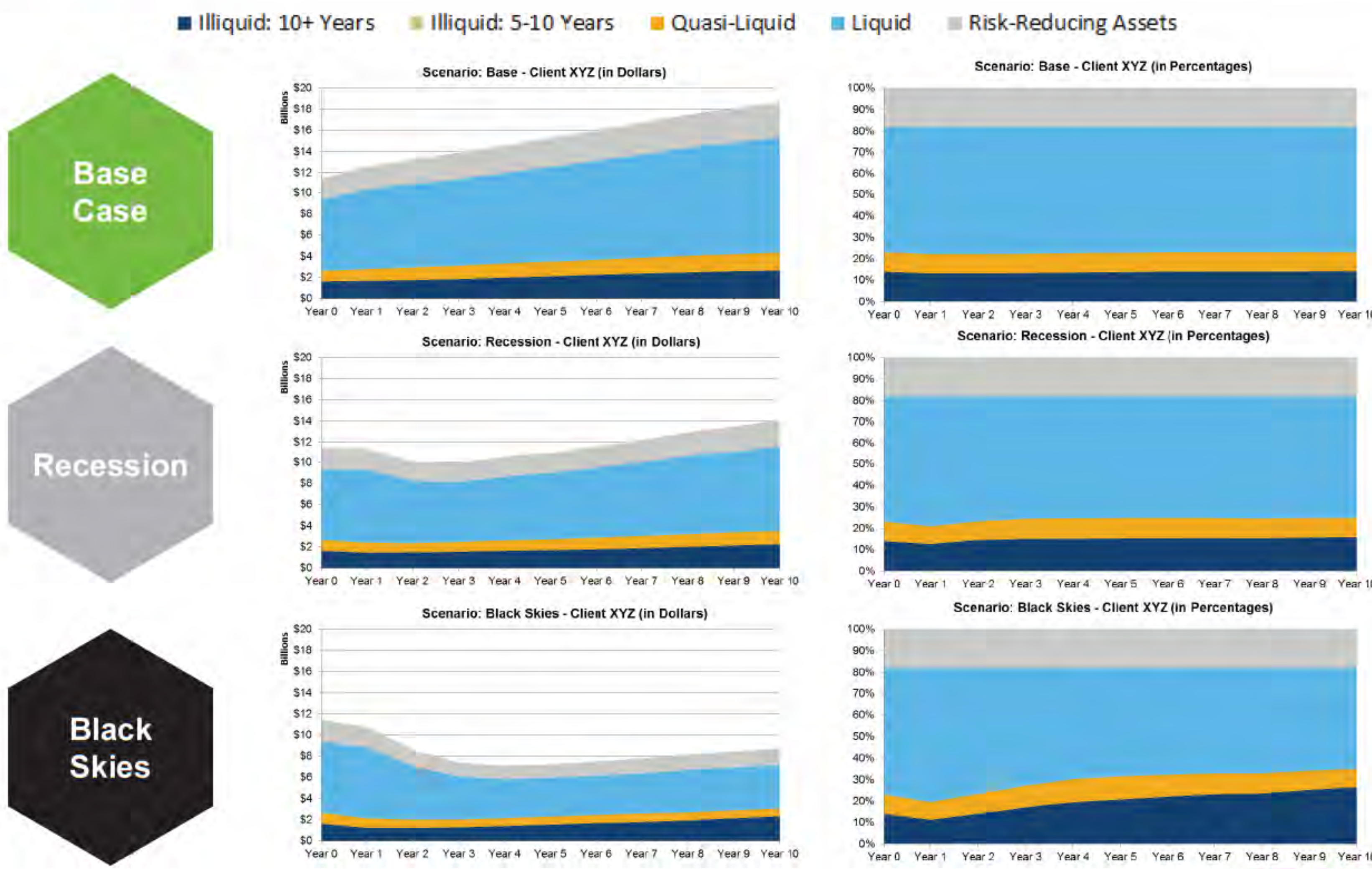
- XYZ's liquidity analysis is performed under its current asset allocation
  - Intended as a stress-testing model, incorporating the profile of the liabilities as well as expected future contributions
  - Uses different scenarios for economic environments and other relevant events
  - Shows how the portfolio's liquidity profile could evolve with a given investment strategy

- We categorized investments by liquidity into four buckets
  - **Liquid:** less than 3 months needed for return of capital (e.g. publicly traded securities)
  - **Quasi-Liquid:** Typical lock-up of 3–12 months. Conservatively, we assumed a 1-year lock-up in most economic environments, 2 years in a Recession scenario, and 3 years in a Black Skies scenario (e.g. many hedge funds, core real estate)
  - **Illiquid: Potential lock-up of 5–10 years**, depending on economic environment (e.g. closed-ended real estate)
  - **Illiquid: Potential lock-up of 10+ years** (e.g. typical private equity)

- This is intended to be a conservative approximation of the actual liquidity properties of the assets

- Not surprisingly, varying economic scenarios would lead XYZ's percentage allocation to alternative assets to differ from its targets due to liquidity differences in asset classes

Liquidity Analysis
Current Policy



Conclusions

- The Current Policy asset allocation has sufficient liquidity in all economic scenarios modeled
  - We do not foresee potential cash flow issues occurring in the Black Skies scenario, but the allocations in the Black Skies scenario could drift far enough from the targets that XYZ would want to rebalance.

- This analysis is **highly** sensitive to the assumed contributions
  - If XYZ contributes less than assumed, especially in a Black Skies environment, then the liquidity issues could be exacerbated.

Analysis

- Summary and Conclusions

Summary and Conclusions

Portfolio Analysis

- The current portfolio is well-diversified
- The expected return assumption for the current portfolio is 6.80% over the next 30 years
- XYZ should consider its desired balance between funding and investment returns in order to determine the ideal investment portfolio

Asset-Liability Projection Analysis

- Longer time horizons are expected to reward higher levels of risk; shorter time horizons are not
- The funded ratio is projected to trend toward full funding over the course of the projection period
- Adverse market experience could significantly impact the funded status of the Plan over the projection period

Liquidity Analysis

- The current asset allocation has sufficient liquidity in all economic scenarios modeled

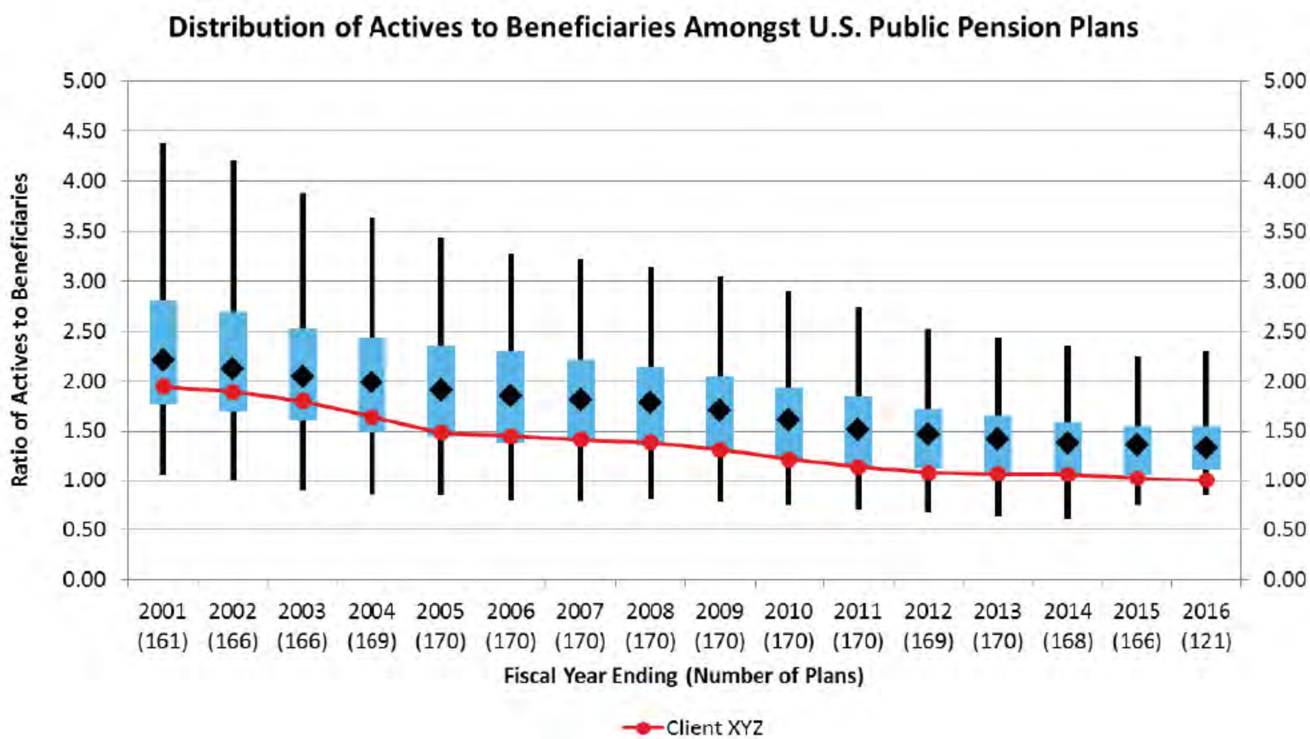
Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Appendix

- Peer Comparisons

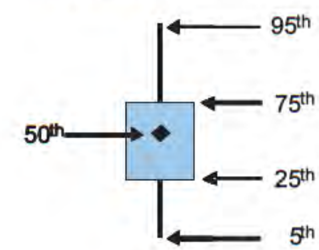
Client XYZ

Demographic Data versus Peers[1]



Key Takeaways:

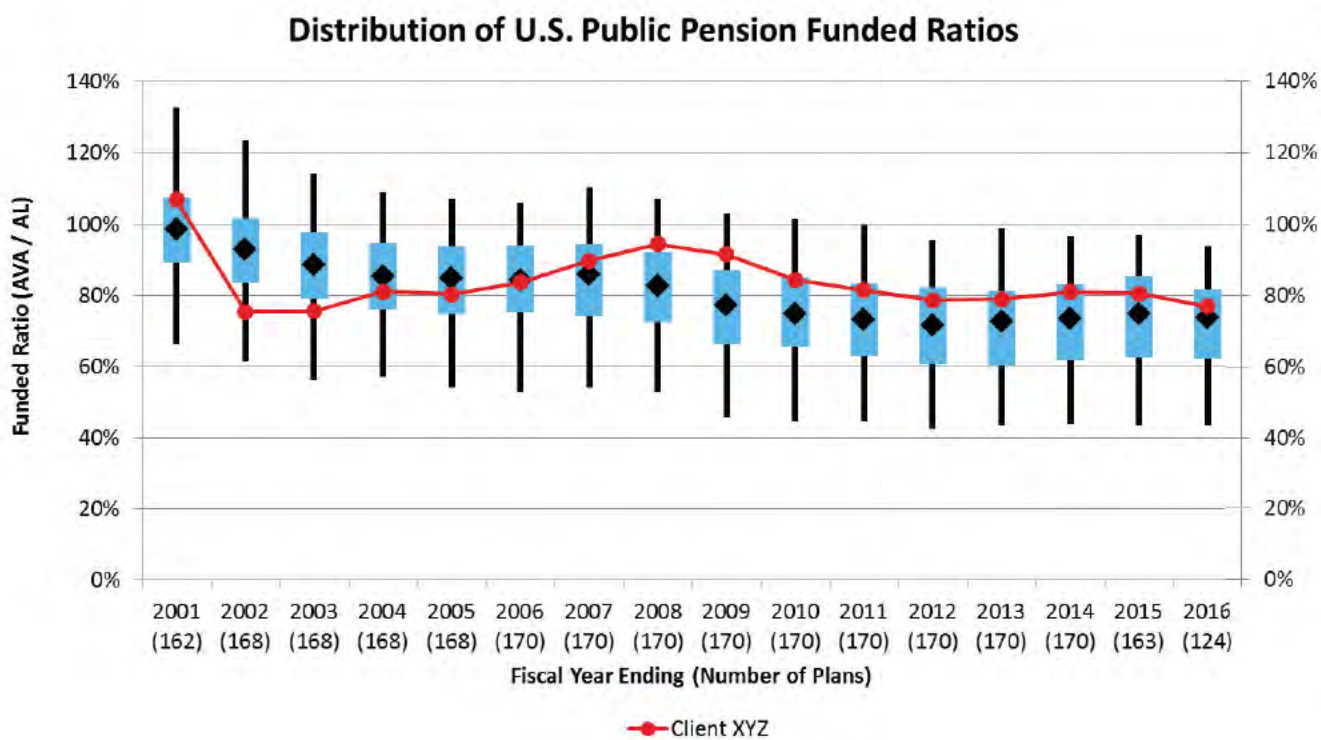
- The median ratio of actives to beneficiaries has declined from 2.2 at FYE 2001 to 1.3 at FYE 2016.
- Over that same time frame, XYZ's active to beneficiary ratio has declined from 1.9 to 1.0



Sources: Public Plans Data (publicplansdata.org) as of July 2017;
[1] Peers defined as public funds published within publicplansdata.org as of July 2017; Number of plans per year are shown in parentheses

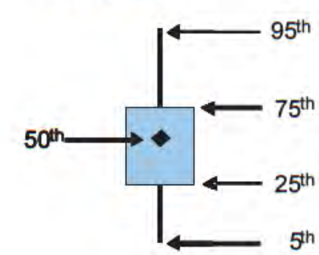
Client XYZ

Funded Ratio (Based on Actuarial Value of Assets) versus Peers[1]



Key Takeaways:

- The median funded ratio as of FYE 2016 was 74% based on the latest survey data
- XYZ's FYE 2016 funded ratio (77%) lied above the 50th percentile relative to its peers

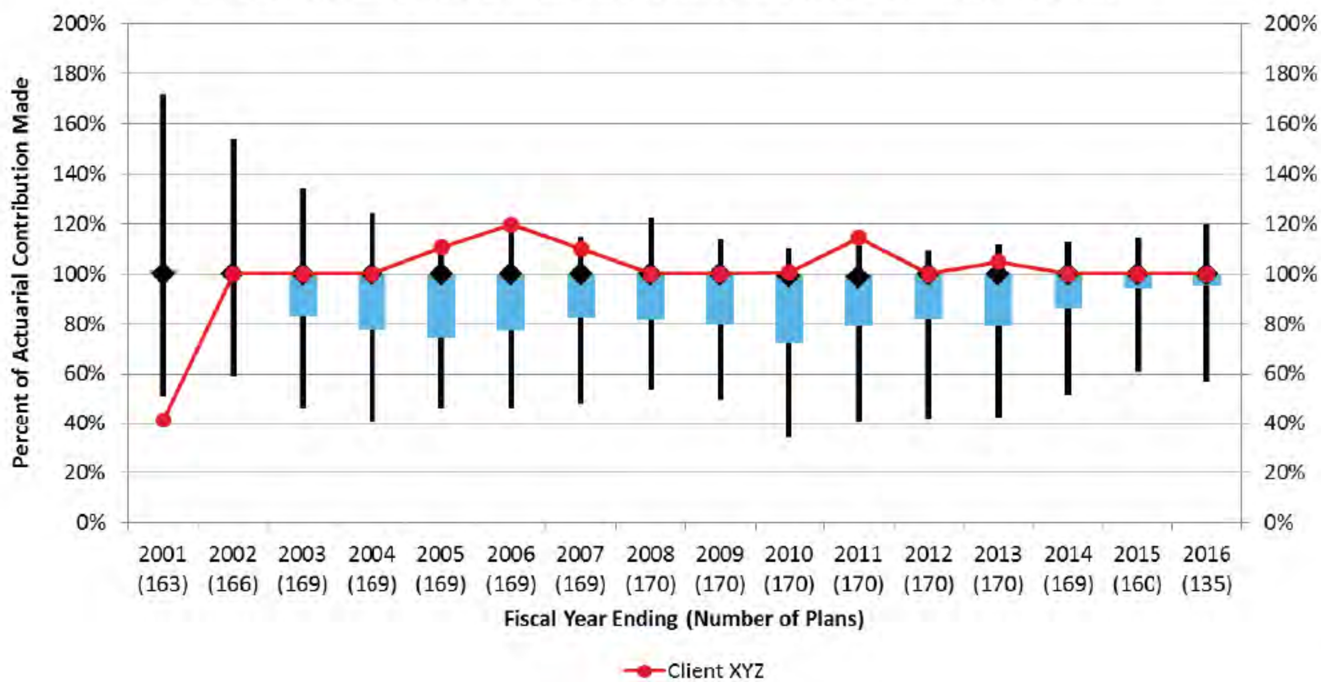


Sources: Public Plans Data (publicplansdata.org) as of July 2017;
[1] Peers defined as public funds published within publicplansdata.org as of July 2017; Number of plans per year are shown in parentheses

Client XYZ

Percentage of Actuarial Contribution Made versus Peers[1]

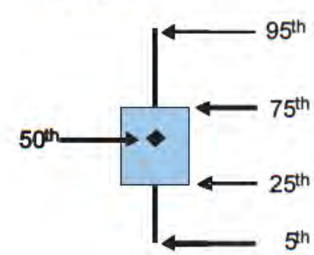
Distribution of U.S. Public Pension % of Actuarial Contribution



Key Takeaway:

- Contributions, as a percentage of the actuarial amount, have been at least 100% since FYE 2002

