TOWN OF WEST HARTFORD
PENSION BOARD

Virtual Regular Meeting

Scheduled For

Monday

May 16, 2022

at 7:45 am

TOWN OF WEST HARTFORD PENSION BOARD VIRTUAL REGULAR MEETING
Monday, May 16, 2022 at 7:45 a.m.

Members of the public may view the meeting on YouTube and www.whctv.org.

I. Roll Call/Attendance
Guests: Mayor Shari Cantor; Rick Ledwith, Acting Town Manager; Cathy Lombardi, Acting Director of Human Resources, Lori Kearney, Human Resources Specialist, Mary Fay, Town Council; Chris Kachmar, Fiducient Advisors, and Becky Sielman, Yelena Pelletier, and Kevin Hart, Milliman

II. Chair's Opening Comments
- A. Review of rules of decorum and procedure for virtual meetings
- B. Election of Clerk of the Board

III. Peter Privitera, Director of Finance / Milliman
- A. Valuation
- B. MARC pension administration system

IV. Chris Kachmar, Fiducient Advisors
- A. Quarterly investment review – Q1 2022
- B. Pension Plan – portfolio composition discussion

V. Brittany Bermingham, Town Matters

VI. Lori Kearney, Human Resources Specialist
- A. Meeting schedule for 2022
- B. Summary of Pension Administration

VII. Formal Actions
- A. Minutes
  - 1. Approval of the minutes for the virtual regular meeting held on Monday, February 28, 2022.

  "Motion to approve the minutes for the virtual regular meeting held on Monday, February 28, 2022."
- B. Pension Administration
  - 1. Memberships
  - 2. Terminations and Refunds
  - 3. Applications for Approval
    - a. Vested interest applications
    - b. Normal retirement applications
    - c. Survivorship applications

  "Motion to approve Pension Administration."
- C. Invoices for Consideration
  - 1. Milliman

    a. Invoice for July 1, 2021 actuarial valuation services in the amount of $7,903.75 and for consultation services regarding QDRO and contingent annuity factors in the amount of $626.25. Invoice date 5/2/2022.

    b. Invoice for July 1, 2021 actuarial valuation services in the amount of $18,000 and for services related to the actuarially determined contribution in the amount of $660. Invoice date 5/2/2022.
  - 2. Silvercrest

    Invoice for management fees for quarter ending 6/30/2022 in the amount of $37,081. Invoice date 4/18/2022.

  "Motion to approve for payment the items under Invoices for Consideration."

VIII. New Business

IX. Adjournment
- A. **"Motion to adjourn."**

"ANY INDIVIDUAL WITH A DISABILITY WHO NEEDS SPECIAL ASSISTANCE TO PARTICIPATE IN A MEETING OR PUBLIC HEARING SHOULD CONTACT SUZANNE OSLANDER, DEPARTMENT OF SOCIAL SERVICES, 860-561-7580 SEVEN DAYS PRIOR TO THE MEETING OR PUBLIC HEARING."

Lori Kearney

From:	Kevin Hart <kevin.hart@milliman.com>
Sent:	Sunday, April 24, 2022 4:39 PM
To:	Yelena Pelletier; Lori Kearney
Cc:	Catherine Lombardi; Becky Sielman; Peter Privitera
Subject:	[EXTERNAL SENDER] RE: quote for pension services
Attachments:	MARC Services Checklist.pdf

Hi Lori,

Below is the estimated pricing for Milliman to implement and support a MARC pension administration system for the Town of West Hartford. Note that the fees are increased if you choose to have disability, death, and post-retirement retiree increase administration all automated.

- Option 1: Implement a MARC system with full system functionality but exclude automating non-standard calculations such as death, disability, and post-retirement retiree increases
    - One-time implementation fee is estimated to be $36,000
    - Monthly MARC license fees are estimated to be $2,500
    - There will still be standard data fields in the system for death, disability, post-retirement retiree increases, and DROs but those calculations will not be automated

- Option 2: Implement a MARC system with full system functionality and include automating non-standard calculations such as death, disability, and post-retirement retiree increases
    - One-time implementation fee is estimated to be $48,000
    - Monthly MARC license fees are estimated to be $2,750
    - Calculations for death, disability, and post-retirement retiree increases will be automated
    - There will still be standard data fields in the system for DROs but those calculations will not be automated

The implementation fees are one-time fees that can be paid over the first 24 months of the contract or sooner, if you'd prefer. The ongoing monthly license fees don't begin until the MARC system is live and available for use by the Town. The monthly MARC license fees include unlimited support for the MARC system, training, and infrastructure costs. The MARC system features included in Option 1 and Option 2 are specified in the attached MARC services checklist. All of the fees above assume that the Town is performing the administration of the pension plan using Milliman's MARC system.

Please let us know if you have any questions or would like Milliman to prepare a formal pricing proposal. Thanks!

Kevin Hart, CPC
Principal & MARC Product Manager
He/Him/His Pronouns

Milliman
15800 W. Bluemound Road, Suite 100
Brookfield, WI 53005 USA

+1 262 796 3361 Office
+1 262 227 5073 Mobile

milliman.com/marc | email

From: Yelena Pelletier <Yelena.Pelletier@milliman.com>
Sent: Friday, April 22, 2022 9:19 AM
To: Lori Kearney <Lori.Kearney@WestHartfordCT.gov>
Cc: Catherine Lombardi <Catherine.Lombardi@WestHartfordCT.gov>; Becky Sielman <becky.sielman@milliman.com>; Kevin Hart <kevin.hart@milliman.com>
Subject: RE: quote for pension services

Hi Lori –

As of our latest valuation (July 1, 2021) there are a total of 794 active members in the pension plan. 389 of them are Town employees and 405 are BOE employees. The split of the members by Plan appears below.

Part B	333
Part B1	12
Part C	80
Part D	111
Part E	258
Total	794

Kevin will be sending you a quote for the administration services we discussed by Tuesday.

Please let me know if you need any other information.

Have a good weekend,
Yelena

Yelena Pelletier, ASA
Consulting Actuary
She / Her / Hers pronouns

Milliman
200 Great Pond Drive
Suite 110
Windsor, CT 06095

860.687.0119
milliman.com

From: Lori Kearney <Lori.Kearney@WestHartfordCT.gov>
Sent: Thursday, April 21, 2022 5:02 PM
To: Becky Sielman <becky.sielman@milliman.com>; Yelena Pelletier <Yelena.Pelletier@milliman.com>
Cc: Catherine Lombardi <Catherine.Lombardi@WestHartfordCT.gov>
Subject: quote for pension services

Becky and Yelena,

At our meeting regarding Milliman's pension software, we discussed firming up a quote for Town and BOE. Yelena was going to provide a count of Town and BOE staff in order to better estimate the cost of implementation and the annual fee. Is that estimate available?

We have a staffing situation here that may make outsourcing this service more feasible.

Thanks.

Lori

Lori Kearney
Human Resources Specialist, Benefits & Pension
Human Resources Department
Town of West Hartford
50 South Main Street, Room 221
West Hartford, CT 06107
Phone (860) 561-7491
Fax (860) 561-7492

MARC Pension Administration System

Tailored to Meet Your Needs

Milliman

Member Website

Participant can view their data	✓
Participant can do on-demand benefit estimates	✓
Participant can perform Social Security and Defined Contribution projection estimates ^	
^ Social Security and DC calculations on the member website available for an additional fee	
Participant can use total family retirement income estimator (including other retirement and spouse retirement income)	✓
Participant can view and download plan-related documents, including beneficiary designation forms, SPDs, required notices, etc.	✓
Participant self-service features include ability to change contact information, beneficiaries, retiree information	✓
Participant can fill out a form to send a message to the Plan Administrator	✓
Milliman website maintains participant login information and provides users with Forgot Username/Password options	✓

Recordkeeping

Pension data storage	✓
Eligibility and vesting tracking	✓
Beneficiary storage	✓
Alternate Payee storage	✓
Member Contributions Data storage and administration	✓
Document storage	✓
Ongoing payroll imports	✓
On-demand exports of any data field stored in the system	✓
Valuation data extract for the actuary	✓

Calculations that Plan Sponsor Can Run

Early, Normal, & Late Retirement benefits	✓
Benefit estimate calculations	✓
Supplemental benefit calculations	✓
Retiree increase calculations	Option 2
Member contribution calculations	✓
Calculations involving Death, Disability ^	Option 2
^ Calculations involving DROs available for an additional fee	

Benefit Payment Services

Retiree data maintenance	✓
Beneficiary records/tracking	✓
Direct-deposit & Tax withholding data fields	✓
Retiree Increase tracking	✓
Monthly data file with new/changed payment amounts	✓

Participant Communications

Termination and retirement paperwork	✓
Benefit statements	✓
On-demand benefit estimates	✓

Milliman Security

Annual SSAE 16 SOC 1 and SOC 2 audits	✓
High level internet security for Milliman-hosted system	✓
Client data hosted on secure off-site server (separate from all other Milliman servers)	✓
Multiple security levels and permissions	✓
All data changes are tracked in the system for audit / review purposes	✓

Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

milliman.com/marc

CONTACT
Kevin M. Hart, CPC
Principal & MARC Product Manager
kevin.hart@milliman.com
262.796.3361

TO: Pension Board

FROM: Lori Kearney, Human Resources Specialist

DATE: May 16, 2022

SUBJECT: **2022 Pension Board Meeting Dates**

The Pension Board meetings are planned for Mondays at 7:45 a.m. They will be conducted virtually through May.

May 16, 2022
September 19, 2022
October 17, 2022
November 14, 2022

A virtual regular meeting of the Town of West Hartford Pension Board was held on Monday, February 28, 2022 at 7:45 a.m.

This meeting was made available on YouTube and www.whctv.org

The meeting was called to order at 7:47 a.m.

I. Roll Call/Attendance

Pension Board Members: Chair Lazaro Guzman, Commissioners Alan Lebow, Perry Salonia, and Peter Privitera, Director of Financial Services.

Participants/Guests: Rick Ledwith, Acting Town Manager, Chris Kachmar, Fiducient Advisors, Lori Kearney, Clerk of the Board, and Paula Knake, Pension Benefits Coordinator.

Absent: Brittany MacGilpin, Mayor Shari Cantor, Mary Faye

II. Chair's Opening Comments

A. Review of rules of decorum and procedure for the virtual meeting in accordance with Governor Lamont's Executive Order #7B permitting municipalities to conduct public meetings virtually during the COVID-19 pandemic.

B. Election of Paula Knake to serve as Clerk to the Board to replace Lori Kearney. No motion is required. No objections.

III. Chris Kachmar, Investment Review, Fiducient Advisors

A. Asset Allocation and Portfolio Discussion

1. The narrative has changed given higher interest rates, inflation and the conflict in Ukraine; at a high level, Bonds are down 4% YTD, S&P is down 7.8% YTD, Small Cap is down 9% YTD, International Equities are down 5.6% YTD and Emerging Markets are challenged. January was a negative month.

2. Pension portfolio in January close to target with $420m of invested assets. The portfolio is down 4%, however running within expectations. Capital market volatility remains escalated given the circumstances surrounding the conflict with Russia and Ukraine.

3. Three of the six Dollar Cost Averaging (DCA) cycles have been completed with $157m remaining to transfer. There are no concerns across portfolio managers. The next DCA is targeted to occur at the end of March. Are we at levels now that warrant accelerating the next transfer to the pension fund? We have a very liquid structure so can move easily if we feel strongly to move assets to the pension fund. Motion by Chair Guzman to accelerate the DCA $54m as follows: three tranches remain – split half of the March transfer, half will transfer now (next couple of days) and the other half at the end of March. The two remaining tranches to be transferred on a quarterly basis as planned:
Peter Privitera – Agree
Al Lebow – Agree
Perry Salonia – Agree
Lazaro Guzman – Agree
Motion carried.

B. 4th Quarter 2021 Pension Trust & POB Pool Performance Updates

1. We currently utilize a performance-based fee structure (incentive arrangement) with Pier, resulting in higher costs due to their very high performance. We can transition to a flat fee and this won't change how the portfolio is managed. It is more common in Europe to have performance-based fees, the US is more accustomed to a flat fee structure. Pier can accommodate both. We have debated this in the past and continue to land on keeping the performance based fees. The flat fee is 40 basis points plus 20% of out-performance (equates to roughly a flat fee of 1% and we paid 1.2%).
Motion by Chair Guzman to keep the existing incentive fee structure (status quo):

Motion by Chair Guzman to keep the existing incentive fee structure (status quo):
Peter Privitera - Agree
Al Lebow - Oppose
Perry Solonia - Agree
Lazaro Guzman - Agree
Motion carried.

2. New Capital Market assumptions were introduced. The current target allocation is the 70-30 mix over 20-years with an expected annualized return of 6.6% annually. There was interest in reviewing a more conservative allocation, including more fixed options. The data has been prepared for comparison purposes. There may be an opportunity in the future to explore further including a more in-depth conversation about fees associated with the asset classes.

IV. Peter Privitera, Director of Finance

1. Overall, expenses can be classified as Investment, Actuarial, Legal, Auditing and Administrative. Peter reviews the professional services bills, but does not generally monitor the administrative service bills. The administrative service bills do not typically go to the board for approval. In terms of size, they are not as significant. Other examples of expenses that are charged to the pension fund include the Benefits Coordinator role and a portion of Financial Services staff. These expenses are a component of the overall Town budget.

V. Brittany Bermingham, Town Matters

1. No items to report

VI. Lori Kearney, HR Specialist

1. Meeting schedule for 2022

a. Next meeting scheduled for May 16, 2022. The meeting may be in person at Town Hall; awaiting direction from Town Clerk.

VII. Formal Actions

A. Minutes

1. Approval of the minutes for the virtual special meeting held on Monday, January 24, 2022.

Motion by Chair Guzman for approval of the minutes for the virtual special meeting held on Monday, January 24, 2022. No objections were raised.

It was unanimously voted to approve the minutes for the virtual special meeting held on Monday, January 24, 2022.

B. Pension Administration

Motion by Chair Guzman for approval of the items under Pension Administration. No objections were raised.

1. Memberships

It was unanimously voted to approve membership for:
BOE – Marielle LeFebvre, Tamika Martin.
Town—Robert Doton, Laura Irmscher.

2. Terminations and Refunds

It was unanimously voted to approve terminations and refunds for:
BOE – Benjamin Villaparades, Molly McClure

3. Applications for Approval

a. Vested Interest

It was unanimously voted to approve a Vested Interest for:
Town - Thomas Wilson

b. Normal retirement applications

It was unanimously voted to approve a Normal retirement for:

BOE—Linda Bartenstein, Janet Fournier, Andrea Zitomer
Town – Michael Coyne, Jr., Sean Walmsley

C. Invoices for Consideration

1. Fiducient Advisors
   Consideration of invoice for payment for consultation services for the period from 10/1/2021 – 12/31/2021 in the amount of $12,500. Invoice date 1/25/2022.
3. Silvercrest
   Consideration of invoice for payment of management fees for the period from 1/1/2022 – 3/31/2022 in the amount of $37,658. Invoice date 1/6/2022.

Motion by Chair Guzman to approve for payment all items under Invoices for Consideration.
No objections were raised.
It was unanimously voted to approve for payment all invoices listed under Invoices for Consideration.

VIII. New Business

IX. Adjournment
Motion by Chair Guzman to adjourn the meeting at 8:44 a.m. No objections were raised. It was unanimously voted to adjourn.