Percentile



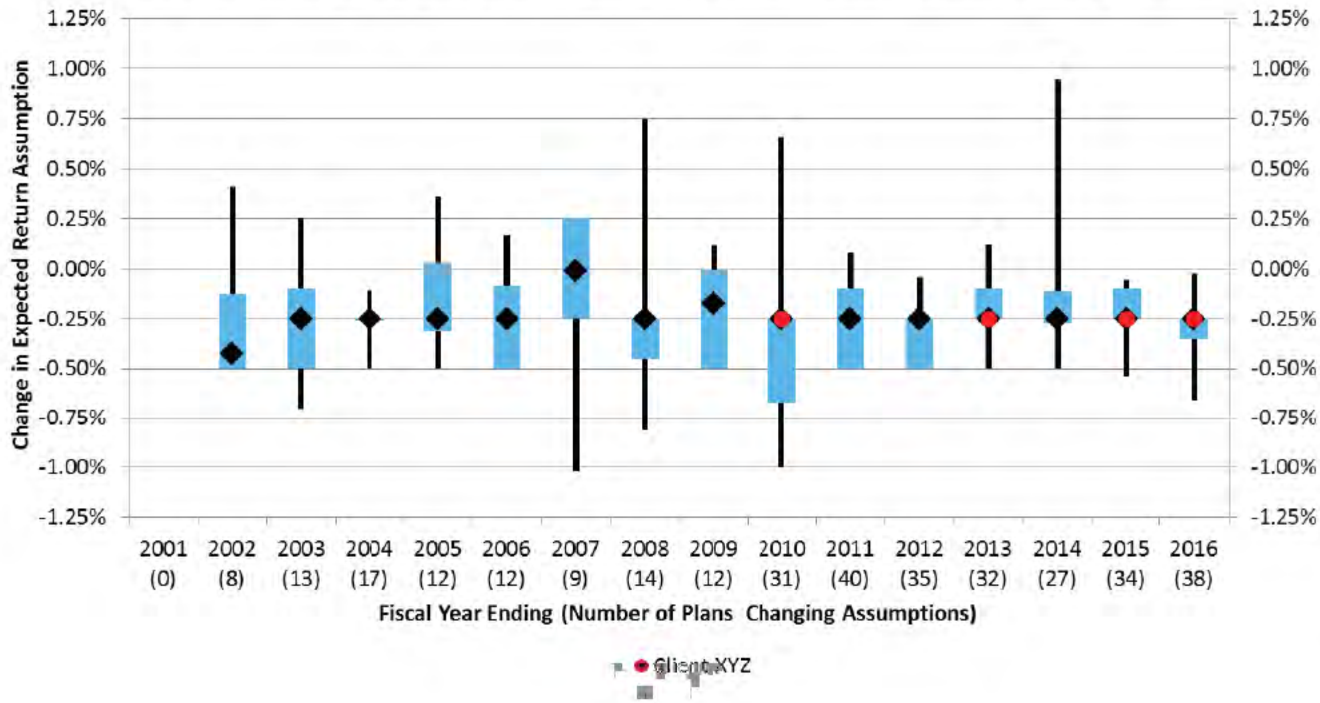
Sources: Public Plans Data (publicplansdata.org) as of July 2017
[1] Peers defined as public funds published within publicplansdata.org as of July 2017; Number of plans per year are shown in parentheses

Case ID: 221102792

Client XYZ

Magnitude of Expected Return on Assets Assumption Changes versus Peers[1]

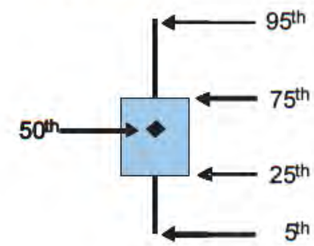
Distribution of Changes in U.S. Public Pension Investment Return Assumptions



Key Takeaway:

- The median change in the investment return assumption, for those plans that made a change, has consistently been a reduction in the 25bps range in recent years

Percentile



Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Sources: Public Plans Data (publicplansdata.org) as of July 2017
Peers defined as public funds published within publicplansdata.org as of July 2017; Number of plans per year are shown in parentheses

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Case ID: 221102792

Appendix

- Actuarial Assumptions and Methods

Actuarial Assumptions and Methods

- Actuarial projections provided by the plan actuary as of June 30, 20XX on an open group basis
- Actuarial assumptions:
  - Valuation Rate of Interest = 7.25%
  - Inflation = 3.00%
  - Payroll Growth = 3.50%
  - Actuarial Value of Assets: determined by recognizing differences between actual and expected investment income over a closed five-year period with no corridor
  - All other assumptions as documented in the Actuarial Valuation Report as of June 30, 2017 unless noted otherwise
- Actuarially Determined Contribution Calculation = Normal Cost plus a level percent amortization of the unfunded liability using a 3.50% salary scale
  - New amortization bases are established each year, creating a layered 20-year amortization base
- Actual asset returns of 7.8% for the period July 1, 2017 – December 31, 2017 were incorporated into the modeling

Appendix

- Capital Market Assumptions

This section does not represent the current CMAs of the company, and the views are subject to change.

AHIC Capital Market Assumptions
As of December 31, 20XX (30 Years)

		Expected Real Return[1]	Expected Nominal Return[1]	Expected Nominal Volatility
	Equity			
1	Large Cap U.S. Equity	3.9%	6.3%	17.5%
2	Small Cap U.S. Equity	4.4%	6.8%	23.5%
3	Global Equity IMI	4.8%	7.2%	19.0%
4	International Equity (Developed)	4.7%	7.1%	20.5%
5	Emerging Markets Equity	5.2%	7.6%	27.5%
	Fixed Income			
6	Intermediate Gov't Bonds (4-Year Duration)	0.3%	2.6%	3.5%
7	Intermediate Corporate Bonds (4-Year Duration)	1.2%	3.5%	5.0%
8	High Yield Bonds	2.4%	4.8%	12.5%
	Alternatives			
9	Opportunistic[2]	4.0%	6.4%	13.5%
10	Core Real Estate	3.1%	5.5%	11.5%
11	Real Assets[3]	6.1%	8.5%	24.5%
12	Private Equity	6.1%	8.5%	24.5%
	Inflation			
13	Inflation	0.0%	2.3%	1.5%

[1] All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees.
[2] Opportunistic modeled as 70% Global Equity / 30% Intermediate Aggregate Fixed Income
[3] Real Assets modeled as Private Equity

AHIC Capital Market Assumptions
As of December 31, 20XX (30 Years)

	Nominal Correlations	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Large Cap U.S. Equity	**1.00**	0.92	0.95	0.79	0.72	-0.06	0.07	0.61	0.95	0.38	0.69	0.69	0.05
2	Small Cap U.S. Equity	0.92	**1.00**	0.90	0.72	0.67	-0.06	0.06	0.56	0.89	0.36	0.64	0.64	0.04
3	Global Equity IMI	0.95	0.90	**1.00**	0.92	0.84	-0.06	0.07	0.66	1.00	0.39	0.67	0.67	0.07
4	International Equity (Developed)	0.79	0.72	0.92	**1.00**	0.75	-0.06	0.06	0.58	0.91	0.35	0.56	0.56	0.08
5	Emerging Markets Equity	0.72	0.67	0.84	0.75	**1.00**	-0.05	0.08	0.66	0.84	0.32	0.53	0.53	0.06
6	Intermediate Gov't Bonds (4-Year Duration)	-0.06	-0.06	-0.06	-0.06	-0.05	**1.00**	0.78	0.05	0.02	0.04	-0.04	-0.04	0.27
7	Intermediate Corporate Bonds (4-Year Duration)	0.07	0.06	0.07	0.06	0.08	0.78	**1.00**	0.40	0.16	0.09	0.07	0.07	0.21
8	High Yield Bonds	0.61	0.56	0.66	0.58	0.66	0.05	0.40	**1.00**	0.68	0.26	0.45	0.45	0.20
9	Opportunistic	0.95	0.89	1.00	0.91	0.84	0.02	0.16	0.68	**1.00**	0.40	0.66	0.66	0.09
10	Core Real Estate	0.38	0.36	0.39	0.35	0.32	0.04	0.09	0.26	0.40	**1.00**	0.33	0.33	0.10
11	Real Assets	0.69	0.64	0.67	0.56	0.53	-0.04	0.07	0.45	0.66	0.33	**1.00**	1.00	0.06
12	Private Equity	0.69	0.64	0.67	0.56	0.53	-0.04	0.07	0.45	0.66	0.33	1.00	**1.00**	0.06
13	Inflation	0.05	0.04	0.07	0.08	0.06	0.27	0.21	0.20	0.09	0.10	0.06	0.06	**1.00**

AHIC Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 2018

The following capital market assumptions were developed by Aon's Global Asset Allocation Team and represent the long-term capital market outlook (i.e., 30 years) based on data at the end of the fourth quarter of 20XX. The assumptions were developed using a building block approach, reflecting observable inflation and interest rate information available in the fixed income markets as well as Consensus Economics forecasts. Our long-term assumptions for other asset classes are based on historical results, current market characteristics, and our professional judgment.

Inflation – Expected Level (2.3%)

Based on Consensus Economics long-term estimates and our near-term economic outlook, we expect U.S. consumer price inflation to be approximately 2.3% during the next 30 years.

Real Returns for Asset Classes

Fixed Income

- **Cash (0.1%)** – Over the long run, we expect the real yield on cash and money market instruments to produce a real return of 0.1% in a moderate- to low-inflationary environment.
- **TIPS (0.9%)** – We expect intermediate duration Treasury Inflation-Protected Securities to produce a real return of about 0.9%.
- **Core Fixed Income (i.e., Market Duration) (0.9%)** – We expect intermediate duration Treasuries to produce a real return of about 0.3%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.6%, resulting in a long-term real return of 0.9%.
- **Long Duration Bonds – Government and Credit (1.1%)** – We expect Treasuries with a duration comparable to the Long Government Credit Index to produce a real return of 0.6%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.5%, resulting in an expected real return of 1.1%.

AHIC Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 20XX

- **Long Duration Bonds – Credit (1.5%)** – We expect Treasuries with a duration comparable to the Long Credit Index to produce a real return of 0.6 %. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.9%, resulting in an expected real return of 1.5%.
- **Long Duration Bonds – Government (0.6%)** – We expect Treasuries with a duration of ~12 years to produce a real return of 0.6% during the next 30 years.
- **High Yield Bonds (2.4%)** – We expect intermediate duration Treasuries to produce a real return of about 0.3%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 2.1%, resulting in an expected real return of 2.4%.
- **Bank Loans (3.2%)** – We expect LIBOR to produce a real return of about 0.5%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults) to be 2.7%, resulting in an expected real return of 3.2%.
- **Non-US Developed Bonds: 50% Hedged (0.5%) –** We forecast real returns for non-US developed market bonds to be 0.5% over a 30-year period after adjusting for a 50% currency hedge. We assume a blend of one-third investment grade corporate bonds and two-thirds government bonds. We also produce assumptions for 0% hedged and 100% hedged non-US developed bonds.
- **Emerging Market Bonds (Sovereign; USD) (2.2%) –** We forecast real returns for emerging market sovereign bonds denominated in USD to be 2.2% over a 30-year period.
- **Emerging Market Bonds (Corporate; USD) (2.1%)** – We forecast real returns for emerging market corporate bonds denominated in USD to be 2.1% over a 30-year period.
- **Emerging Market Bonds (Sovereign; Local) (3.5%)** – We forecast real returns for emerging market sovereign bond denominated in local currency to be 3.5% over a 30-year period.
- **Multi Asset Credit (MAC) (3.8%) –** We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 2.8% plus 1.0% from alpha (net of fees) over a 30-year period.

AHIC Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 20XX

Equities

- **Large Cap U.S. Equity (3.9%)** – This assumption is based on our 30-year outlook for large cap U.S. company dividends and real earnings growth. Adjustments are made for valuations as needed.
- **Small Cap U.S. Equity (4.4%)** – Adding a 0.5% return premium for small cap U.S. equity over large cap U.S. equity results in an expected real return of 4.4%. This return premium is theoretically justified by the higher risk inherent in small cap U.S. equity versus large cap U.S. equity, and is also justified by historical data. In recent years, higher small cap valuations relative large cap equity has reduced the small cap premium.
- **Global Equity (Developed & Emerging Markets) (4.8%)** – We employ a building block process similar to the U.S. equity model using the developed and emerging markets that comprise the MSCI All-Country World Index. Our roll-up model produces an expected real return of 4.8% for global equity.
- **International (Non-U.S.) Equity, Developed Markets (4.7%)** – We employ a building block process similar to the U.S. equity model using the non-U.S. developed equity markets that comprise the MSCI EAFE Index.
- **Emerging Market Stocks (5.2%)** - We employ a building block process similar to the U.S. equity model using the non-U.S. emerging equity markets that comprise the MSCI Emerging Markets Index.
- **Equity Risk Insurance Premium Strategies- High Beta (3.7%) –** We expect nominal returns from insurance equity risk premium to average 4.1% plus 2.0% from cash & dividends over the next 30 years.

Alternative Asset Classes

- **Hedge Fund-of-Funds Universe (1.7%)** – The generic category "hedge funds" encompasses a wide range of strategies accessed through "fund-of-funds" vehicles. We also assume the ***median*** manager is selected and also allow for the additional costs associated with Fund-of-Funds management. A top-tier portfolio of funds (hedge fund-of-funds buy-list) could add an additional 1.1% in return at similar volatility based on alpha, lower fees and better risk management.

AHIC Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 20XX

- **Hedge Fund-of-Funds Buy List (2.9%)** – The generic category of top-tier "hedge funds" encompasses a wide range of strategies accessed through "fund-of-funds" vehicles. We assume additional costs associated with Funds-of-Funds management. To use this category the funds must be buy rated or we advise on manager selection.
- **Broad Hedge Funds (3.1%)** – Represents a diversified portfolio of direct hedge fund investments. This investment will tend to be less diversified than a typical "fund-of-funds" strategy as there will be fewer underlying managers and will not include the extra layer of fees found in a Fund-of-Funds structure.
- **Broad Hedge Funds Buy List (4.4%)** – Represents a diversified portfolio of top-tier direct hedge fund investments. This investment will tend to be less diversified than a typical "fund-of-funds" strategy as there will be fewer underlying managers and will not include the extra layer of fees found in a Fund-of-Funds structure. To use this category the funds must be buy rated or we advise on manager selection.
- **Core Real Estate (3.1%)** – Our real return assumption for core real estate is based on a gross income of about 4.4%, management fees of roughly 1%, and future capital appreciation near the rate of inflation during the next 30 years. We assume a portfolio of equity real estate holdings that is diversified by property type and geographic region.
- **U.S. REITs (4.0%)** – Our real return assumption for U.S. REITs is based on income of 3.9% and future capital appreciation near the rate of inflation over the next 30 years. REITs are a sub-set of the U.S. small/mid cap equities.
- **Commodities (2.8%)** – Our commodity assumption is for a diversified portfolio of commodity futures contracts. Commodity futures returns are composed of three parts: spot price appreciation, collateral return, and roll return (positive or negative change implied by the shape of the future curve). We believe that spot prices will converge with CPI over the long run (i.e., 2.3%). Collateral is assumed to be LIBOR cash 0.5%. Also, we believe the roll effect will be near zero, resulting in a real return of approximately 2.8% for commodities.

AHIC Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 20XX

- **Private Equity (6.1%)** – Our private equity assumption reflects a diversified fund of funds with exposure to buyouts, venture capital, distressed debt, and mezzanine debt.
- **Infrastructure (4.0%)** – Our infrastructure assumption is formulated using a cash flow based approach that projects cash flows (on a diversified portfolio of assets) over a 30 year period. Income and capital growth as well as gearing levels, debt costs and terms, relevant tax and management expenses are all taken into consideration. Our approach produces an expected real return of 4.0% for infrastructure.
- **Equity Risk Insurance Premium Strategies- Low Beta (3.5%)** – We assume nominal returns from cash of 2.4% + 3.5% from alpha.

Volatility / Correlation Assumptions

Assumed volatilities are formulated with reference to implied volatilities priced into option contracts of various terms, as well as with regard to historical volatility levels. For asset classes which are not marked to market (for example real estate), we "de-smooth" historical returns before calculating volatilities. Importantly, we consider expected volatility trends in the future – in recent years we assumed the re-emergence of an economic cycle and a loss of confidence in central bankers would lead to an increase in volatility. Correlation assumptions are generally similar to actual historical results; however, we do make adjustments to reflect our forward-looking views as well as current market fundamentals.

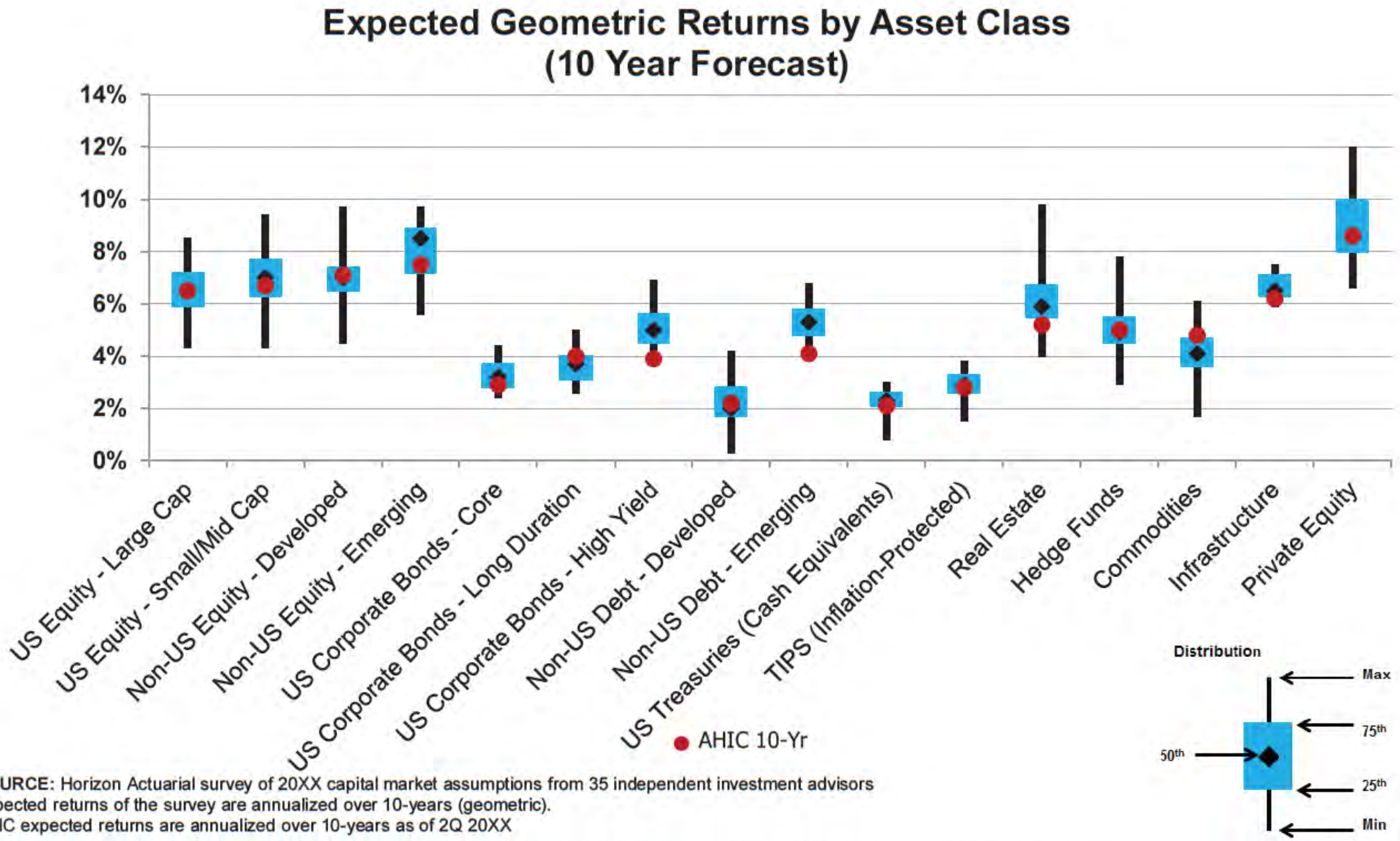
Appendix

- Horizon Survey of Capital Market Assumptions

20XX Horizon Survey Results
AHIC vs. Other Advisors

- Since 20XX, Horizon Actuarial Services, LLC has conducted a capital market assumption survey of investment firms to aid in determining reasonable assumptions for a pension plan's expected return on assets
  - While we do not seek to change our approach based on how we stack up to peers, it is a helpful double-check to make sure we are not too far off from others in the industry
- Compared to 20XX, the 20XX survey results under the 10-year forecast indicate a slight decrease in return assumptions for both risky assets (equity-like) and fixed income asset classes
  - Equity return assumptions are lower by an average of 0.2%
  - Fixed income return assumptions are lower by an average of 0.3%
  - Alternative asset class return assumptions are lower by an average of 0.1%
- 20XX AHIC 10-year forecast assumptions tend to be lower than the survey average
  - AHIC equity assumptions are driven by market valuations, earnings growth expectations and assumed payouts to investors. Recent experience suggests strong equity market performance has been driven more by increasing valuations than increasing profits. As markets have become more expensive, our equity return assumptions have consequently fallen
  - AHIC fixed income assumptions reflect falling yields and flattening of yield curves during the first quarter of 20XX
  - AHIC alternative asset class assumptions are generally lower due to methodological and inflation forecast differences compared to survey participant forecasts
- In conclusion, AHIC assumptions appear somewhat more conservative than peers included in the 20XX Horizon Survey of capital market assumptions