Attest:

Paula Knake, LK

Paula Knake, Clerk of the Board

TO: Pension Board

FROM: Lori Kearney, Human Resources Specialist, Pension Division

DATE: May 16, 2022

SUBJECT: Pension Plan Membership

In accordance with the definition of employee as stated in Section 30-8 of the Pension Ordinance, I recommend that the following employees of the Town of West Hartford be accepted into the Pension Plan as of the dates listed below:

NEW MEMBERS - PBD				
NAME	**POSITION**	**DOH**	**DOE**	**DEPT**
Brown, Conor	Police Officer	3/14/2022	6/14/2022	Police
Chachulski, Anthony	Streets Maintainer I	1/3/2022	4/3/2022	Streets
Costa, Maria	Café Worker	1/4/2022	4/4/2022	Nutrition
Hemstock, Christopher	Revenue Services Rep	5/8/2022	8/8/2022	Financial Services
Lang, Skylar	Police Officer	4/11/2022	7/11/2022	Police
Magnuson, Cole	Mechanic	3/28/2022	6/28/2022	Streets
Michaud, Nathaniel	Police Officer	4/11/2022	7/11/2022	Police
Nieves, Maria	Café Worker	9/8/2020	12/8/2020	Nutrition
Rodriguez, Karoli	Police Officer	4/11/2022	7/11/2022	Town
Schiltz, Kaylie	Paraprofessional	3/21/2022	6/21/2022	BOE
Selmer, John	Police Officer	4/11/2022	7/11/2022	Police
Seymour, Joshua	Grounds Worker II	5/2/2022	8/2/2022	BOE
Strong, David	Parking Monitor	4/4/2022	7/4/2022	Town
Ubarry, Marcus	IT Specialist	2/28/2022	5/28/2022	BOE
Watkins, Benjamin	Police	2/21/2022	5/21/2022	Police

TO: Pension Board

FROM: Lori Kearney, Human Resources Specialist, Pension Division

DATE: May 16, 2022

SUBJECT: Withdrawals and Terminations

NON-VESTED WITHDRAWALS and TERMINATIONS

Reaffirmation of termination for employees with non-vested rights in accordance with Section 30-28 of the Pension Ordinance:

Name	Hire Date	Termination Date	Gross Refund	Department	Plan
Benjamin VanSchaack	10/18/2015	4/23/2018	$5,462.79	Grounds	B
Laurie Rosano	5/8/2017	6/11/2021	$8,932.38	BOE – Benefits	E
Mary Ellen Smith	12/10/2014	9/21/2018	$9,208.81	BOE – IT	E
Izaias Pontes	2/29/2016	12/20/2019	$6,121.54	BOE – Custodian	E
Kimberly Neild	10/29/2018	12/31/2021	$8,265.81	BOE – IT	E
Matthew Hart	7/31/2017	2/4/2022	$22,459.03	Town Manager	E
Molly Weyers	8/29/2018	2/25/2022	$5,080.75	BOE – Interpreter	E
Rodrigo Pinto	8/17/2020	6/24/2021	$2,858.42	Fire	C

VESTED WITHDRAWALS and TERMINATIONS

Reaffirmation of termination for employees with vested rights in accordance with Section 30-28 of the Pension Ordinance.

Name	Hire Date	Termination Date	Gross Refund	Department	Plan

Vested Interest - For Approval - Pension Board Meeting May 16, 2022 - Chart #1

	Name	Dept.	Yrs of Service	Benefit Pre 62...	Benefit after 62...	Date of Early	Date of Normal	Termination Date
COONS	MARY	BOE - PARA.	6 YRS. 6 MOS.		$150.72	6/9/2027	6/9/2032	9/2/2021
KLEIN	IRENE-LEE	POLICE	10 YRS. 1 MO.		$1,934.81	9/4/2021	9/4/2031	10/1/2021

Normal Retirements - For Approval - Pension Board Meeting May 16, 2022 - CHART #2

Name		Date of Normal	Years of Svs.	Dept.	Benefit - Before 62/65	After 62/65	Status	Plan
CIARLEGLIO	STEVEN	2/10/2022	20 YRS. 11 MOS.	POLICE		$7,617.32	LA	D
CLOUKEY	KERRY	3/31/2022	21 YRS. 3 MOS.	POLICE		$8,956.15	LA	D
HICKEY	KATHLEEN	2/28/2022	21 YRS. 11 MOS.	BOE		$2,124.63	CA	B
HILL	GREGORY	3/14/2022	23 YRS. 6 MOS.	FIRE		$5,824.09	LA	C
TOPLIFF JR.	WALTER	3/1/2022	6 YRS.	ASSESSORS		$623.40	LA	B

Survivorship Benefits - For Approval - Pension Board Meeting May 16, 2022 - CHART #3

Name		Date of Benefit	Survivor / CA of:	Benefit	Plan
NOONAN	JOANNE	2/27/2022	JOHN NOONAN	$843.55	C
SUBER	MYRTLE	3/7/2022	ELIJAH SUBER	$1,019.53	D
WILSON	KAREN	1/25/2022	WILLIAM WILSON	$1,805.63	C

Milliman

Invoice Number 0054WHF 04 22 P

May 2, 2022

Mr. Peter Privitera
Director of Financial Services
Town of West Hartford
50 South Main Street
West Hartford, CT 06107
Peter.Privitera@WestHartfordCT.gov

Remit checks to
Milliman, Inc.
200 Great Pond Drive, Suite 110, Windsor CT 06095
860-687-2110
Please return a copy of this invoice with your payment

Wire Instructions
Wells Fargo Bank, 999 Third Avenue, Seattle WA 98104

ABA Number	121000248
Account Name	Milliman
Account Number	4159648724

The Retirement Plan for Employees of the Town of West Hartford

Email remittance address
Hartlandbilling@milliman.com

Late fees will be charged of 1% / month after 90 days

Actuarial Services Through January 2022

Basic Services

Actuarial Valuation as of July 1, 2021 - completed — $7,903.75

Benefit Calculation Services

Consulting regarding Contingent Annuity Factors (email dated 10/20/2021) and call regarding QDRO (03/10/2022)

	Hours	Rate	Cost
Pelletier	1.50	$375	$562.50
Garibaldo	0.25	255	63.75

626.25

Total Amount Due $\boxed{\$8,530.00}$

Milliman

May 2, 2022

Mr. Peter Privitera
Director of Financial Services
Town of West Hartford
50 South Main Street
West Hartford, CT 06107
Peter.Privitera@WestHartfordCT.gov

Town of West Hartford OPEB Plan

Invoice Number 0054WHF 04 22 0

Remit checks to
Milliman, Inc.
200 Great Pond Drive, Suite 110, Windsor CT 06095
860-687-2110
Please return a copy of this invoice with your payment

Wire instructions
Wells Fargo Bank, 999 Third Avenue, Seattle WA 98104
ABA Number 121000248
Account Name Milliman
Account Number 4159648724

Email remittance address
Hartlandbilling@milliman.com

Late fees will be charged of 1% / month after 90 days

Actuarial Services Through March 2022

Basic Services

July 1, 2021 valuation — $18,000.00

Special Services

Estimated 2022-23 Actuarially Determined Contribution - email on 01/05/2022

	Hours	Rate	Cost
Castelhano	1.00	$375	$375.00
Lindberg	1.00	285	285.00

660.00

Total Amount Due — $18,660.00

SILVERCREST
ASSET MANAGEMENT GROUP

April 18, 2022

Peter Privitera
Town of West Hartford
50 South Main Street
West Hartford, CT 06107

Acct: XXXX9801
Code: westhpsc

SUMMARY OF MANAGEMENT FEES: Pension Board of the Town of West Hartford

Quarter ending 6/30/2022

3/31/2022 Portfolio Value:	$	18,540,497		
Quarterly Fee Based On:				
All Assets				
$18,540,497 @ 0.80% per annum	$	37,081		
Quarterly Fee			$	37,081
TOTAL DUE			$	37,081

Applicable Fee Schedule:
First $20,000,000 at 0.80% per annum
Next $30,000,000 at 0.72% per annum
Next $50,000,000 at 0.64% per annum
And Above at 0.56% per annum

Send check to:
Silvercrest Asset Management Group LLC
1330 Avenue of the Americas, 38th Floor
New York, NY 10019
Attn: Scott Gerard

TOWN OF WEST HARTFORD
PENSION PLAN

Full Actuarial Valuation as of July 1, 2021
To Determine Funding for Fiscal Year 2022-23

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Yelena Pelletier, ASA
Consulting Actuary

March 28, 2022

Table of Contents

Certification

We have performed a full actuarial valuation of the Plan as of July 1, 2021 to determine funding for fiscal year 2022-23. This report presents the results of our valuation.

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to calculate the Actuarially Determined Contribution based on the policies and assumptions adopted by the Town. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.
- Review of plan experience for the previous year to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.
- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.
- Comments on any other matters which may be of assistance in the funding and operation of the plan.

This report may not be used for purposes other than those listed above without Milliman's prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section. Determinations for other purposes, such as for financial reporting in accordance with GASB standards, could be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of the Town of West Hartford ("Town"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the Town may provide a copy of Milliman's work, in its entirety, to the Town's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Town; and (b) the Town may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by the Town. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

Figures for periods prior to July 1, 2019 have been obtained from actuarial valuation reports prepared by Hooker & Holcombe and from the City's Comprehensive Annual Financial Reports.

The calculations reported herein have been made on a basis consistent with our understanding of the Town's funding policy. Additional determinations may be needed for purposes other than meeting funding requirements, such as judging benefit security at plan termination or meeting employer accounting requirements.

The valuation results were developed using models intended for valuations that use standard actuarial techniques. In addition to the models described previously, Milliman has developed certain models to develop the discount rate used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOP). The models, including all input, calculations, and output may not be appropriate for any other purpose.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting recommendations of the American Academy of Actuaries and are based on actuarial assumptions and methods adopted by the Authority. We believe that the actuarial assumptions and methods used in this actuarial valuation are reasonable for valuing the benefits provided under the Plan.

This valuation is only an estimate of the Plan's financial condition as of a single date. It can neither predict the Plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of Plan contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA	Yelena Pelletier, ASA
Consulting Actuary	Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Pension Obligation Bond

The Town completed a Pension Obligation Bond sale in June 2021. We included the proceeds from the sale in the amount of $322.9 million as a receivable contribution as of July 1, 2021. The proceeds are being gradually invested according to the Plan's investment policy over a period of six to eight quarters. As a part of the Pension Obligation Bond package, the Town diverted the Actuarially Determined Contribution for the 2021-22 fiscal year to establish a reserve fund that is designed to provide the Town with budgetary stability in the event of market volatility.

Changes in Actuarial Methods and Assumptions

We lowered the interest rate assumption from 6.99% to 6.25% to better reflect anticipated future asset returns.

In conjunction with the sale of the Pension Obligation Bonds, the Town adopted the following changes to the funding policy:

- The amortization period for the Unfunded Accrued Liability changed to a 25-year closed period starting on July 1, 2021. The amortization period will decrease by 1 every year. Once it reaches 10, the policy will shift to 10 year layered amortization bases.
- The Town will continue to fund the Net Normal Cost so long as the Plan's funded ratio is below 150%. Should the funded ratio be 150% or more as of the valuation date, surplus would be used to offset the Net Normal Cost.
- The Actuarial Value of Assets was reset to equal the Market Value of Assets as of July 1, 2021.

These changes, in conjunction with the Pension Obligation Bond Proceeds, increased the Accrued Liability by approximately $45.3 million and decreased the Actuarially Determined Contribution by about $20.1 million.

Plan Changes

The employee contribution rate was updated for several unions reflecting the latest changes in the collective bargaining agreements between the Town and those unions. This change lowered the Accrued Liability by about $2,000 and decreased the Actuarially Determined Contribution by approximately $311,000.

Other Significant Changes

Although it is possible that the COVID-19 pandemic could have a material impact on the projected mortality, liabilities, and contribution requirements, we have chosen not to make an adjustment in the projections at this time, given the substantial current uncertainty regarding the impact of COVID-19 on mortality and plan costs, including whether the pandemic will increase or decrease mortality during the term of our projections. We will be monitoring this development closely and may adjust future projections to reflect the impact of COVID-19, if and when it becomes appropriate.

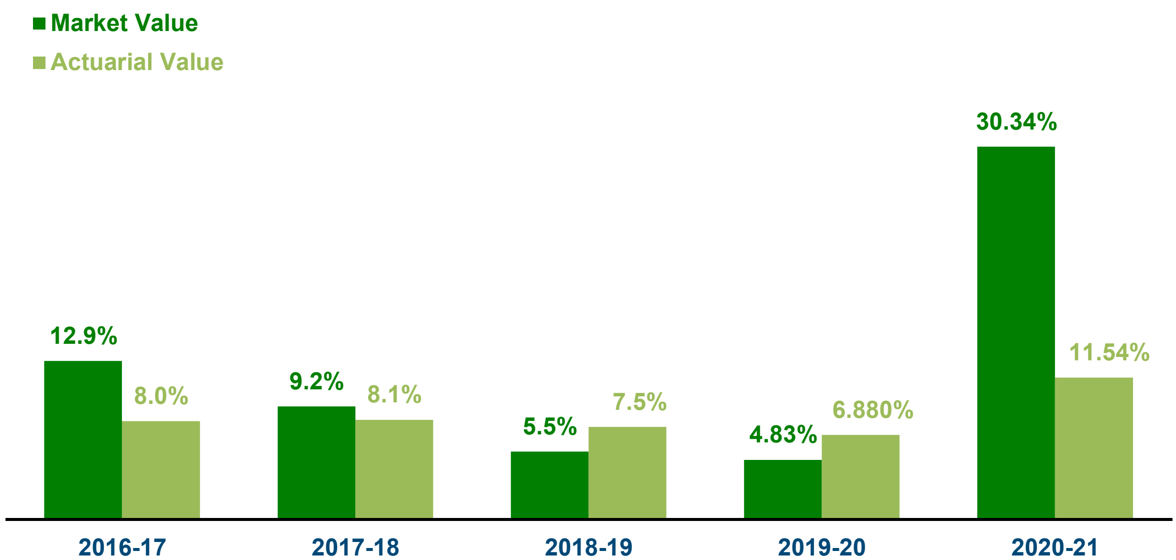
Section I - Executive Summary
Assets

There are two different measures of the plan's assets that are used throughout this report. The Market Value is a snapshot of the plan's investments as of the valuation date. The Actuarial Value is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses asymptotically over five years. The Actuarial Value of Assets has been reset to equal the Market Value of Assets as of July 1, 2021.

	Market	Actuarial
Value as of July 1, 2020	$214,812,124	$215,752,896
Town and Member Contributions*	351,642,498	351,642,498
Investment Income	63,829,773	24,393,052
Benefit Payments and Administrative Expenses	(37,671,314)	(37,671,314)
Reset Actuarial Value of Assets to Market Value of Assets	N/A	38,495,949
Value as of July 1, 2021	592,613,081	592,613,081

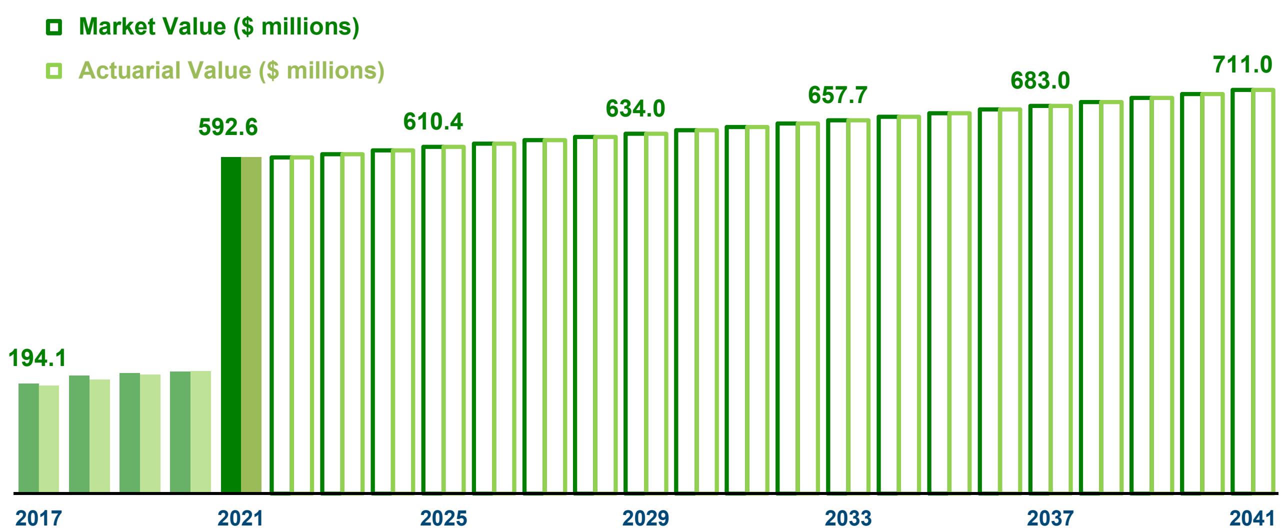
*Includes POB Proceeds equal to $322.9 million.