Ask 35 Consultants and…



SOURCE: Horizon Actuarial survey of 20XX capital market assumptions from 35 independent investment advisors
Expected returns of the survey are annualized over 10-years (geometric).
AHIC expected returns are annualized over 10-years as of 2Q 20XX

Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

AHIC Versus Peers (20XX Horizon Survey)—10-Year Forecast

	Horizon Survey		AHIC		
	10 Year Horizon		10 Year Forecasts		
Asset Class	Expected Return	Expected Risk	Expected Return	Expected Risk	Difference
US Equity - Large Cap	6.5%	16.6%	6.5%	17.0%	0.0%
US Equity - Small/Mid Cap	6.9%	20.2%	6.7%	23.0%	-0.2%
Non-US Equity - Developed	7.0%	18.9%	7.1%	20.0%	0.1%
Non-US Equity - Emerging	8.0%	25.4%	7.5%	30.0%	-0.5%
US Fixed Income - Core	3.2%	5.5%	2.9%	4.0%	-0.3%
US Fixed Income - Long Duration Corp	3.6%	10.4%	4.0%	11.0%	0.4%
US Fixed Income - High Yield	5.1%	10.6%	3.9%	12.0%	-1.2%
Non-US Fixed Income - Developed	2.2%	7.4%	2.2%	5.5%	0.0%
Non-US Fixed Income - Emerging	5.3%	11.8%	4.1%	13.0%	-1.2%
Treasuries (Cash Equivalents)	2.3%	3.0%	2.1%	1.0%	-0.2%
TIPS (Inflation-Protected)	2.9%	6.3%	2.8%	4.5%	-0.1%
Real Estate	6.2%	14.5%	5.2%	11.5%	-1.0%
Hedge Funds	4.9%	8.0%	5.0%	9.0%	0.1%
Commodities	4.1%	17.9%	4.8%	17.0%	0.8%
Infrastructure	6.7%	14.6%	6.2%	14.5%	-0.5%
Private Equity	9.0%	22.0%	8.6%	24.0%	-0.4%
Inflation	2.2%	1.7%	2.2%	1.0%	0.0%

Notes (Horizon Survey):

Source: Horizon Actuarial survey of 20XX capital market assumptions from 35 independent investment advisors

Expected returns are annualized (geometric).

Notes (AHIC Forecasts):

AHIC Forecasts are for Q2 20XX

US Equity - Small/Mid Cap forecasts represents AHIC forecasts for US Small Cap

US Fixed Income - Long Duration forecasts represents AHIC forecasts for Long Duration Credit

Non-US Fixed Income - Developed forecasts represents AHIC forecasts for Non-US Fixed Income - Developed (50% Hedged)

Non-US Fixed Income- Emerging forecasts represents AHIC forecasts for Non-US Fixed Income- Emerging Sovereign USD

Real Estate forecasts represents AHIC forecasts for Core Private Real Estate

Hedge Funds forecasts represents AHIC forecasts for Hedge Fund-of-Funds (Buy List)

Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Leading Methodologies & Reasons for Differences

Leading Methodologies

- Building Block
- Global Capital Asset Pricing Model (Global CAPM)
- Surveys
- Historical data (as a guide to future)
- Black-Litterman (combination of building block and CAPM)

Reasons for Differences

- Methodology
- Time Horizon
- Arithmetic vs. Geometric forecasts*
- Alpha (active management)*
- Inflation
- Investment Fees
- Asset class definition

* While some firms in Horizon survey responded with Arithmetic forecasts, the results have been converted to Geometric forecasts for comparison purposes. Additionally, the return expectations included in the Horizon survey are based on indexed returns (no "alpha"). However, AHIC return assumptions for certain asset classes include "alpha" or active management premium (e.g., Hedge Funds)

Appendix

- Liquidity Analysis Detail

Background

AHIC Approach to Analyzing Liquidity Risk from Alternatives

- Intended as a stress-testing model
- Develops multi-year projections of assets and spending needs
- Uses different scenarios for economic environments and other relevant events
- Shows how the portfolio's liquidity profile could evolve with a given investment strategy
- Incorporates the profile of the liabilities as well as expected future contributions

Background
Process Inputs and Outputs

Background

Modeling Parameters – Degrees of Illiquidity

- We categorized investments by liquidity into four buckets
  - **Liquid:** less than 3 months needed for return of capital (e.g. publicly traded securities)
  - **Quasi-Liquid:** Typical lock-up of 3–12 months. Conservatively, we assumed a 1-year lock-up in most economic environments, 2 years in a Recession scenario, and 3 years in a Black Skies scenario (e.g. many hedge funds, core real estate)
  - **Illiquid: Potential lock-up of 5–10 years**, depending on economic environment (e.g. closed-ended real estate)
  - **Illiquid: Potential lock-up of 10+ years** (e.g. typical private equity)
- This is intended to be a conservative approximation of the actual liquidity properties of the assets
- We started with the current long-term target allocation, then see how the actual allocations would change in different economic scenarios, continuing new commitments to private assets, as expected.
- Assumptions
  - Starting assets based the June 30, 20XX actuarial valuation report
  - Asset figures reflect actual returns of 7.8% for the period July 1, 20XX – December 31, 20XX
  - The plan's contribution policy is actuarially based, leveraging projections from the plan actuary based on the 20XX asset-liability study
  - Assumes the portfolio starts at the target asset allocation levels for illiquid assets, maintaining close to the long-term policy targets over the next 10 years

Background

Asset Allocation and Liquidity Category (Current Policy)

Asset Class	Target Allocations				
	Total portfolio	Liquid	Quasi-Liquid	Illiquid: 5-10 Years	Illiquid: 10+ Years
Public Equities	45.0%	45.0%	0.0%	0.0%	0.0%
Opportunistic Allocation	8.0%	8.0%	0.0%	0.0%	0.0%
Core Real Estate	9.0%	0.0%	9.0%	0.0%	0.0%
Real Assets	6.0%	0.0%	0.0%	0.0%	6.0%
Private Equity	8.0%	0.0%	0.0%	0.0%	8.0%
High Yield Bonds	6.0%	6.0%	0.0%	0.0%	0.0%
Intermediate Aggregate Fixed Income	18.0%	18.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**77.0%**	**9.0%**	**0.0%**	**14.0%**

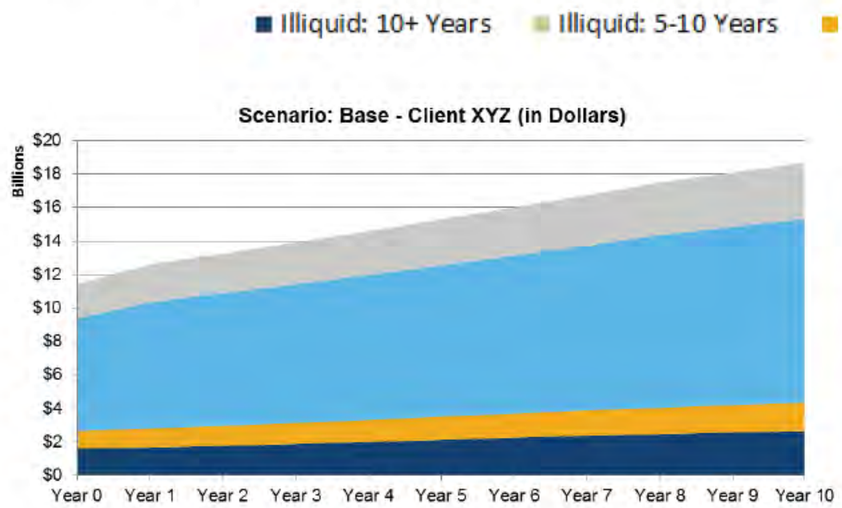
Empower Results®

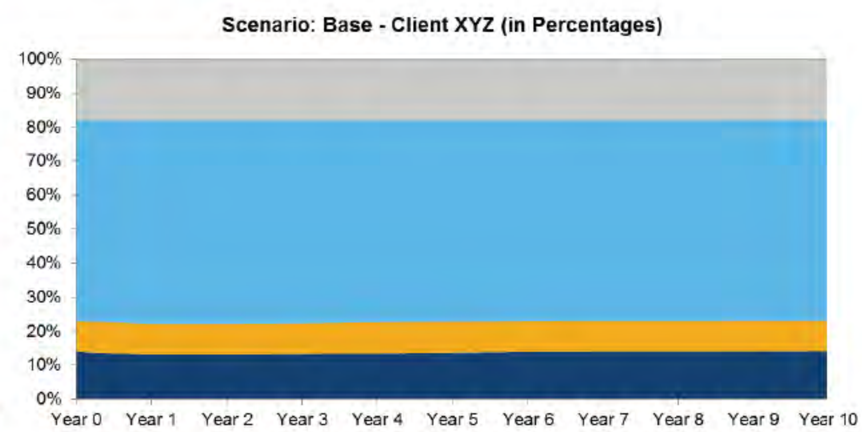
Background
Economic Scenarios

- **Base Scenario**
  - Markets perform as expected (~50th percentile)
- **Recession Scenario**
  - Somewhat pessimistic outlook for the markets (~95th percentile)
  - Return-seeking assets decline in the first two years with a modest rebound in later years.
- **Black Skies Scenario**
  - Very pessimistic outlook for markets (~99th percentile)
  - Return-seeking assets decline significantly. The value of public equities roughly splits in half over three years, without an immediate rebound

Liquidity Analysis: Base Economic Scenario
Current Policy

- The exhibit below shows the projected liquidity lock-up of the current allocation in the Base economic scenario, assuming commitments are continued as expected





- **Key Takeaway:**
  - Total illiquid assets stay near 23% of the plan and can be maintained near the target with no cash flow problems

Empower Results®

Case ID: 221102792

Liquidity Analysis: Base Economic Scenario (continued)

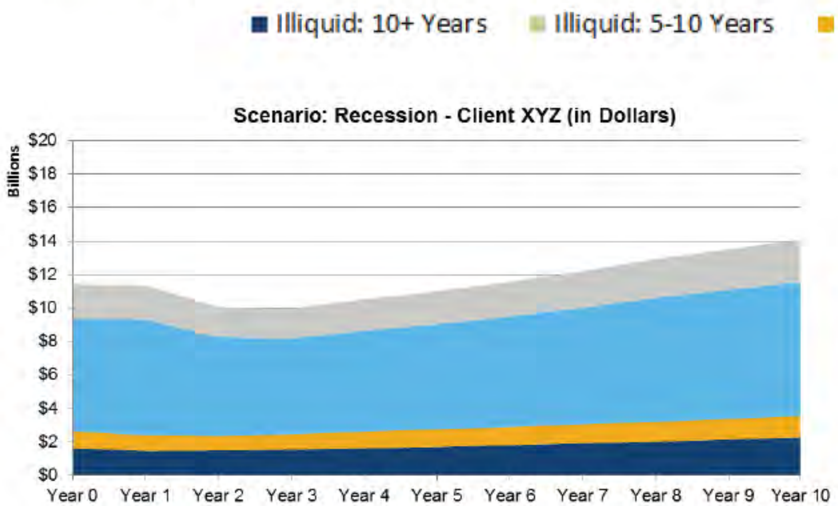
Current Policy

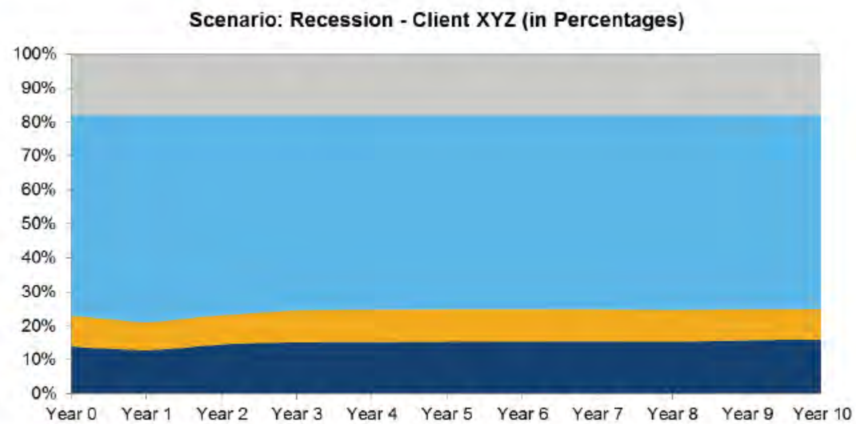
- The exhibit below shows the projected liquidity lock-up of the current allocation in a Base scenario

Asset Allocation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Risk-Reducing Assets	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
Liquid Return-Seeking	59	60	60	60	59	59	59	59	59	59	59
Total Liquid	**77%**	**78%**	**78%**	**78%**	**77%**	**77%**	**77%**	**77%**	**77%**	**77%**	**77%**
Quasi-Liquid	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Illiquid: 5-10 Year Lock-up	0	0	0	0	0	0	0	0	0	0	0
Illiquid: 10+ Year Lock-up	14	13	13	13	14	14	14	14	14	14	14
Total Quasi + Illiquid	**23%**	**22%**	**22%**	**22%**	**23%**	**23%**	**23%**	**23%**	**23%**	**23%**	**23%**

Liquidity Analysis: Recession Economic Scenario
Current Policy

- The exhibit below shows the projected liquidity lock-up of the current allocation in the Recession economic scenario, assuming commitments are continued as expected





- **Key Takeaways:**
  - Commitments to illiquid alternatives are maintained at the steady state level, but recessionary markets cause the total portfolio to shrink
  - Total illiquid assets reach about 20% of the plan due to the shrinking market value of the total plan in this scenario
  - There would not be a concern with the ability to pay benefits

Liquidity Analysis: Recession Economic Scenario (continued)

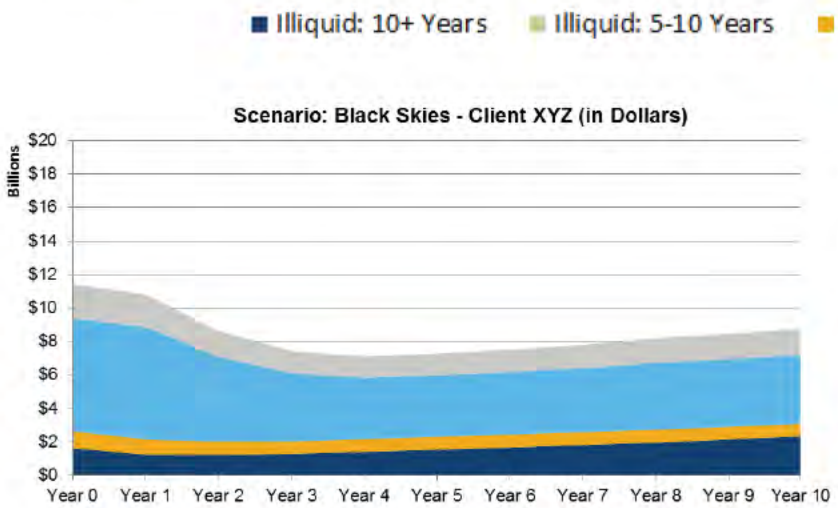
Current Policy

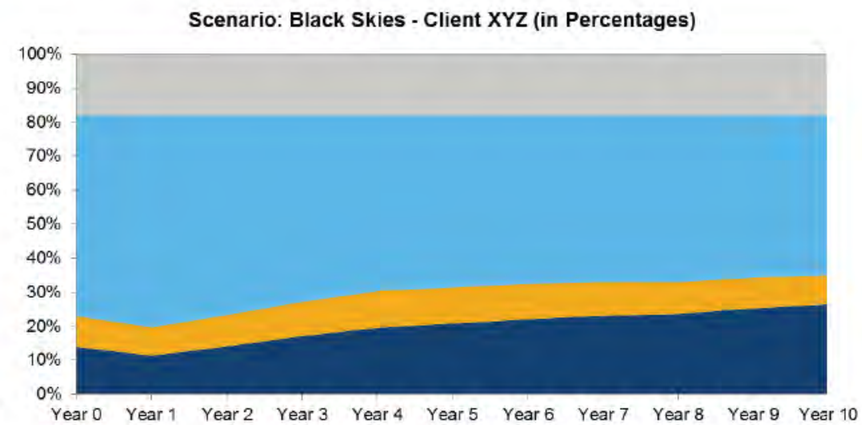
- The exhibit below shows the projected liquidity lock-up of the current allocation in a Recession scenario

Asset Allocation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Risk-Reducing Assets	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
Liquid Return-Seeking	59	61	59	57	57	57	57	57	57	57	57
Total Liquid	**77%**	**79%**	**77%**	**75%**	**75%**	**75%**	**75%**	**75%**	**75%**	**75%**	**75%**
Quasi-Liquid	9%	8%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Illiquid: 5-10 Year Lock-up	0	0	0	0	0	0	0	0	0	0	0
Illiquid: 10+ Year Lock-up	14	13	15	15	15	15	15	16	15	16	16
Total Quasi + Illiquid	**23%**	**21%**	**23%**	**25%**	**25%**	**25%**	**25%**	**25%**	**25%**	**25%**	**25%**

Liquidity Analysis: Black Skies Economic Scenario
Current Policy

- The exhibit below shows the projected liquidity lock-up of the current allocation in a Black Skies scenario, assuming commitments are continued as expected





- **Key Takeaways:**
  - Commitments to illiquid alternatives are maintained at the steady state level, but subpar markets cause the total portfolio to shrink
  - Total illiquid assets reach as high as 35% due to the shrinking market value of the total plan in this scenario
  - There would not be a concern with the ability to pay benefits

Liquidity Analysis: Black Skies Economic Scenario (continued)
Current Policy

- The exhibit below shows the projected liquidity lock-up of the current strategy in a Black Skies scenario

Asset Allocation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Risk-Reducing Assets	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
Liquid Return-Seeking	59	62	59	55	52	51	50	49	49	48	47
Total Liquid	**77%**	**80%**	**77%**	**73%**	**70%**	**69%**	**68%**	**67%**	**67%**	**66%**	**65%**
Quasi-Liquid	9%	8%	9%	10%	11%	11%	10%	10%	9%	9%	9%
Illiquid: 5-10 Year Lock-up	0	0	0	0	0	0	0	0	0	0	0
Illiquid: 10+ Year Lock-up	14	11	14	17	20	21	22	23	24	25	26
Total Quasi + Illiquid	**23%**	**20%**	**23%**	**27%**	**30%**	**31%**	**32%**	**33%**	**33%**	**34%**	**35%**

Economic Scenarios – Base

BASE SCENARIO

	Year 0	1	2	3	4	5	6	7	8	9	10
Yields (BOY)											
Treasury yield 5y	2.1%	2.4%	2.6%	2.7%	2.8%	2.8%	2.9%	2.9%	3.0%	3.2%	3.3%
Long Treasury yield 15y	2.7%	2.8%	2.9%	2.9%	3.0%	3.1%	3.1%	3.1%	3.2%	3.2%	3.2%
TIPS yield 5y	0.2%	0.3%	0.6%	0.8%	0.9%	1.1%	1.1%	1.1%	1.1%	1.1%	1.0%
Long TIPS yield 15y	0.7%	0.8%	0.9%	1.0%	1.0%	1.1%	1.1%	1.2%	1.2%	1.2%	1.2%
Breakeven price inflation 15y	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	1.9%	1.9%	2.0%	2.0%	2.1%
A Corporate bond yield 5y	2.8%	3.2%	3.6%	3.9%	4.2%	4.3%	4.3%	4.3%	4.2%	4.2%	4.2%
Long A Corporate bond yield 10y	3.5%	3.8%	3.9%	4.1%	4.2%	4.2%	4.3%	4.4%	4.5%	4.6%	4.7%
A Corporate spread 5y	0.6%	0.8%	1.0%	1.2%	1.3%	1.4%	1.4%	1.3%	1.2%	1.0%	0.9%
Long A Corporate spread 10y	1.0%	1.1%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.4%	1.4%	1.5%
Expected nominal return on assets											
Equity - US		6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%
Equity - Global		7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%
A Corporate bonds 5y		1.7%	2.0%	2.5%	3.0%	3.4%	3.7%	3.9%	4.0%	4.1%	4.1%
Long A Corporate bonds 10y		1.6%	1.9%	2.5%	3.0%	3.4%	3.7%	3.9%	4.1%	4.1%	4.0%
Treasury 5y		1.5%	1.8%	2.1%	2.5%	2.8%	2.8%	2.8%	2.9%	2.7%	2.9%
Long Treasury 15y		1.5%	1.8%	2.1%	2.5%	2.8%	2.8%	2.8%	2.9%	2.7%	2.9%
TIPS 5y		2.0%	2.0%	2.3%	2.6%	2.8%	3.0%	3.2%	3.3%	3.4%	3.4%
Long TIPS 15y		2.0%	2.0%	2.3%	2.6%	2.8%	3.0%	3.2%	3.3%	3.4%	3.4%
US High Yield		4.9%	4.0%	3.8%	4.1%	4.5%	4.1%	4.3%	4.7%	4.5%	4.7%
Bank Loans		3.6%	3.8%	4.4%	4.4%	4.4%	4.7%	4.5%	4.5%	4.6%	4.7%
USD Emerging Market Debt		3.7%	3.4%	4.0%	4.1%	4.6%	4.7%	4.8%	5.1%	4.9%	5.1%
Local Emerging Market Debt		5.1%	5.6%	5.8%	5.4%	5.9%	5.6%	5.8%	5.7%	6.3%	5.8%
Real Estate		5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%
Commodities		4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%
Hedge Funds - FoHF - Universe		3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%
Private Equity		8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
Infrastructure - Europe		6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Cash		1.5%	1.8%	2.1%	2.5%	2.8%	2.8%	2.8%	2.9%	2.7%	2.9%
CPI		2.1%	2.1%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%

Scenario information as of September 30, 20XX

Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Economic Scenarios – Recession

RECESSION SCENARIO

	Year 0	1	2	3	4	5	6	7	8	9	10
Yields (BOY)											
Treasury yield 5y	2.1%	1.4%	1.1%	1.3%	1.7%	2.2%	2.2%	2.3%	2.4%	2.5%	2.6%
Long Treasury yield 15y	2.7%	2.1%	1.7%	1.8%	2.0%	2.5%	2.5%	2.5%	2.6%	2.6%	2.7%
TIPS yield 5y	0.2%	-0.3%	-0.3%	0.0%	0.4%	0.8%	0.9%	0.9%	0.9%	0.8%	0.8%
Long TIPS yield 15y	0.7%	0.4%	0.4%	0.3%	0.6%	0.7%	0.8%	0.8%	0.8%	0.8%	0.8%
Breakeven price inflation 15y	2.0%	1.7%	1.3%	1.4%	1.4%	1.8%	1.7%	1.7%	1.8%	1.8%	1.8%
A Corporate bond yield 5y	2.8%	4.2%	4.8%	4.9%	5.2%	5.3%	5.4%	5.3%	5.3%	5.2%	5.2%
Long A Corporate bond yield 10y	3.5%	4.5%	4.8%	4.8%	4.9%	4.9%	5.0%	5.1%	5.2%	5.3%	5.4%
A Corporate spread 5y	0.6%	2.8%	3.7%	3.6%	3.5%	3.1%	3.1%	3.0%	2.9%	2.7%	2.6%
Long A Corporate spread 10y	1.0%	2.8%	3.4%	3.3%	3.0%	2.6%	2.6%	2.7%	2.8%	2.9%	2.9%
Expected nominal return on assets											
Equity - US		-18.1%	-10.0%	10.6%	5.7%	5.7%	5.4%	5.4%	5.4%	5.4%	5.4%
Equity - Global		-21.5%	-12.0%	11.6%	5.9%	5.9%	5.4%	5.4%	5.4%	5.4%	5.4%
A Corporate bonds 5y		-2.2%	1.1%	2.9%	2.3%	3.1%	3.5%	3.7%	3.9%	4.0%	4.0%
Long A Corporate bonds 10y		-5.2%	0.5%	3.1%	2.2%	2.4%	3.0%	3.2%	3.3%	3.3%	3.2%
Treasury 5y		5.6%	2.9%	0.5%	-0.2%	0.0%	2.3%	2.3%	2.4%	2.3%	2.4%
Long Treasury 15y		12.6%	9.3%	0.9%	-1.8%	-3.7%	2.2%	2.2%	2.3%	2.1%	2.3%
TIPS 5y		2.3%	0.3%	-0.7%	-0.4%	-0.1%	1.4%	1.6%	1.8%	1.9%	1.9%
Long TIPS 15y		5.2%	2.7%	1.5%	-1.9%	0.0%	1.6%	1.8%	1.9%	2.0%	2.0%
US High Yield		-12.4%	-6.5%	6.9%	3.5%	3.7%	3.0%	3.1%	3.5%	3.4%	3.6%
Bank Loans		-6.7%	-2.8%	5.3%	3.4%	3.4%	3.3%	3.1%	3.1%	3.2%	3.3%
USD Emerging Market Debt		-18.0%	-10.2%	7.7%	3.2%	3.9%	3.7%	3.8%	4.1%	3.9%	4.1%
Local Emerging Market Debt		-19.0%	-9.6%	9.9%	4.4%	5.1%	4.5%	4.7%	4.6%	5.2%	4.7%
Real Estate		-12.6%	-7.5%	-2.3%	1.1%	5.0%	4.7%	4.7%	4.7%	4.7%	4.7%
Commodities		-27.6%	-21.7%	7.3%	3.9%	3.9%	3.5%	3.5%	3.5%	3.5%	3.5%
Hedge Funds - FoHF - Universe		-14.2%	-9.0%	6.5%	5.4%	3.6%	3.5%	3.5%	3.5%	3.5%	3.5%
Private Equity		-18.5%	-6.0%	13.5%	8.7%	8.9%	9.0%	9.0%	9.0%	9.0%	9.0%
Infrastructure - Europe		-6.2%	-1.8%	1.7%	2.5%	6.1%	5.9%	5.9%	5.9%	5.9%	5.9%
Cash		1.5%	0.6%	0.5%	0.7%	1.2%	1.2%	1.2%	1.3%	1.2%	1.3%
CPI		-0.4%	0.4%	0.7%	1.0%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%

Scenario information as of September 30, 20XX

Expected returns are using AHIC Capital Market Assumptions. Assumptions do not include fees/expenses. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See capital market assumptions disclosure pages beginning on page 33.

Economic Scenarios – Black Skies

BLACK SKIES SCENARIO

	Year 0	1	2	3	4	5	6	7	8	9	10
Yields (BOY)											
Treasury yield 5y	2.1%	0.6%	0.6%	0.7%	0.8%	0.9%	0.9%	1.0%	1.1%	1.2%	1.3%
Long Treasury yield 15y	2.7%	1.5%	1.1%	1.1%	1.2%	1.4%	1.4%	1.4%	1.5%	1.5%	1.6%
TIPS yield 5y	0.2%	-0.3%	-0.4%	-0.3%	-0.2%	-0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%
Long TIPS yield 15y	0.7%	0.2%	0.2%	0.1%	0.2%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%
Breakeven price inflation 15y	2.0%	1.3%	1.0%	0.9%	0.9%	1.1%	1.0%	1.0%	1.1%	1.1%	1.1%
A Corporate bond yield 5y	2.8%	4.4%	5.5%	5.6%	5.7%	5.4%	5.5%	5.4%	5.4%	5.3%	5.3%
Long A Corporate bond yield 10y	3.5%	4.7%	5.3%	5.2%	5.1%	4.9%	5.0%	5.1%	5.2%	5.3%	5.4%
A Corporate spread 5y	0.6%	3.8%	4.9%	5.0%	4.9%	4.5%	4.5%	4.5%	4.3%	4.1%	4.0%
Long A Corporate spread 10y	1.0%	3.6%	4.4%	4.4%	4.2%	3.8%	3.8%	3.9%	4.0%	4.0%	4.1%
Expected nominal return on assets											
Equity - US		-28.8%	-20.8%	-11.5%	2.6%	2.6%	0.7%	0.7%	0.7%	0.7%	0.7%
Equity - Global		-32.5%	-23.6%	-13.0%	2.5%	2.5%	0.2%	0.2%	0.2%	0.2%	0.2%
A Corporate bonds 5y		-3.3%	-2.4%	1.2%	1.4%	2.5%	1.3%	1.5%	1.7%	1.9%	2.0%
Long A Corporate bonds 10y		-7.1%	-4.4%	1.1%	1.5%	2.9%	0.6%	0.8%	0.9%	0.8%	0.7%
Treasury 5y		8.7%	0.9%	0.3%	0.3%	0.4%	1.1%	1.0%	1.1%	1.0%	1.1%
Long Treasury 15y		22.5%	8.1%	2.6%	-0.2%	-0.9%	1.4%	1.3%	1.5%	1.3%	1.5%
TIPS 5y		0.5%	-1.1%	-0.2%	-0.2%	0.0%	0.3%	0.4%	0.6%	0.7%	0.7%
Long TIPS 15y		6.6%	0.7%	0.7%	-0.6%	-0.3%	0.6%	0.8%	0.9%	1.0%	1.0%
US High Yield		-26.8%	-20.5%	-12.0%	0.7%	1.2%	-0.8%	-0.7%	-0.3%	-0.4%	-0.2%
Bank Loans		-17.0%	-12.4%	-6.5%	1.4%	1.4%	0.1%	0.0%	0.0%	0.1%	0.2%
USD Emerging Market Debt		-26.7%	-20.3%	-11.1%	0.6%	1.2%	-0.3%	-0.3%	0.1%	-0.1%	0.1%
Local Emerging Market Debt		-28.8%	-20.8%	-11.0%	1.5%	2.1%	0.0%	0.2%	0.1%	0.7%	0.2%
Real Estate		-15.2%	-10.7%	-4.8%	-0.3%	2.0%	0.2%	0.2%	0.2%	0.2%	0.2%
Commodities		-36.7%	-28.3%	-3.6%	2.3%	2.3%	1.2%	1.2%	1.2%	1.2%	1.2%
Hedge Funds - FoHF - Universe		-18.1%	-12.7%	-6.8%	0.5%	0.5%	-1.1%	-1.1%	-1.1%	-1.1%	-1.1%
Private Equity		-32.3%	-23.4%	-12.2%	4.5%	4.5%	2.3%	2.3%	2.3%	2.3%	2.3%
Infrastructure - Europe		-14.0%	-9.5%	-5.5%	-0.3%	2.5%	0.4%	0.4%	0.4%	0.4%	0.4%
Cash		1.5%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%	0.5%	0.4%	0.5%
CPI		-1.8%	-1.4%	0.1%	0.2%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%

Scenario information as of September 30, 20XX

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Appendix

- How Do Public Pensions Impact Credit Ratings?

Empower Results®

How Do Public Pensions Impact Credit Ratings?

Summary and Conclusions

Pension Impact on Credit Ratings

- Pension plans have a direct impact on the ultimate state or local credit rating
- Rating agencies are not just looking at where public pension plans stand today; they are looking at the expected future trajectory of the plan based on how it is managed

Credit Ratings and Borrowing Costs

- Taxpayers in lower credit rated jurisdictions are paying higher borrowing costs and could save money through healthier pension plan management

Call to Action

- The Big Three value selecting appropriate actuarial assumptions, avoiding excessive risk taking, and developing an adequate funding policy
- While debt priorities and revenue framework to service such debt will vary on a case-by-case basis, every jurisdiction has the ability to thoughtfully develop a funding policy and set appropriate assumptions
- These initial steps will help pension stakeholders better understand the true economic costs, improve the funding outlook for public pensions, and potentially reduce borrowing costs and further taxpayer burden

How Do Public Pensions Impact Credit Ratings?

Call to Action: Plan Sponsors Have Ability to Impact Credit Rating

Below are three specific actions plan sponsors can take today to directly improve the impact a pension plan will have on the credit rating of its locality:

Action	Considerations
1. Conduct an actuarial assumption audit ▪ Review reasonability of key assumptions: – Salary scale, Mortality, Retirement rates, Turnover rates	▪ Assumptions set to plan-specific expectations will lead to lower contribution volatility ▪ Aggressive assumptions may provide short-term relief but may have long-term consequences
2. Consider adjustments to expected return assumption ▪ Adjustments should be in line with forward-looking expectations for asset returns	▪ Contributing an actuarial amount? – **Yes:** Failing to achieve target returns will necessitate increases in future contributions and make what was intended to be a smooth, budget-friendly progression of contribution increases far more volatile – **No:** The funding gap will widen and become highly volatile as contribution policy will not add enough dollars to replenish losses
3. Review the plan's funding policy ▪ Look far enough into the future to identify potential pain points	▪ Conduct "tread water"/hurdle rate analysis to ensure short-term contributions are sufficient to keep pace with growth of plan liabilities ▪ Consider asset-liability study to understand range of potential future outcomes rather than a single deterministic scenario

Appendix

- Investment Guidance for Public Employee Retirement System Trustees

Investment Guidance for Public Employee Retirement System Trustees[1]

1. **PERS trustees should look to the state for statutory direction on behalf of the taxpayers**
    a) Prudent-person rule
    b) Peer analysis

2. **PERS trustees should not be daunted by a liability value that exceeds the value of assets**
    a) Do not feel obliged to incur greater risk in an effort to narrow the gap
    b) Funded status has less to do with investment performance than it does with public policy and politics

3. **PERS trustees should not assume that an equity-oriented investment policy is suitable for their fund**
    a) Discern the risk tolerance of taxpayers
    b) May conclude that a moderate level of risk is warranted

4. **Trustees of individual PERSs should be cognizant of the existence and implications of the unitary state pension fund**
    a) Unitary state pension fund is the only fund of economic consequence to the taxpayers
    b) Multiple actively managed funds may form, in total, a closet index fund

5. **PERS investments should be exposed to rewarded risks, and insulated from unrewarded risks**
    a) Market risk (equity exposure) is rewarded risk, on average
    b) Diversifiable risk is not

[1] Richard M. Ennis, *Is a Statewide Pension Fund a Person or a Cookie Jar? The Answer Has Implications for Investment Policy,* Financial Analysts Journal, November-December 1988

Appendix

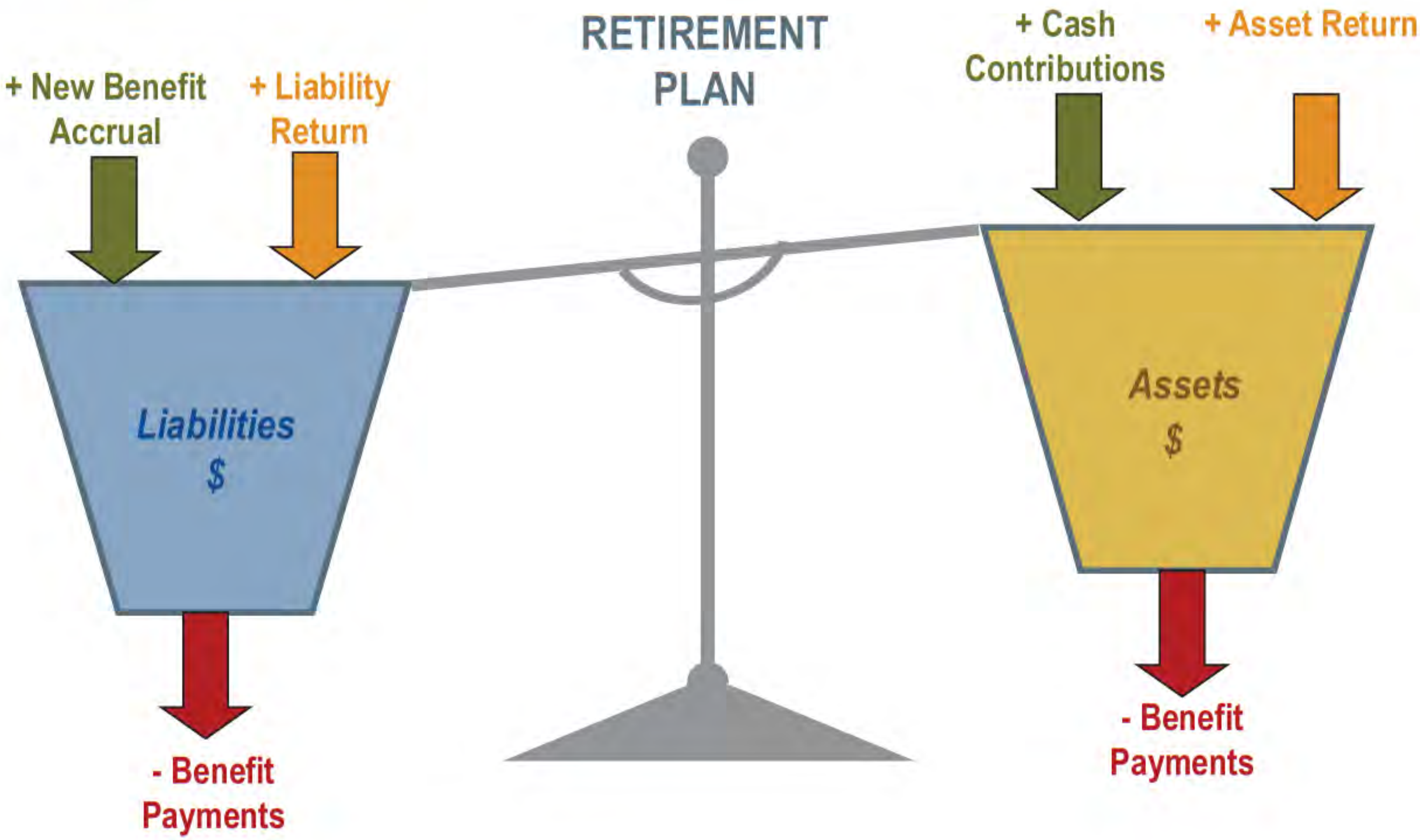
- Asset-Liability Management Background

Asset-Liability Management Background
What is an Asset-Liability Study?