For fiscal year 2020-21, the plan's assets earned 30.34% on a Market Value basis and 11.54% on an Actuarial Value basis. The actuarial assumption for this period was 6.99%; the result is an asset gain of about $49.12 million on a Market Value basis and a gain of about 9.62 million on an Actuarial Value basis. Historical rates of return are shown in the graph below.

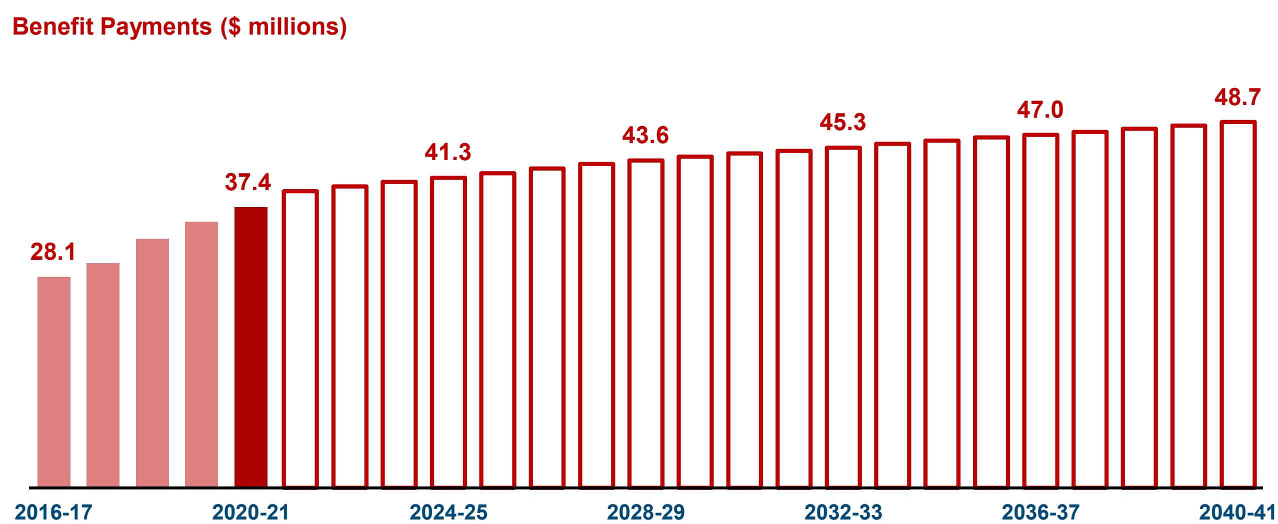


Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that the Town always contributes the Actuarially Determined Contribution, the investments always earn the assumed interest rate each year, and plan experience matches what is anticipated by the assumptions. Please note that the substantial increase in the assets as of July 1, 2021 is attributable to the Pension Obligation Bond (POB) issued by the Town.

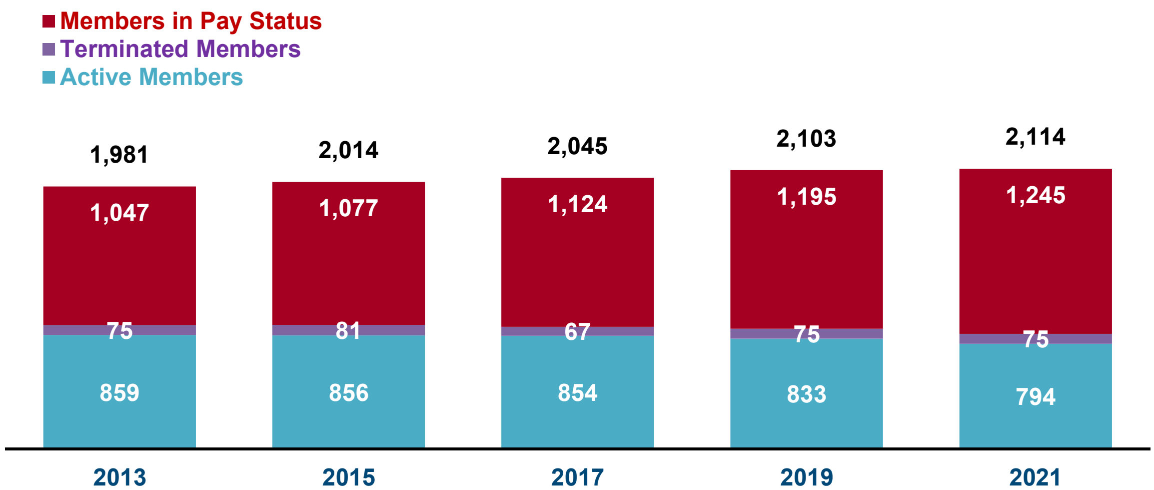


In 2020-21, the plan paid out $37.4 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $889 million in benefits to members.



Section I - Executive Summary
Membership

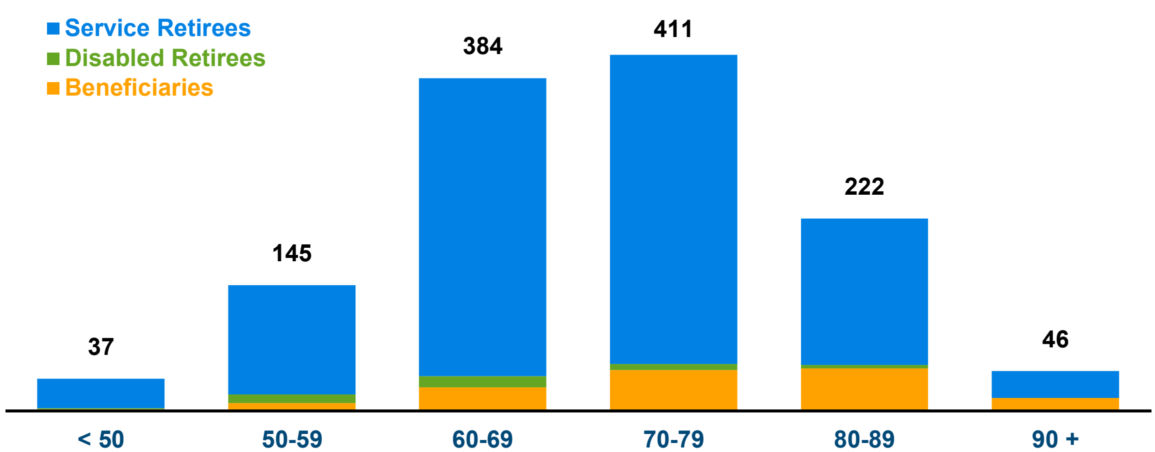
Full valuations, where complete membership data is collected and analyzed, are performed only in odd-numbered years so membership data in even-numbered years is not available. There are three basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) active employees who have met the eligibility requirements for membership.