- Provides fiduciaries with an understanding of the dynamic relationship between plan assets and liabilities over time
- Illustrates the impact of various asset allocation targets on required contributions and funded status under a range of different macro-economic scenarios
- Identifies future trends in the financial health of the plan based on economic uncertainties that may not be evident from an actuarial valuation, which provides only a snapshot at a point in time
- Helps determine the level of risk that is appropriate in the context of the Plan's liabilities

An asset-liability study provides the tools to align a plan's risk taking with its liabilities

Asset-Liability Management Background
Balance of Liabilities and Assets

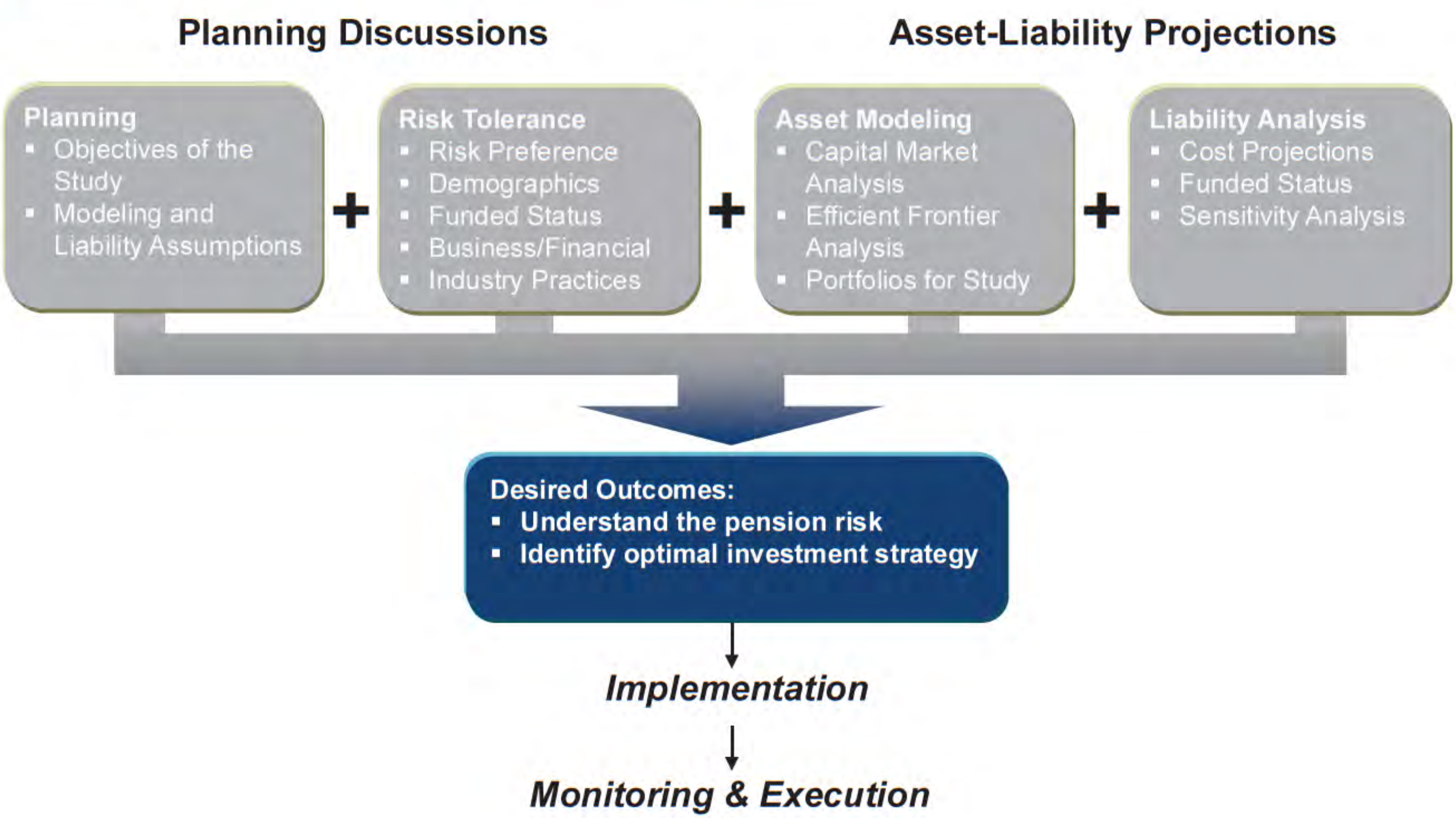


Asset-Liability Management Background

Key Risks for Public Pension Plans

Types of Risk	Time Horizon	Risk Management Tools and Controls
Return Shortfall ▪ Assets do not grow with liabilities ▪ Investment return & contribution less than liability growth	**Long-Term** (10+ years)	▪ Funding policy ▪ Plan design ▪ Investment policy ▪ Assumptions & methods
Liquidity ▪ Cannot liquidate assets efficiently to meet needs ▪ Lose control of asset allocation	**Short- to Medium-Term** (<5 years)	▪ Funding policy ▪ Benefit accruals ▪ Use of Illiquid investments ▪ Scenario analysis ▪ Monitoring
Investment ▪ Asset allocation (policy) ▪ Investment structure ▪ Manager selection ▪ Rebalancing ▪ Scenario (or path risk) ▪ Factor	**Short-to Medium-Term** (<5 years)	▪ Investment policy statement – Static/dynamic – Asset allocation – Rebalancing – Manager guidelines – Monitoring/roles & responsibilities ▪ Risk budgeting ▪ Monitoring / dashboards ▪ Medium term views ▪ Regression and scenario analysis

Asset-Liability Management Background
Overview of the Asset-Liability Study Process



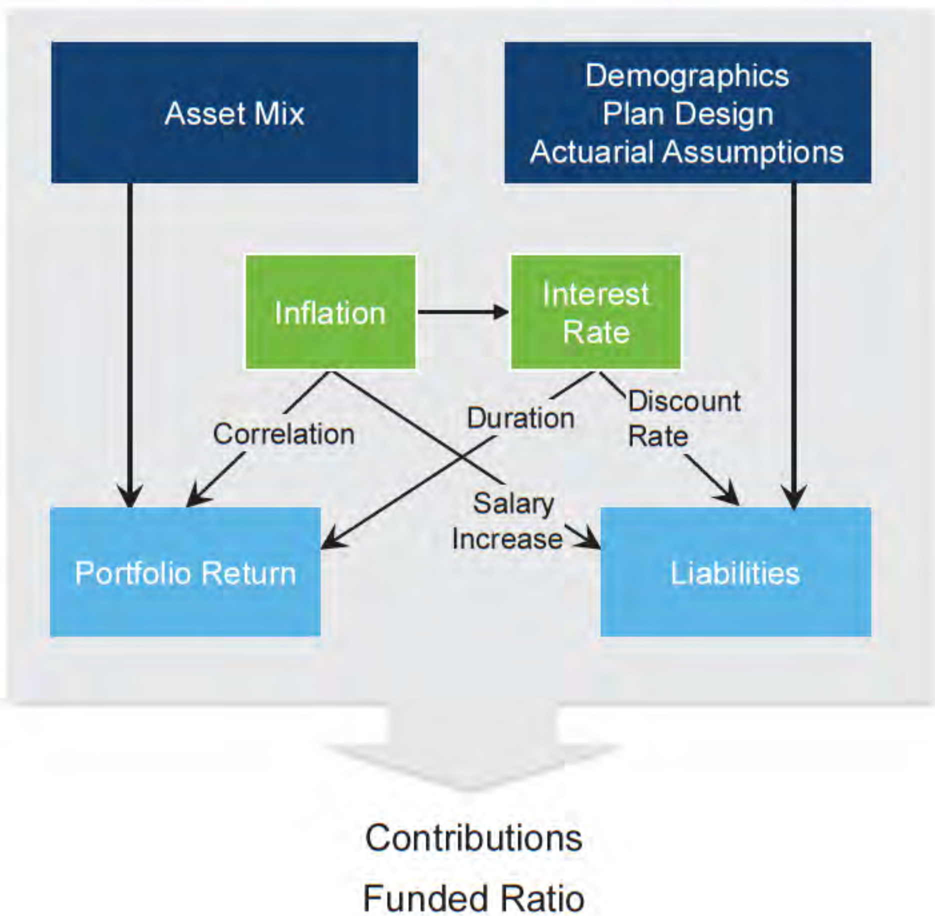
Asset-Liability Management Background
Modeling Process

- Goals of an asset-liability study:
  - Understand the pension plan's asset-liability risk, and
  - Identify the optimal investment strategies

- Stochastic, Monte Carlo simulation analysis used
  - 5,000 independent economic trials
  - Building block approach
    - Starts with inflation and interest rates
    - Using a multi-factor regression analysis, other asset classes are then modeled
  - Assets and liabilities are modeled over the projection period
    - Projections include contribution requirements and funded ratios

- Asset-liability studies are best-suited to determine the optimal mix of return-seeking (e.g., equity) and fixed income assets for the pension fund
  - Asset mix is the single most important investment decision for the plan sponsor
    - Is it worthwhile to have a more aggressive allocation in order to reduce long term cost in exchange for risk of higher costs in a bad outcome?
    - Is it worthwhile to have a more conservative allocation in order to have a more predictable cost in exchange for potentially higher average costs?

Asset-Liability Management Background
Mechanics of Asset-Liability Modeling Process



Asset and liability modeling integrated in single platform

- Integrates impact of key economic variables

Flexibility in modeling parameters and output to client preferences

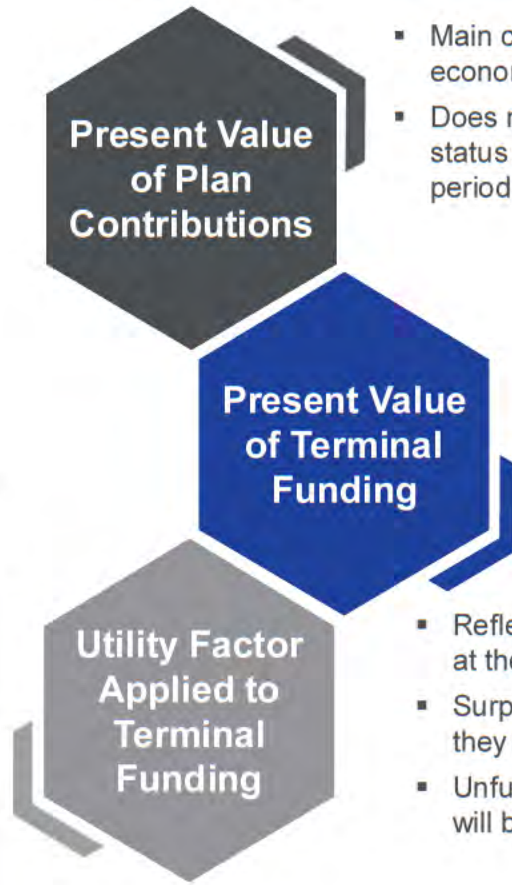
Stochastic and deterministic modeling performed

Asset-Liability Management Background
Long-Term Economic Cost of Plan

Long-Term Economic Cost =

- **Present Value of Plan Contributions +**
- **Present Value of Terminal Funding, adjusted by a utility factor**

Terminal Funding	Surplus	Shortfall
Utility Rationale	Declining value, or utility, from very high funded ratios	Increasing "pain" as unfunded amounts grow to high levels
Threshold	PVB / AL	(5 Yrs. of Benefit Payments) / AL
Utility Factor above/below threshold	50%	200%



- Main component of long-term economic cost
- Does not reflect the plan's funded status at the end of the forecast period

- Reflects the plan's funded status at the end of the forecast period
- Surplus assets are valuable as they lower future contributions
- Unfunded liabilities are costs that will be recognized in future years

Asset-Liability Management Background
Utility Factor For Terminal Funded Status

- Modest deviations from 100% funding are normal, and no special adjustment is needed for these scenarios – the amount of surplus or unfunded liability can be reflected at its dollar value
- As surplus amounts grow to very high levels, there is a declining value, or utility, to the surplus:
  - Contributions cannot go below zero
  - Long contribution holidays may create a false sense of how much the plan really costs, and lead to confusion when cost levels revert to "normal"
  - Large surplus amounts can become a potential target for non-pension applications
- As unfunded amounts grow to very high levels, there is an increasing amount of "pain" as contributions rise to unacceptable levels:
  - May be viewed as "breaking trust" with future taxpayers
  - Freezing of the pension plan becomes a possibility

Asset-Liability Management Background

Risk and Return in an Asset-Liability Context

- **Traditional:**
  - Return = Investment performance
  - Risk = Annual volatility of investment gains and losses (e.g. weak/negative capital market returns)
- **Asset-Liability:**
  - Return = Potential cost reduction or funded status improvement under average economic conditions
  - Risk = During the worst economic conditions, contributions need to increase or funded status declines (e.g., stocks decline, inflation/deflation shocks and/or interest rates decline)

Asset-Liability Management Background
Key Factors Affecting the Risk/Reward Trade-off

- The key take-away from the A/L study is the allocation between equity (“return-seeking”) vs. fixed income (“risk-reducing”)

- Major factors affecting the ultimate mix are:
  - Time horizon (or amortization period of unfunded liability) to fund the liability: a longer time horizon supports more risk taking
  - Characteristics of plan participants: a growing population of active participants supports more risk taking; a mature population with significant retirees might need a more conservative policy
  - Funded status: a less funded plan can utilize additional returns from equity investments
  - Nature of plan benefits: a pension with sensitivity to wage inflation growth can benefit from equities in the long-term; an increased need in liquidity due to significant benefit payments in the near future can have a more conservative policy

Appendix

- About This Material

About This Material

This material includes a summary of calculations and consulting related to the finances of Client XYZ (XYZ). The following variables have been addressed:

- Contributions
- Economic Cost
- Funded Ratio
- Hurdle Rate
- Liquidity
- Net Outflow

This analysis is intended to assist the Investment Committee with a review of the associated issues and options, and its use may not be appropriate for other purposes. This analysis has been prepared solely for the benefit of the Investment Committee. Any further dissemination of this report is not allowed without the written consent of Aon Hewitt Investment Consulting, Inc.

Our calculations were generally based on the methodologies identified in the actuary's valuation report for XYZ. We believe the methodology used in these calculations conforms to the applicable standards identified in the report.

Experience different than anticipated could have a material impact on the ultimate costs of the benefits. In addition, changes in plan provisions or applicable laws could have a significant impact on cost. Actual experience may differ from our modeling assumptions.

Our calculations were based on data provided by the plan actuary. The actuarial assumptions and methods and plan provisions reflected in these projections are the same as those used for the 20XX actuarial valuation for XYZ as noted in the actuarial reports, except where noted in this report. Unless specifically noted, our calculations do not reflect any other changes or events after June 30, 20XX.

In conducting these projections, we have relied on plan design, demographic and financial information provided by other parties, including the plan's actuary and plan sponsor. While we cannot verify the accuracy of all of the information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy or completeness of the information and believe that it has produced appropriate results.

These projections have been conducted in accordance with generally accepted actuarial principles and practices, including applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board. The undersigned actuary is familiar with the near-term and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All sections of this report are considered an integral part of the actuarial opinions.

To our knowledge, no associate of Aon Hewitt Investment Consulting, Inc. providing services to XYZ has any direct financial interest or indirect material interest in XYZ. Thus, we believe there is no relationship existing that might affect our capacity to prepare and certify this report for XYZ.

Aon Hewitt Investment Consulting, Inc.

Phil Kivarkis FSA, CFA

J. Sample Operational Due Diligence Summary Assessment

[redacted]

[redacted]		[redacted]		[redacted]
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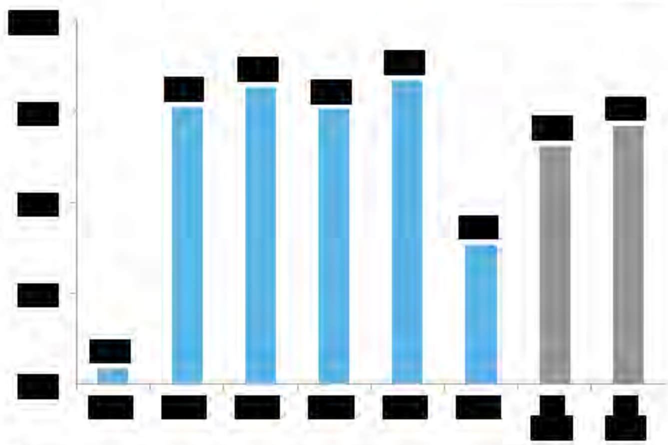

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Empower Results®

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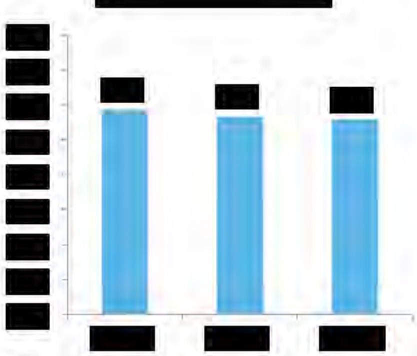

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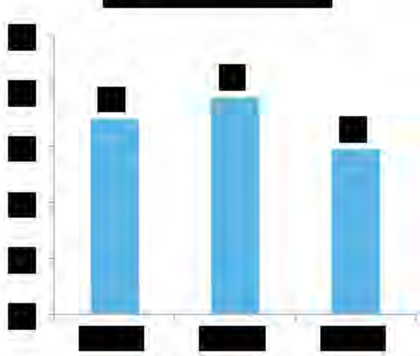

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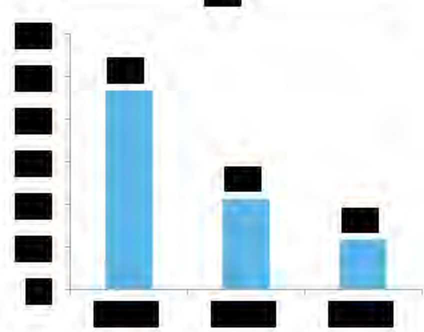

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K. Sample InBrief Report

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L. Sample Quarterly Performance Report

PA Public School Employees' Retirement System | Third Quarter 2018

Quarterly Investment Review

Visit the Aon Retirement and Investment Blog (http://retirementandinvestmentblog.aon.com); sharing our best thinking.

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Executive Summary

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Aon Happenings

Your new Aon Client Portal is here!

On the portal, you'll be able to securely access:

- Documents shared by your consultant
- Thought leadership

Your consultant will be reaching out to you with details.

Aon's 2019 Retirement & Investment Client Conference

Mark your calendar for September 25-26, 2019, as Aon will be hosting our Client Conference in Chicago. More details, such as the agenda and speakers, will be provided as the event gets closer.

Be prepared for the workforce of the future!

In times of tightening labor markets, Aon's workforce consulting practices have hundreds of professionals who help employers address talent shortages, by:

- Customizing rewards based on what employees really want
- Combining best thinking, data, analytics, and technology to measure and address future skills and workforce gaps
- Developing intelligent tools that direct employees to new roles in which they can succeed

Aon Hewitt Investment Consulting announces compliance with the Global Investment Performance Standards (GIPS®)

The proprietary pooled funds managed under full discretion by Aon Hewitt Investment Consulting (AHIC)—also known as "Aon-GIPS Firm"—claims compliance with the Global Investment Performance Standards (GIPS®)[1], and has been independently verified by ACA Performance Services for the period of July 1, 2010 through December 31, 2017.

Did you know?

Aon Hewitt Investment Consulting has:

- **More than 360 U.S. investment consulting colleagues[2]**
- **More than 150 professionals dedicated to Investment Manager Research, including 98 dedicated to alternative strategies[3]**
- **477 U.S. Client relationships[4]**

Aon Hewitt Investment Consulting recently advised the largest defined contribution plan in the U.S, the $554 billion Thrift Savings Plan for employees of the federal government, to redesign its custom target date funds.[5]

[1]GIPS® is a registered trademark of CFA Institute. CFA Institute has not been involved in the preparation or review of this material. For a copy of a presentation that complies with the GIPS standards and/or the firm's list of composite descriptions, please email retirement@aonhewitt.com

[2]As of 6/30/2018

[3]As of 6/30/2018; total combined research staff as of 6/30/2018 includes 48 manager research colleagues of AHIC and Aon affiliates, 22 operational due diligence colleagues, and 83 Townsend colleagues from advisory, portfolio management and strategy teams. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes AHIC and its global Aon affiliates.

[4]As of 3/31/2018, contains both discretionary and non-discretionary U.S. retainer clients

[5]Assets as of 12/31/2017. Project description at https://www.govexec.com/pay-benefits/2018/09/tsp-increase-stock-holdings-across-lifecycle-funds/151368/

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AON Empower Results®

Thought Leadership Highlights

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All Investors: Global Perspectives on Responsible Investing	Link
All Investors: Making Portfolios More Fee-Efficient	Link
All Investors: Commercial Real Estate Debt Overview	Link
All Investors: Bank Capital Relief	Link
All Investors: The Real Deal	Link
All Investors: Why We Are in a Transition Environment	Link
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Non-Profit: Key Components of Effective Investment Policy Statements for Non-Profit Organizations	Link
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Private DB: Aon's 2018 U.S. Annuity Settlement Market Update	Link
Private DB: An Overview of the Multiemployer Pension Plan System	Link
Private DB: The Third Dimension – Credit Path: Redefining Dynamic Management of Pension Risk	Link
Private DB: U.S. Plan-Specific Mortality Studies: A Call to Action	Link
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Third Quarter 2018 Market Review and Outlook	Link
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Aon Retirement and Investment Blog

https://retirementandinvestmentblog.aon.com/

Aon Empower Results®

As of September 30, 2018

Market Highlights

	Performance(%)										
	1 Quarter	Year To Date	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	Since Inception	Inception Date
Equity											
Dow Jones U.S. Total Stock Market Index	7.11	10.58	7.11	17.58	17.05	13.42	12.05	10.00	7.94	10.55	01/01/1987
S&P 500 Index	7.71	10.56	7.71	17.91	17.31	13.95	11.97	9.65	7.42	10.20	01/01/1926
MSCI USA IMI	7.08	10.65	7.08	17.65	17.14	13.52	12.11	10.06	7.93	10.14	06/01/1994
MSCI USA Large Cap Index	8.01	11.09	8 01	18.37	17.57	14.19	11.89	9.55	6.96	9.78	06/01/1994
MSCI USA Small Cap Index	4.22	10.83	4 22	16.20	17.15	11.94	13.01	10.99	N/A	10.31	01/01/2001
MSCI EAFE Index (Net)	1.35	-1.43	1.35	2.74	9.23	4.42	5.38	6.80	5.20	8.77	01/01/1970
MSCI EAFE Index (hedged)	2.32	0.53	2 32	4.25	7.74	5.66	4.36	4.61	3.08	7.11	01/01/1970
MSCI EAFE Index (Price)	0.76	-3.76	0.76	-0.01	6.27	1.65	2.42	3.95	2.65	6.31	01/01/1970
MSCI EAFE Small Cap Index (Net)	-0.88	-2.19	-0 88	3.73	12.39	7.96	9.68	9.55	N/A	8.81	01/01/2001
MSCI AC World ex USA IMI Index (Net)	0.39	-3.27	0.39	1.79	10.14	4.39	5.60	7.49	6.18	5.19	06/01/1994
MSCI AC World ex USA Index (Net)	0.71	-3.09	0.71	1.76	9.97	4.12	5.18	7.20	5.85	4.88	01/01/2001
MSCI Emerging Markets Index (Net)	-1.09	-7.68	-1 09	-0.81	12.36	3.61	5.40	9.65	9.85	10.27	02/01/1988
Fixed Income											
Blmbg. Barc. U.S. Aggregate	0.02	-1.60	0 02	-1.22	1.31	2.16	3.77	3.78	4.48	7.28	01/01/1976
Blmbg. Barc. U.S. Treasury: Long	-2.88	-5.79	-2 88	-3.56	0.72	4.41	5.45	5.56	5.80	8.03	01/01/1973
Barclays Global Agg GDP Weighted Dev x U.S. Index (unhedged)	-1.47	-3.16	-1.47	-1.63	2.40	-0.04	2.55	N/A	N/A	2.51	01/01/2005
Barclays Global Agg GDP Weighted Dev x U.S. Index (hedged)	-0.15	1.03	-0.15	2.24	3.04	3.81	4.42	N/A	N/A	4.22	01/01/2005
Blmbg. Barc. U.S. Corp: High Yield	2.40	2.57	2.40	3.05	8.15	5.54	9.46	7.74	6.92	8.87	07/01/1983
Blmbg. Barc. Emerging Market 10% Country Cap Index	-1.02	-6.73	-1.02	-5.32	4.94	-0.53	3.02	N/A	N/A	2.45	07/01/2008
Blmbg. Barc. Global Inflation-Linked: U.S. TIPS	-0.82	-0.84	-0 82	0.41	2.04	1.37	3.32	3.93	5.20	5.23	10/01/1997
Barclays World Inflation Linked Bonds (hedged)	-0.84	-0.44	-0.84	2.06	3.93	3.80	4.38	4.65	5.36	5.77	01/01/1997
Barclays Universal Index	0.27	-1.41	0.27	-1.00	1.98	2.53	4.22	4.11	4.80	6.02	01/01/1990
ICE Libor (3 month)	0.59	1.66	0 59	2.04	1.26	0.86	0.70	1.66	2.23	5.59	01/01/1977
ICE BofAML 3 Month U.S. T-Bill	0.49	1.30	0.49	1.59	0.84	0.52	0.34	1.30	1.93	4.92	01/01/1978
ICE BofAML US Treasury Bills 0-3M	0.49	1.27	0.49	1.54	0.78	0.48	0.30	1.23	1.84	2.50	07/01/1992

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Empower Results®

As of September 30, 2018

Market Highlights

	Performance(%)										
	1 Quarter	Year To Date	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	Since Inception	Inception Date
Infrastructure											
FTSE Dev. Core Infrastr 50/50 Index (Net) (Hedged)	0.09	0.96	0 09	2.84	8.81	9.40	N/A	N/A	N/A	9.92	01/01/2010
FTSE Developed Core Infrast 50/50 Index (Net)	-0.28	-1.24	-0.28	0.74	8.76	7.47	N/A	N/A	N/A	8.99	01/01/2010
MLP											
S&P MLP Index	6.39	7.46	6 39	7.15	4.90	-1.73	9.97	9.12	N/A	9.70	08/01/2001
Commodities											
Bloomberg Commodity Index Total Return	-2.02	-2.03	-2 02	2.59	-0.11	-7.18	-6.24	-1.07	1.55	2.26	02/01/1991
Bloomberg Gold Subindex Total Return	-5.00	-9.36	-5 00	-7.66	1.53	-2.68	2.41	7.00	6.65	4.20	02/01/1991
Real Estate											
Burgiss (Lagged) - Opportunistic	-0.56	6.32	-0 56	10.62	8.78	10.64	6.22	8.98	9.19	8.86	01/01/1993
Burgiss (Lagged) - Value Added	1.53	10.64	1 53	13.48	11.76	12.71	7.50	9.85	9.84	10.19	10/01/1997
NCREIF ODCE NOF 1 Quarter Lag	1.81	5.73	1.81	7.47	8.38	10.03	4.33	7.29	7.69	7.66	04/01/1978
FTSE EPRA/NAREIT Developed Index (Net)	-0.30	0.06	-0.30	3.66	6.19	5.43	6.04	N/A	N/A	5.75	03/01/2005
FTSE EPRA/NAREIT Custom Dev 100% Hedged USD (Net)	0.30	2.02	0 30	5.65	6.57	7.23	N/A	N/A	N/A	10.26	01/01/2012
Wilshire US Real Estate Securities Index	0.73	2.35	0.73	4.11	7.52	9.58	7.51	9.50	10.18	11.64	01/01/1978
Risk Parity											
Blended Policy (Risk Parity)	0.07	-1.89	0 07	2.73	7.89	5.55	8.19	8.66	9.07	4.05	10/01/2012
Private Markets											
Burgiss All Private Markets ex Real Estate (1Q Lag)	2.70	10.50	2.70	14.80	11.06	12.61	9.11	9.04	6.31	6.24	04/01/1998

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AON Empower Results®

As of September 30, 2018

Trailing Period Performance

	Performance(%)												
	1 Quarter	2 Quarters	3 Quarters	YTD	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	Since Inception	Inception Date
PSERS Total Fund	1.40	3.52	3.66	3.66	1.40	7.37	8.78	7.31	6.41	7.46	6.92	9.71	07/01/1982
Blended Policy (Total Plan)	1.21	2.87	2.81	2.81	1 21	6.33	8.23	6.90	6.31	6.81	6.11	N/A	
Value Added	0.19	0.65	0.85	0.85	0.19	1.04	0.55	0.41	0.10	0.65	0.81	N/A	
Total Public Market Composite	0.78	2.76	1.62	1.62	0.78	5.36	8.04	5.67	6.29	6.57	N/A	6.54	06/01/2002
Blended Policy (Public Market) (Hedged)	1.00	2.30	0.75	0.75	1 00	4.13	7.54	4.72	4.96	5.64	5.24	5.27	
Value Added	-0.22	0.46	0.87	0.87	-0 22	1.23	0.50	0.95	1.33	0.93	N/A	1.27	
Blended Policy (Public Market) (Unhedged)	0.94	1.23	0.17	0.17	0 94	3.63	7.34	4.32	4.76	5.50	5.14	5.15	
Value Added	-0.16	1.53	1.45	1.45	-0.16	1.73	0.70	1.35	1.53	1.07	N/A	1.39	
Total Private Market Composite	3.42	5.98	10.49	10.49	3.42	14.12	11.30	11.46	6.10	11.24	9.59	10.18	12/01/1992
Blended Policy (Private Market)	1.81	4.62	9.34	9.34	1 81	13.29	10.43	12.07	8.68	9.43	7.97	N/A	
Value Added	1.61	1.36	1.15	1.15	1.61	0.83	0.87	-0.61	-2.58	1.81	1.62	N/A	

*PSERS Total Fund and Public Markets Composites incorprate the levered returns for the PSERS Gold and PSERS U.S. Long Treasuries accounts.
**Total Fund Blended Policy Benchmark incorporates the performance of the Public Market Blended Policy Benchmark (Hedged).

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Empower Results®

As of September 30, 2018

Trailing Period Performance

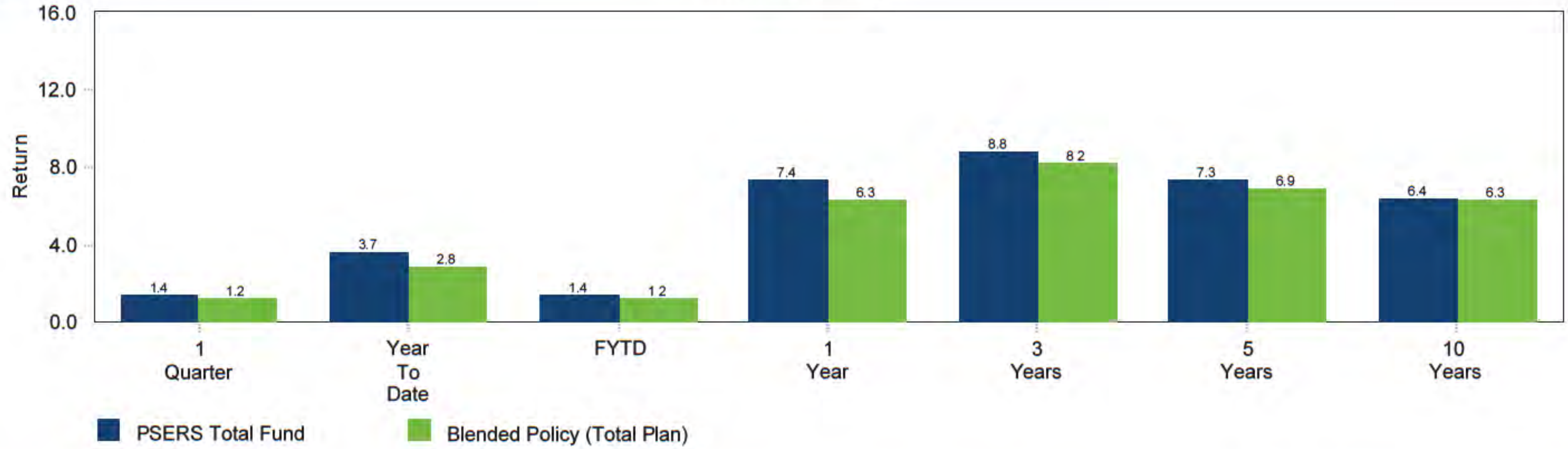
	Performance (%)
	Since July 2011
PSERS Total Fund	7.02
Blended Policy (Total Plan)	6.46

PSERS Total Fund

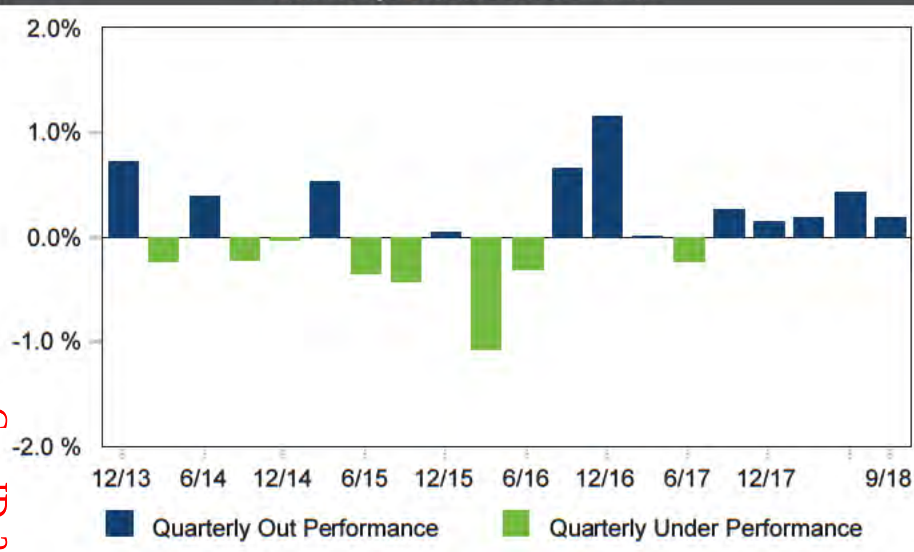
As of September 30, 2018

Performance Summary

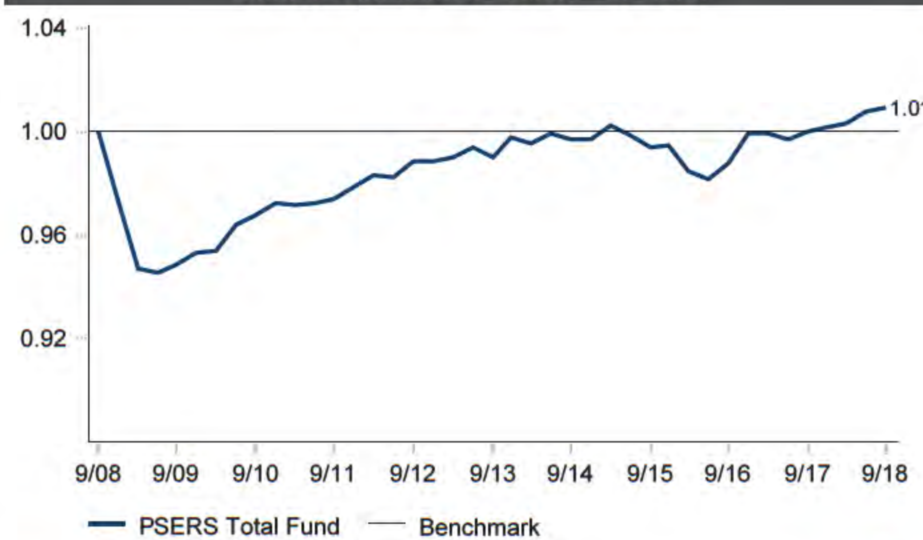
Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - 10 Years