Members in Pay Status on July 1, 2021

Service Retirees	1,061	Average Age	71.1
Disabled Retirees	35	Total Annual Benefit	$38,375,653
Beneficiaries	149	Average Annual Benefit	30,824
Total	1,245		

The members in pay status fall across a wide distribution of ages:



Section I - Executive Summary
Membership (continued)

Terminated Vested Members on July 1, 2021

Count	48
Average Age	51.8
Total Annual Benefit	$509,543
Average Annual Benefit	10,615

Nonvested Members Due Refunds on July 1, 2021

Count	27

Active Members on July 1, 2021

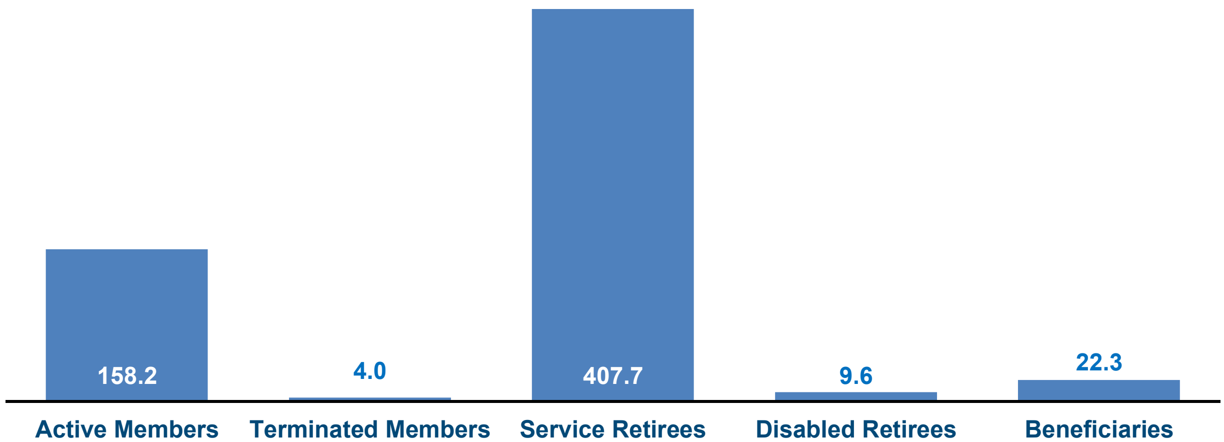
Count	794
Average Age	47.9
Average Service	11.0
Payroll	$64,437,918
Average Payroll	81,156

The table below illustrates the age and years of service of the active membership:

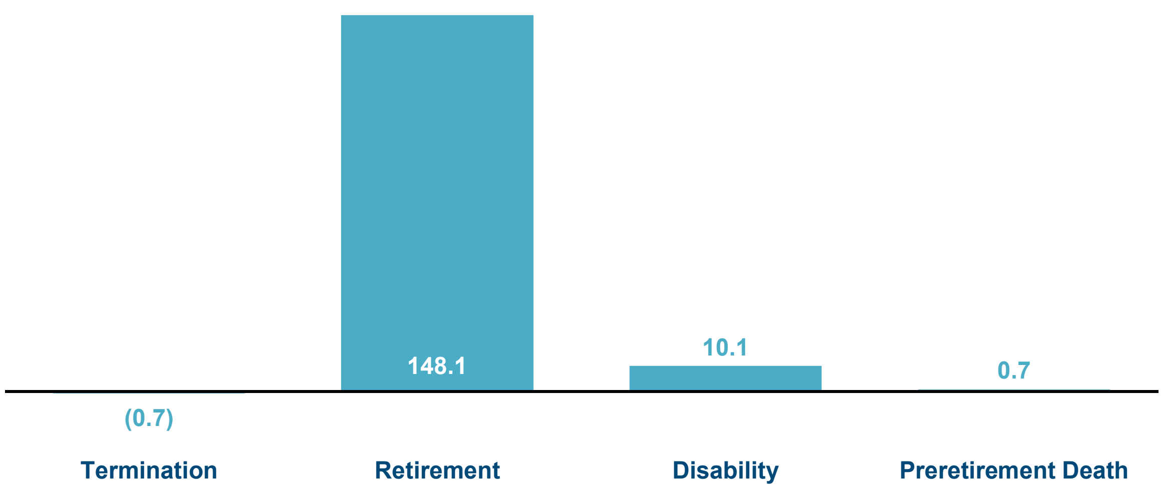
	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	13							13
25-29	48	11						59
30-34	39	37	6					82
35-39	32	30	28	11				101
40-44	26	17	8	17	6			74
45-49	27	12	14	10	11	2		76
50-54	34	23	22	20	18	9	4	130
55-59	29	14	13	13	26	4	5	104
60-64	19	11	14	15	24	9	4	96
65+	1	7	11	13	16	5	6	59
Total	268	162	116	99	101	29	19	794

Section I - Executive Summary
Accrued Liability

The Accrued Liability as of July 1, 2021 is $601,847,298, which consists of the following pieces (in $ millions):

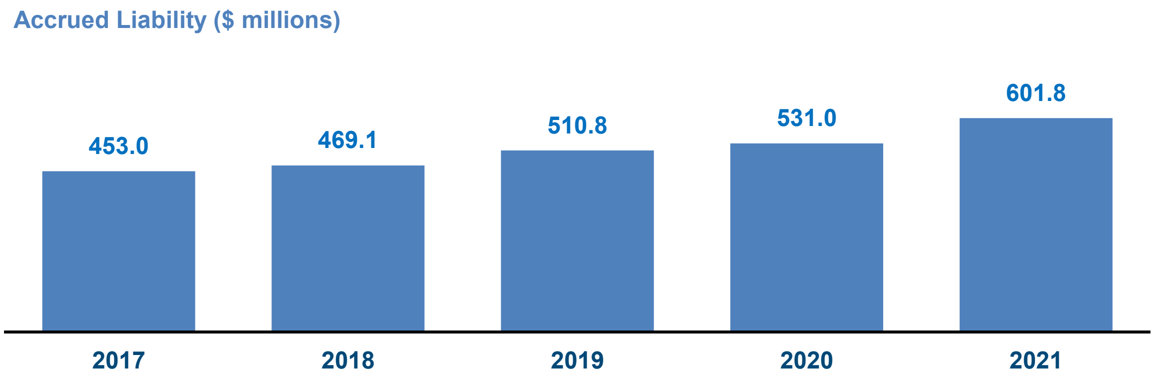


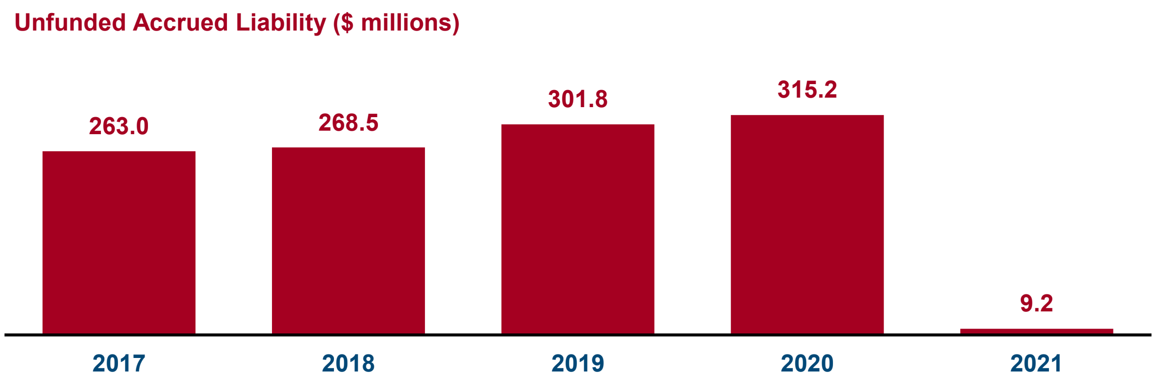
The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:

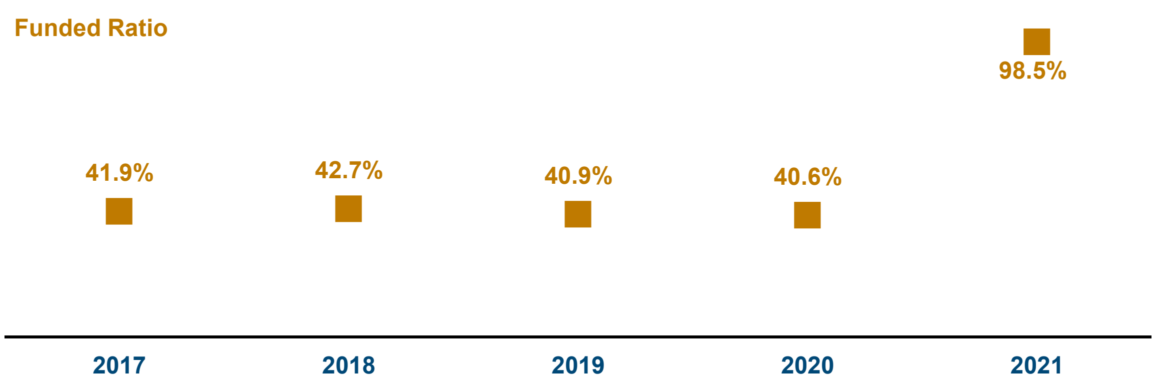


Section I - Executive Summary
Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.