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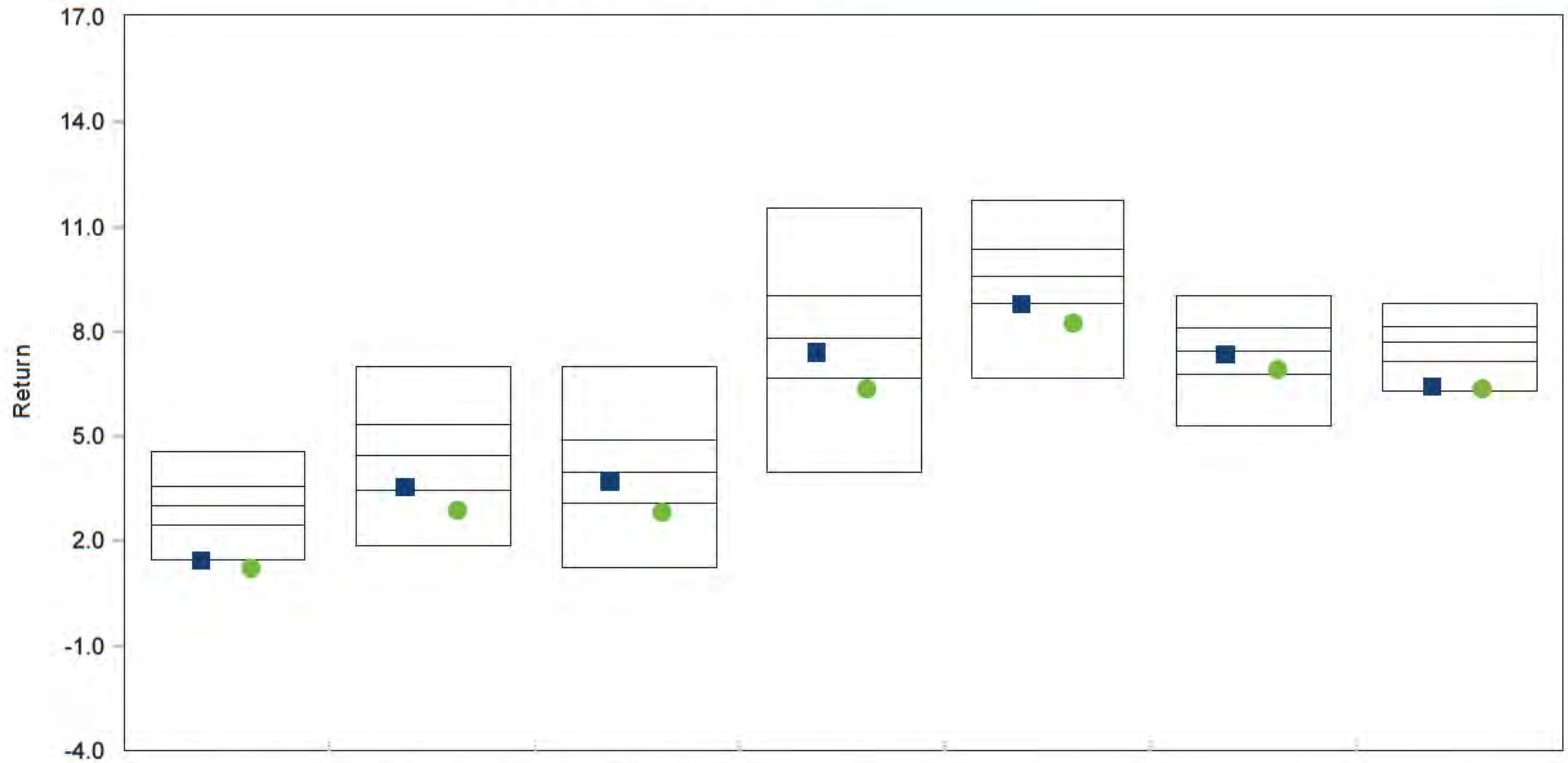
Peer Group Analysis



	1 Quarter	2 Quarters Ending Sep-2018	3 Quarters Ending Sep-2018	1 Year	3 Years	5 Years	10 Years
■ PSERS Total Fund	1.40 (96)	3.52 (73)	3.66 (63)	7.37 (63)	8.78 (77)	7.31 (56)	6.41 (94)
● Blended Policy (Total Plan)	1.21 (97)	2.87 (88)	2.81 (81)	6.33 (81)	8.23 (88)	6.90 (71)	6.31 (95)
5th Percentile	4.59	6.99	6.99	11.52	11.75	9.02	8.85
1st Quartile	3.56	5.32	4.89	9.06	10.35	8.09	8.18
Median	3.04	4.45	3.98	7.84	9.58	7.43	7.71
3rd Quartile	2.44	3.45	3.06	6.67	8.83	6.75	7.18
95th Percentile	1.46	1.83	1.24	3.98	6.64	5.27	6.27
Population	535	532	532	531	487	450	395

Parentheses contain percentile rankings.

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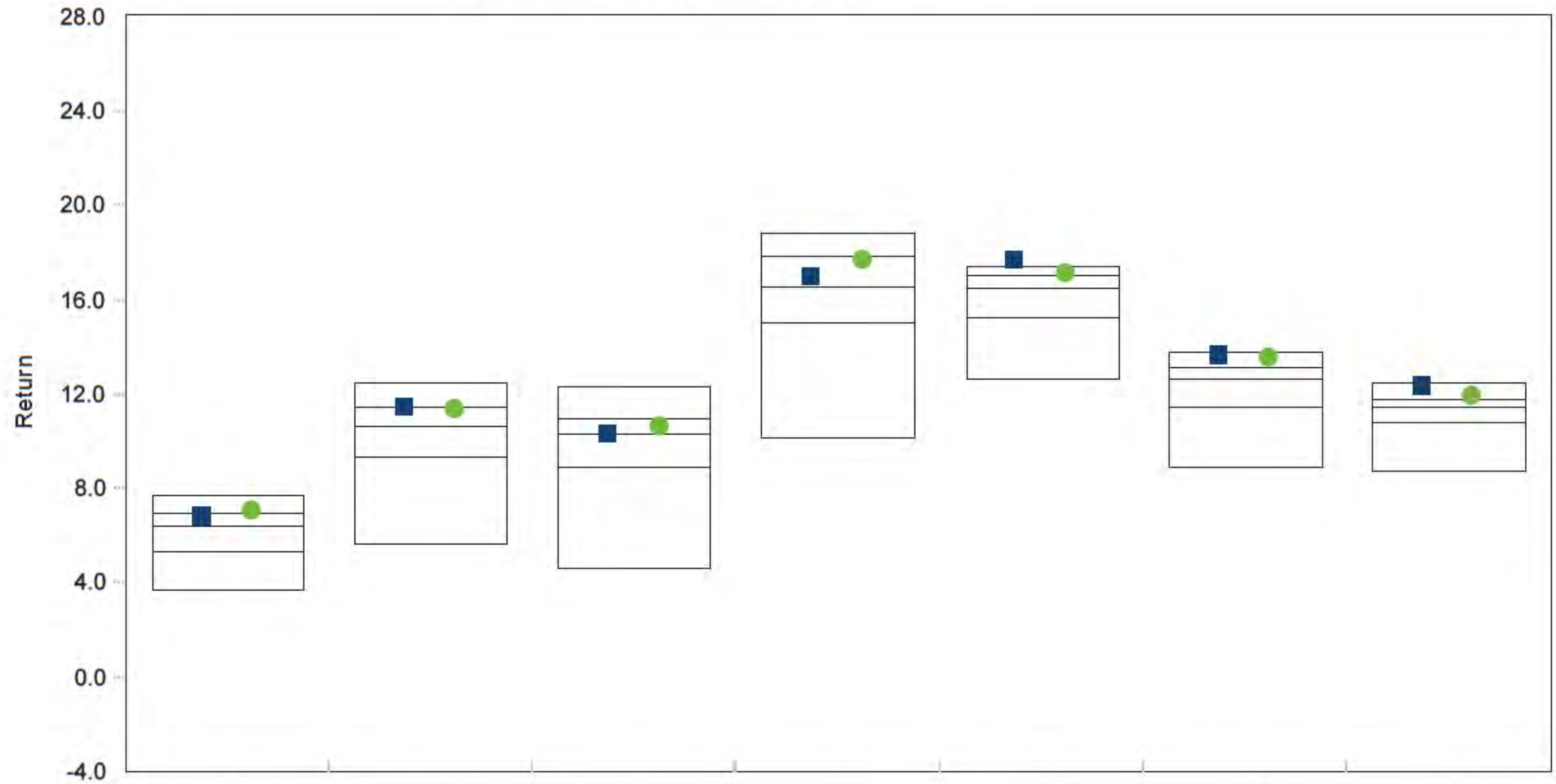
Empower Results®

Plan Sponsor Peer Group Analysis

All Public Plans-US Equity Segment



	1 Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years
■ Total US Equity Composite	6.83 (33)	11.44 (26)	10.30 (51)	16.92 (46)	17.69 (2)	13.59 (15)	12.30 (7)
● Blended Policy (Tot US Eq)	7.08 (20)	11.32 (33)	10.65 (33)	17.65 (34)	17.14 (24)	13.52 (15)	11.94 (20)
5th Percentile	7.66	12.46	12.33	18.81	17.48	13.79	12.48
1st Quartile	6.94	11.44	10.92	17.81	17.01	13.15	11.79
Median	6.36	10.62	10.33	16.55	16.43	12.64	11.46
3rd Quartile	5.36	9.34	8.88	15.01	15.21	11.45	10.79
95th Percentile	3.74	5.67	4.64	10.12	12.69	8.93	8.74
Population	73	73	71	68	65	60	34

Parentheses contain percentile rankings.

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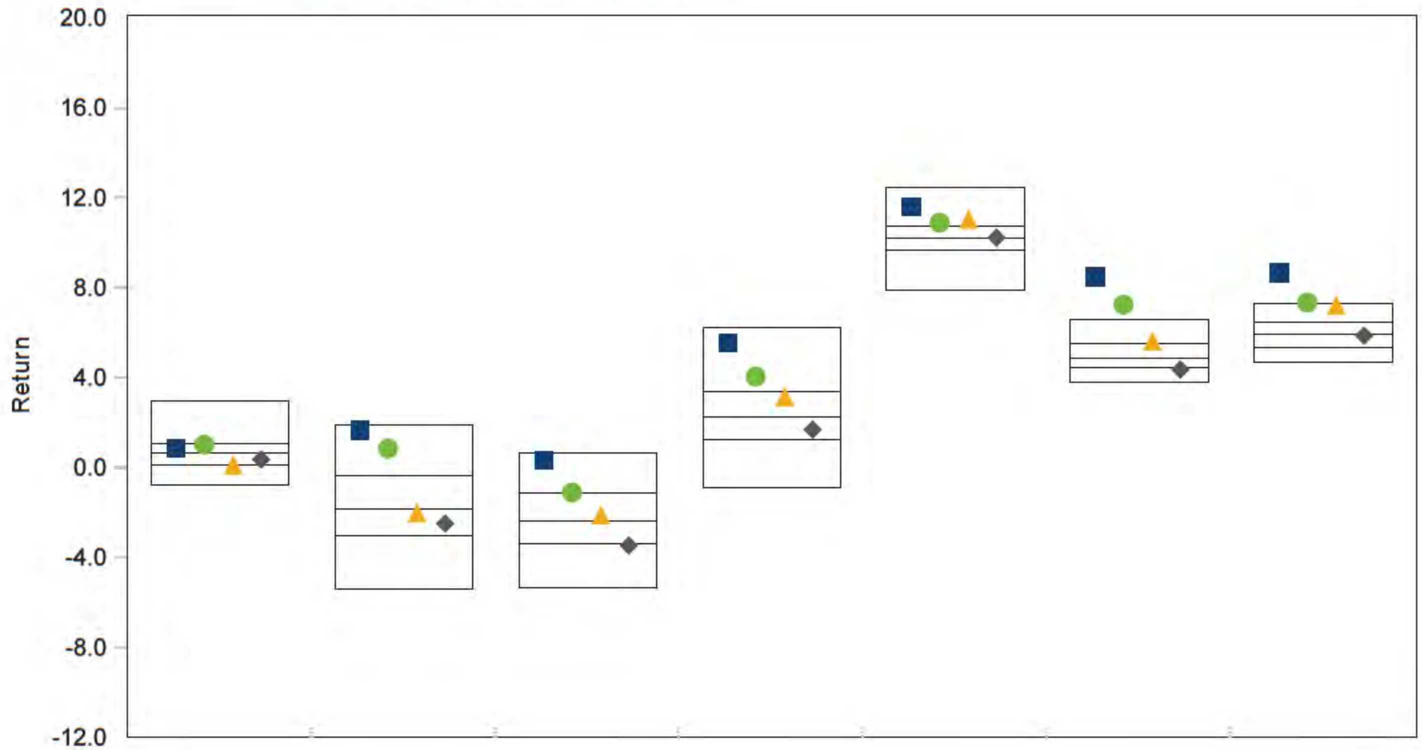
Plan Sponsor Peer Group Analysis

All Public Plans-Intl. Equity Segment



	1 Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years
■ Total Non-U.S. Equity Composite (hedged)	0.79 (40)	1.61 (6)	0.27 (12)	5.52 (9)	11.54 (14)	8.41 (1)	8.59 (1)
● Blended Policy (Total Non-US Eq) (Hedged)	1.02 (28)	0.80 (11)	-1.15 (25)	4.04 (16)	10.86 (24)	7.20 (2)	7.27 (6)
▲ Total Non-U.S. Equity Composite (unhedged)	0.09 (76)	-2.01 (54)	-2.13 (45)	3.10 (31)	11.00 (18)	5.61 (21)	7.17 (7)
◆ Blended Policy (Total Non-US Eq) (Unhedged)	0.33 (66)	-2.51 (70)	-3.45 (77)	1.69 (67)	10.24 (50)	4.34 (81)	5.82 (56)
5th Percentile	2.90	1.88	0.63	6.20	12.45	6.61	7.28
1st Quartile	1.11	-0.34	-1.20	3.35	10.77	5.48	6.46
Median	0.58	-1.86	-2.39	2.24	10.23	4.87	5.92
3rd Quartile	0.09	-3.04	-3.40	1.24	9.71	4.45	5.30
95th Percentile	-0.76	-5.47	-5.30	-0.86	7.95	3.83	4.70
Population	75	74	74	73	69	60	34

Parentheses contain percentile rankings.

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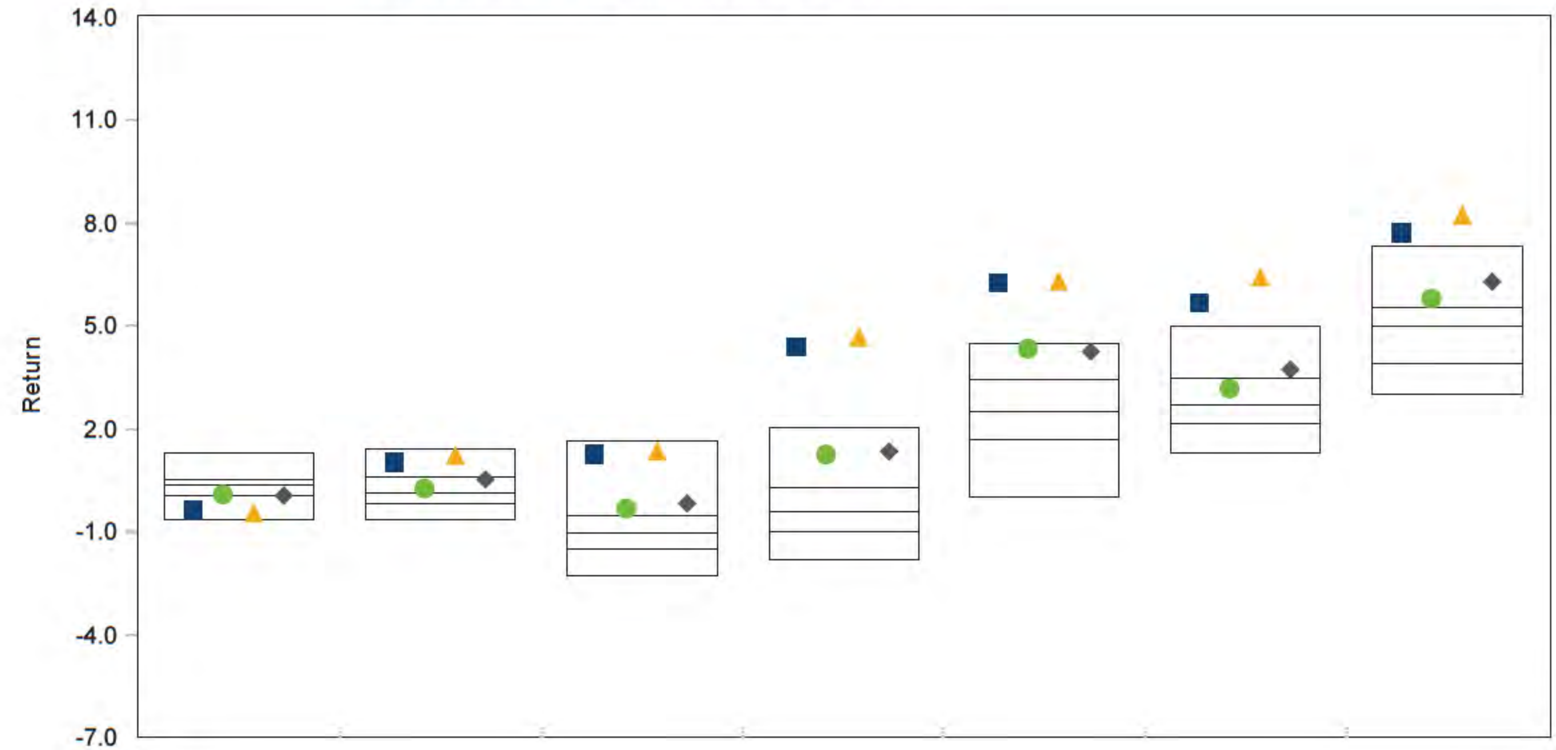
Plan Sponsor Peer Group Analysis

All Public Plans-US Fixed Income Segment



	1 Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years
■ Total Fixed Income Composite	-0.42 (93)	1.01 (10)	1.21 (7)	4.35 (3)	6.25 (1)	5.64 (3)	7.68 (5)
● Blended Policy (Total FI)	0.05 (77)	0.24 (42)	-0.34 (23)	1.20 (11)	4.33 (10)	3.17 (41)	5.76 (19)
▲ Total US Fixed Income Composite	-0.47 (93)	1.22 (7)	1.36 (7)	4.66 (2)	6.30 (1)	6.39 (1)	8.20 (3)
◆ Blended Policy (Total US FI)	0.08 (76)	0.55 (26)	-0.19 (22)	1.36 (10)	4.28 (11)	3.72 (20)	6.30 (11)
5th Percentile	1.27	1.40	1.63	2.07	4.49	5.03	7.38
1st Quartile	0.54	0.56	-0.53	0.30	3.45	3.50	5.54
Median	0.35	0.14	-1.06	-0.43	2.51	2.69	5.02
3rd Quartile	0.08	-0.20	-1.53	-1.02	1.68	2.17	3.90
95th Percentile	-0.66	-0.64	-2.25	-1.83	0.02	1.28	3.04
Population	77	77	77	76	72	67	38

Parentheses contain percentile rankings.

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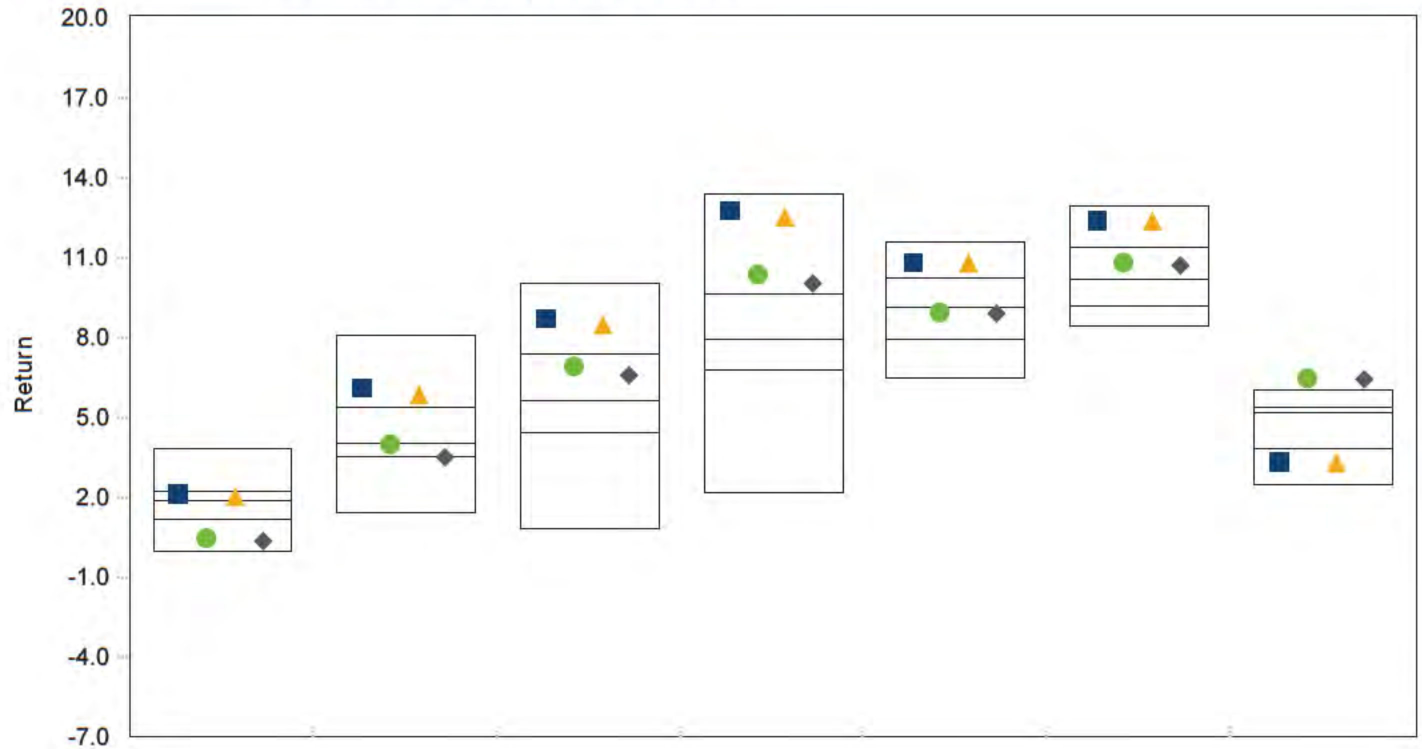
AON Empower Results®

Plan Sponsor Peer Group Analysis

All Public Plans-Real Estate Segment



	1 Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years
■ Total Real Estate (levered/hedged)	2.09 (33)	6.02 (18)	8.65 (12)	12.70 (7)	10.80 (14)	12.38 (8)	3.26 (90)
● Blended Policy (Total Real Estate) (Hedged)	0.43 (90)	3.91 (54)	6.87 (29)	10.36 (17)	8.94 (52)	10.76 (40)	6.44 (1)
▲ Total Real Estate (levered/unhedged)	2.03 (38)	5.79 (21)	8.48 (13)	12.51 (8)	10.78 (15)	12.36 (8)	3.26 (90)
◆ Blended Policy (Total Real Estate) (Unhedged)	0.32 (91)	3.51 (76)	6.54 (32)	10.03 (18)	8.89 (52)	10.74 (41)	6.42 (1)
5th Percentile	3.81	8.07	9.99	13.42	11.60	12.92	6.04
1st Quartile	2.19	5.37	7.40	9.63	10.24	11.34	5.36
Median	1.84	4.06	5.57	7.91	9.09	10.19	5.13
3rd Quartile	1.16	3.52	4.38	6.79	7.90	9.22	3.82
95th Percentile	0.00	1.44	0.77	2.17	6.52	8.45	2.43
Population	46	42	39	37	26	22	11

Parentheses contain percentile rankings.

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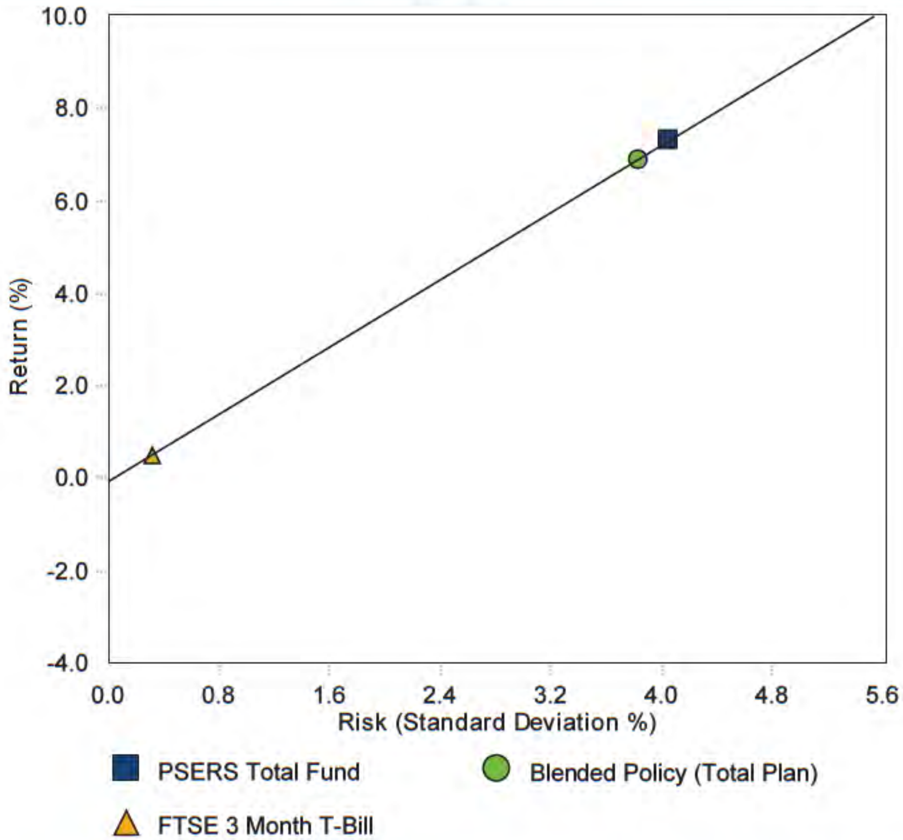
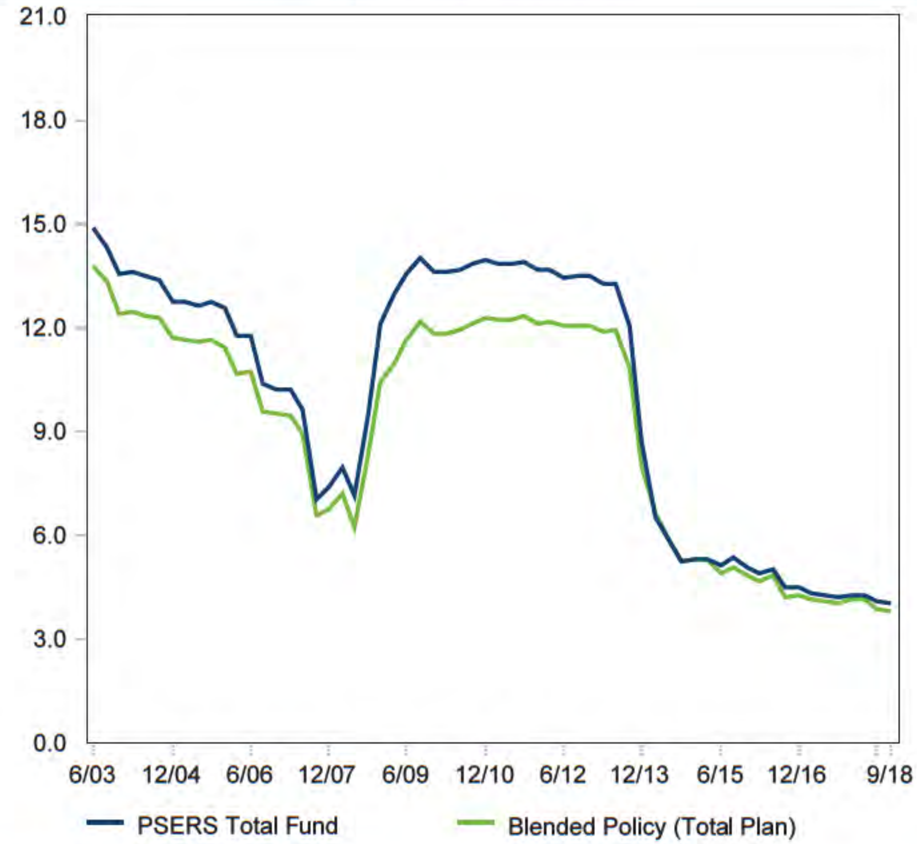
AON Empower Results®

Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
PSERS Total Fund	0.40	0.98	0.40	0.94	1.66	0.22	1.03	7.31	4.05	0.97
Blended Policy (Total Plan)	0.00	0.00	N/A	1.00	1.65	0.00	1.00	6.90	3.83	1.00
FTSE 3 Month T-Bill	-6.31	3.83	-1.65	0.00	N/A	0.46	0.00	0.49	0.32	0.05

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Empower Results®

As of September 30, 2018

Trailing Period Performance

	Performance(%)												
	1 Quarter	2 Quarters	3 Quarters	YTD	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	Since Inception	Inception Date
Total Public and Private Equity Exposure (hedged)	3.30	5.18	6.46	6.46	3.30	11.20	12.49	N/A	N/A	N/A	N/A	9.09	10/01/2014
Total Public Equity Composite (hedged)	2.66	4.39	3.36	3.36	2.66	8.95	13.46	10.23	10.01	9.11	7.90	7.06	07/01/1998
Blended Policy (Public Equity) (Hedged)	3.37	4.85	3.36	3.36	3.37	9.24	13.33	9.80	9.27	8.70	7.01	6.20	
Value Added	-0.71	-0.46	0.00	0.00	-0.71	-0.29	0.13	0.43	0.74	0.41	0.89	0.86	
Total US Equity Composite	6.83	11.44	10.30	10.30	6.83	16.92	17.69	13.59	12.30	9.80	N/A	6.96	01/01/2000
Blended Policy (Tot US Eq)	7.08	11.32	10.65	10.65	7.08	17.65	17.14	13.52	11.94	9.92	N/A	6.11	
Value Added	-0.25	0.12	-0.35	-0.35	-0.25	-0.73	0.55	0.07	0.36	-0.12	N/A	0.85	
Total Non-U.S. Equity Composite (hedged)	0.79	1.61	0.27	0.27	0.79	5.52	11.54	8.41	8.59	9.66	N/A	5.87	01/01/2000
Blended Policy (Total Non-US Eq) (Hedged)	1.02	0.80	-1.15	-1.15	1.02	4.04	10.86	7.20	7.27	8.63	N/A	4.87	
Value Added	-0.23	0.81	1.42	1.42	-0.23	1.48	0.68	1.21	1.32	1.03	N/A	1.00	
Emerging Markets Equity Composite	-6.01	-11.07	-10.72	-10.72	-6.01	-4.46	5.53	2.12	4.60	8.94	9.00	7.63	07/01/1998
Blended Policy (MSCI EM net)	-1.45	-9.35	-8.22	-8.22	-1.45	-1.18	12.22	3.54	5.36	9.73	9.96	8.49	
Value Added	-4.56	-1.72	-2.50	-2.50	-4.56	-3.28	-6.69	-1.42	-0.76	-0.79	-0.96	-0.86	
Total Alternative Investments (hedged)	4.20	6.26	11.36	11.36	4.20	14.90	11.51	10.64	7.86	12.84	10.51	10.40	07/01/1998
Burgiss All Private Markets ex Real Estate (1Q Lag)	2.70	5.46	10.50	10.50	2.70	14.80	11.06	12.61	9.11	9.04	6.31	6.24	04/01/1998
Total Fixed Income Composite (hedged)	-0.42	1.01	1.21	1.21	-0.42	4.35	6.25	5.64	7.68	6.45	6.41	6.59	07/01/1998
Blended Policy (Total FI)	0.05	0.24	-0.34	-0.34	0.05	1.20	4.33	3.17	5.76	5.07	5.38	5.57	
Value Added	-0.47	0.77	1.55	1.55	-0.47	3.15	1.92	2.47	1.92	1.38	1.03	1.02	
Investment Grade Composite	-2.02	-2.65	-5.39	-5.39	-2.02	-3.47	1.92	N/A	N/A	N/A	N/A	2.81	10/01/2014
Blended Policy (Investment Grade)	-0.97	-0.90	-2.70	-2.70	-0.97	-1.59	1.26	2.68	4.30	N/A	N/A	1.86	
Value Added	-1.05	-1.75	-2.69	-2.69	-1.05	-1.88	0.66	N/A	N/A	N/A	N/A	0.95	
US Core Plus Fixed Income Composite	0.00	-0.55	-1.77	-1.77	0.00	-0.69	2.80	3.49	5.56	N/A	N/A	4.79	10/01/2004
Blended Policy (Barclays Aggregate Index)	0.02	-0.14	-1.60	-1.60	0.02	-1.22	1.31	2.16	3.83	3.85	4.60	3.81	
Value Added	-0.02	-0.41	-0.17	-0.17	-0.02	0.53	1.49	1.33	1.73	N/A	N/A	0.98	
Non-U.S. Developed Markets Fixed Income	0.22	0.02	0.83	0.83	0.22	1.77	3.66	0.69	3.79	3.99	4.25	4.56	07/01/1998
Blended Policy (Barclays Global Agg GDP weighted)	-0.15	0.27	1.03	1.03	-0.15	2.24	3.04	0.07	2.82	N/A	N/A	N/A	
Value Added	0.37	-0.25	-0.20	-0.20	0.37	-0.47	0.62	0.62	0.97	N/A	N/A	N/A	
U.S. Treasuries Total (unlevered)	-3.49	-3.72	-7.51	-7.51	-3.49	-5.68	-0.77	2.54	N/A	N/A	N/A	0.44	07/01/2012
Blmbg. Barc. U.S. Treasury: Long	-2.88	-2.58	-5.79	-5.79	-2.88	-3.56	0.72	4.41	5.45	5.56	5.80	1.71	
Value Added	-0.61	-1.14	-1.72	-1.72	-0.61	-2.12	-1.49	-1.87	N/A	N/A	N/A	-1.27	
Credit-Related (hedged)	2.25	4.70	6.56	6.56	2.25	9.26	9.05	N/A	N/A	N/A	N/A	6.32	10/01/2014
Blended Policy (Credit-Related)	2.10	2.20	1.72	1.72	2.10	2.29	8.03	N/A	N/A	N/A	N/A	4.10	
Value Added	0.15	2.50	4.84	4.84	0.15	6.97	1.02	N/A	N/A	N/A	N/A	2.22	
Emerging Markets Fixed Income	0.97	-3.67	-1.20	-1.20	0.97	1.00	8.20	2.36	N/A	N/A	N/A	3.93	04/01/2010
Blended Policy (Barclays Emerging Mkt 10% Country Cap)	-1.02	-9.81	-6.73	-6.73	-1.02	-5.32	4.94	-0.53	3.56	6.58	N/A	1.78	
Value Added	1.99	6.14	5.53	5.53	1.99	6.32	3.26	2.89	N/A	N/A	N/A	2.15	
High Yield Fixed Income Composite (hedged)	2.34	5.33	7.14	7.14	2.34	9.87	9.00	7.95	9.43	8.26	N/A	8.06	10/01/1999
Blended Policy (Barclays Corporate HY)	2.40	3.46	2.57	2.57	2.40	3.05	8.15	5.54	9.32	7.80	7.30	7.48	
Value Added	-0.06	1.87	4.57	4.57	-0.06	6.82	0.85	2.41	0.11	0.46	N/A	0.58	
Inflation Protected (unlevered)	-0.74	0.11	0.31	0.31	-0.74	2.71	3.44	4.68	8.03	N/A	N/A	6.95	04/01/2004
Blended Policy (Barclays World Inflation Linked Bond - Hedged)	-0.84	-0.52	-0.44	-0.44	-0.84	2.06	3.93	2.50	3.89	4.32	5.50	3.99	
Value Added	0.10	0.63	0.75	0.75	0.10	0.65	-0.49	2.18	4.14	N/A	N/A	2.96	
TIPS Composite (unlevered)	-0.74	0.11	0.31	0.31	-0.74	2.71	3.44	4.68	8.03	N/A	N/A	6.95	04/01/2004
Blended Policy (Barclays World Inflation Linked Bond - Hedged)	-0.84	-0.52	-0.44	-0.44	-0.84	2.06	3.93	2.50	3.89	4.32	5.50	3.99	
Value Added	0.10	0.63	0.75	0.75	0.10	0.65	-0.49	2.18	4.14	N/A	N/A	2.96	
P MCO Multi-Sector Strategy	-0.42	-0.26	-0.89	-0.89	-0.42	-0.11	3.61	2.62	N/A	N/A	N/A	2.75	07/01/2012
Blended Policy (PIMCO Multi-Sector)	-0.49	-0.32	-1.05	-1.05	-0.49	-0.01	3.08	2.62	4.39	4.19	4.79	2.67	
Value Added	0.07	0.06	0.16	0.16	0.07	-0.10	0.53	0.00	N/A	N/A	N/A	0.08	

*The indicated index in parenthesis of Blended Policy represents current benchmark. Description of Blended Policy is provided in Appendix of this report

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