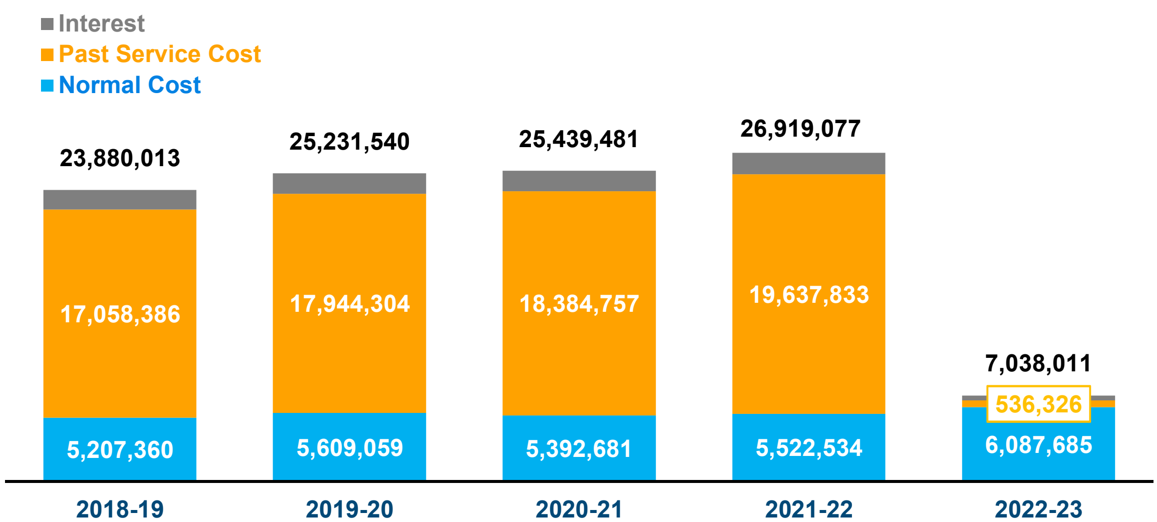




Section I - Executive Summary
Actuarially Determined Contribution

The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest to reflect the timing of the contribution relative to the valuation date. In addition to paying the Actuarially Determined Contribution, starting with the FYE 2023, the Town must pay debt service on the Pension Obligation Bond of $17.7 million annually.

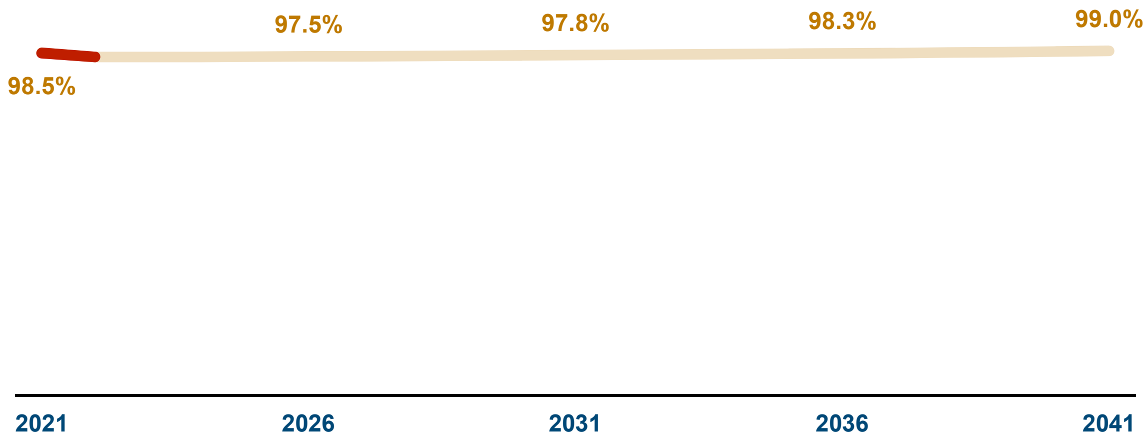
The Actuarially Determined Contribution for fiscal year 2022-23 is shown graphically below, along with the comparable figures for the preceding four fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects the impact of asset performance.



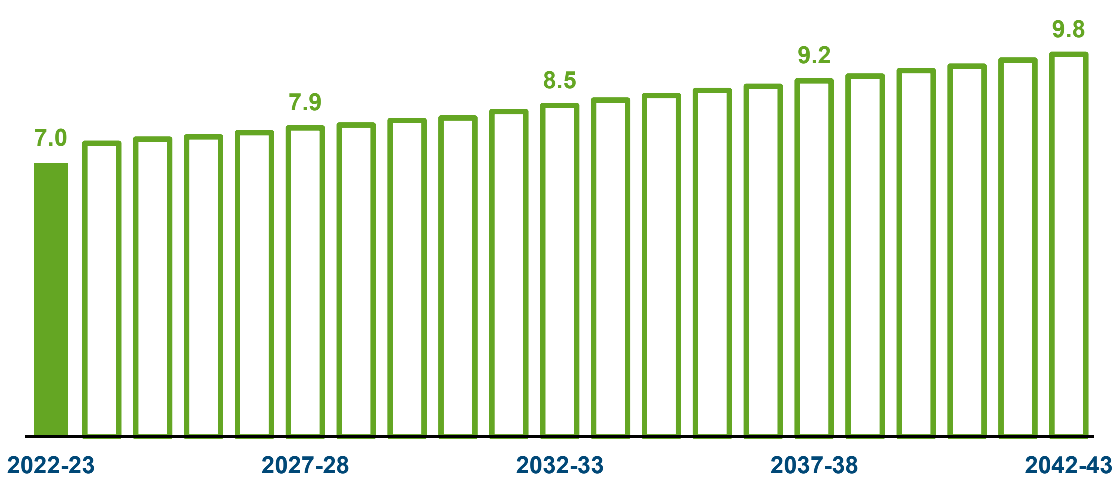
Section I - Executive Summary
Long-Range Forecast

If the Town pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the long-range contribution levels:

Funded Ratio



Actuarially Determined Contribution ($ millions)

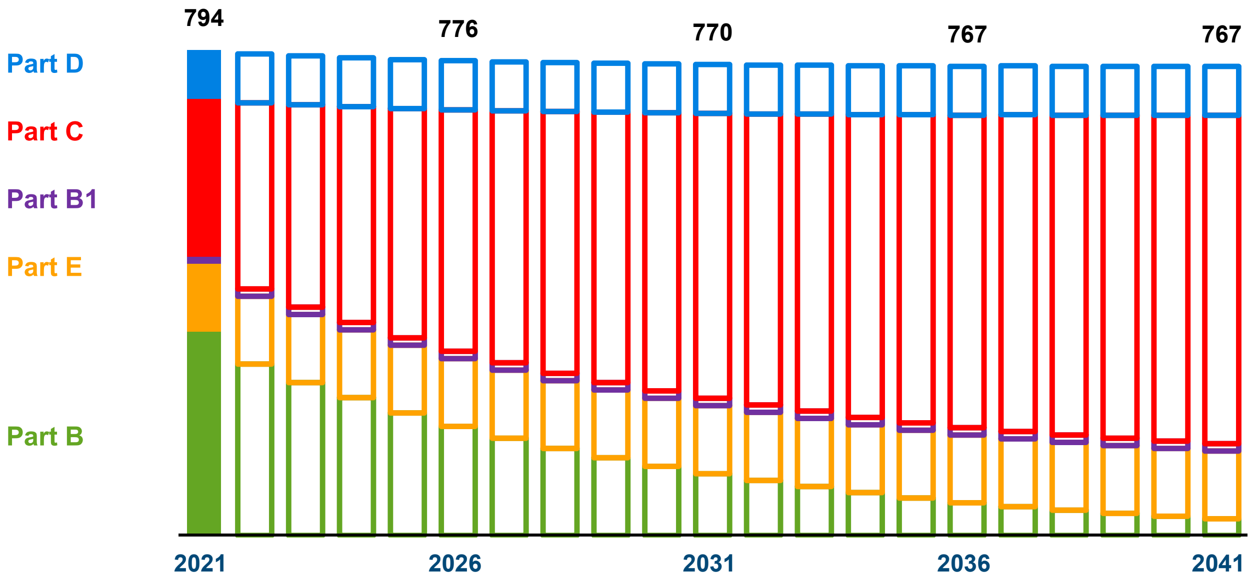


To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
Long-Range Forecast

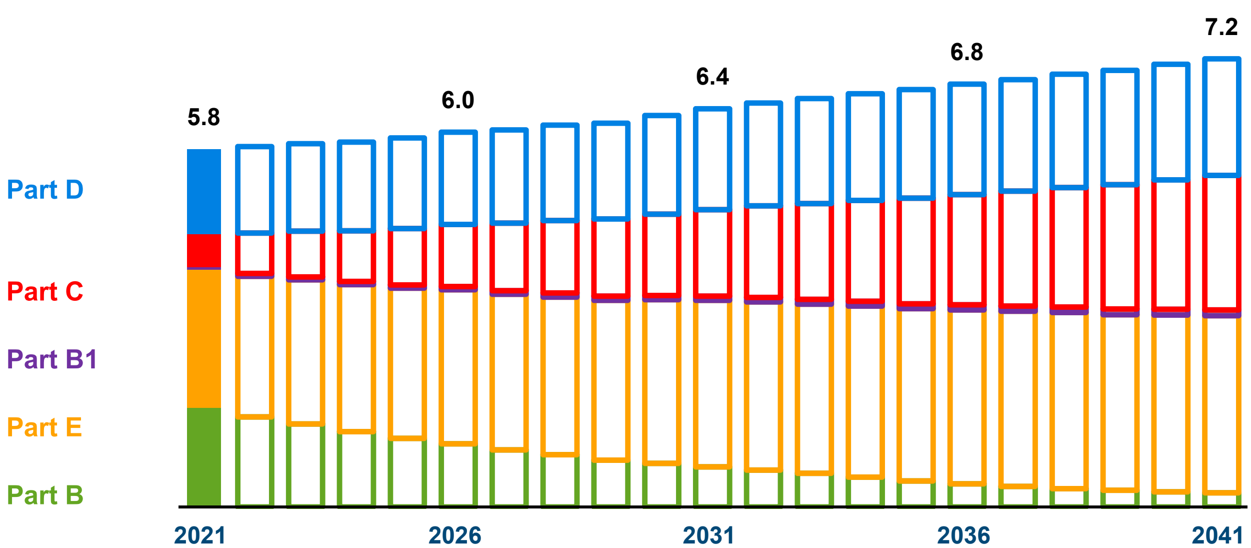
The Town's projected active member counts reflect the expected gradual replacement of terminating and retiring Part B members with replacement employees who are covered by the lower cost hybrid plan (Part E) or by the Town's defined contribution plan. This shift is illustrated in the graph below.

Projected Active Member Count



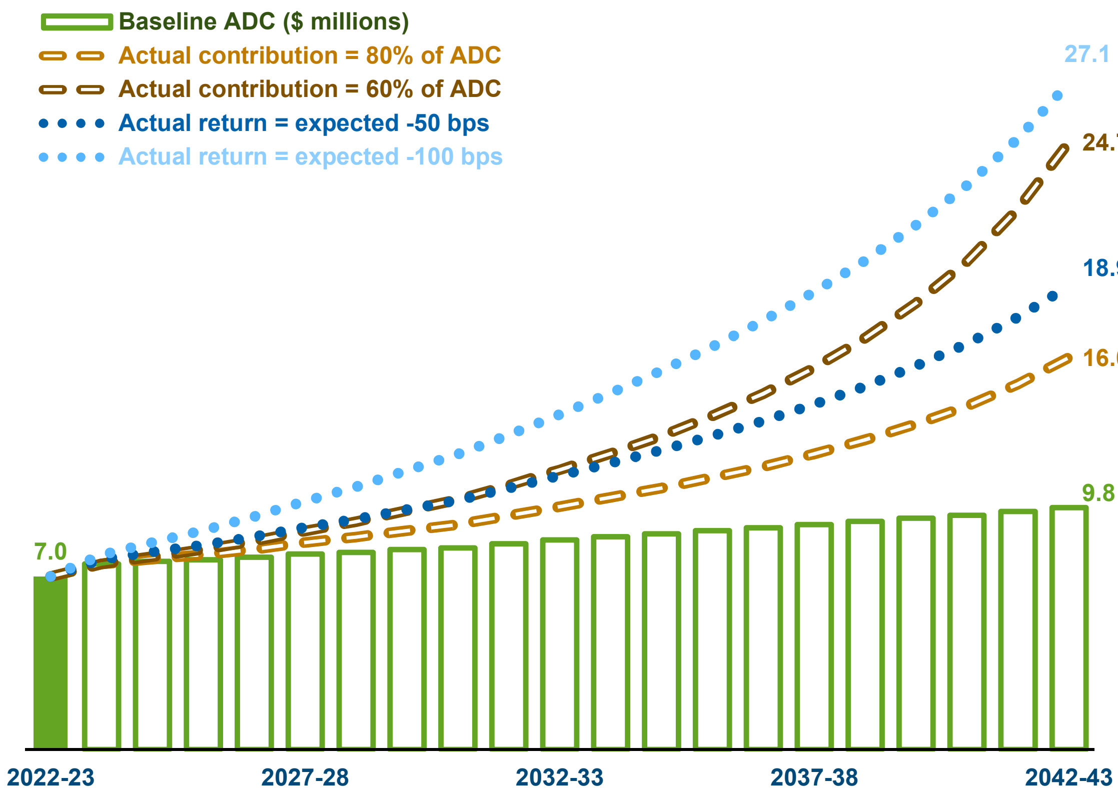
The Net Normal Cost component of the Actuarially Determined Contribution will likewise reflect this shift, as Part B active members with higher Net Normal Costs are gradually replaced by Part E active members with lower Net Normal Costs. Note that each individual active member's Net Normal Cost is expected to go up over time with salary growth, so for the plan as a whole the Net Normal Cost is projected to increase over time.

Projected Net Normal Cost ($ millions)



Section I - Executive Summary
Long-Range Forecast (continued)

Pension benefits are paid for through a combination of contributions from the Town and from employees, and from investment income. If the Town pays less than the Actuarially Determined Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer, and to compensate, the Town's contribution levels would be pushed higher. The risks of underfunding and underearning are illustrated in the hypothetical scenarios below:



The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions except for the return scenarios noted above; in particular that actual asset returns will be constant in every year of the projection period. Underfunding and underearning with both result in actuarial losses. For illustration purposes, we have amortized these losses over the remaining amortization period, even if that period is less than 10 years. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the Town's future contribution levels. Stochastic projections could be prepared that would enable the Town to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	July 1, 2020	July 1, 2021
Active Members	N/A	794
Terminated Members	N/A	75
Members in Pay Status	N/A	1,245
Total Count	N/A	2,114
Payroll	N/A	64,437,918

Assets and Liabilities as of	July 1, 2020	July 1, 2021
Market Value of Assets	$214,812,124	$592,613,081
Actuarial Value of Assets	215,752,896	592,613,081
Accrued Liability for Active Members	156,259,911	158,174,509
Accrued Liability for Terminated Members	4,492,818	4,041,220
Accrued Liability for Members in Pay Status	370,214,137	439,631,569
Total Accrued Liability	530,966,866	601,847,298
Unfunded Accrued Liability	315,213,970	9,234,217
Funded Ratio	40.6%	98.5%

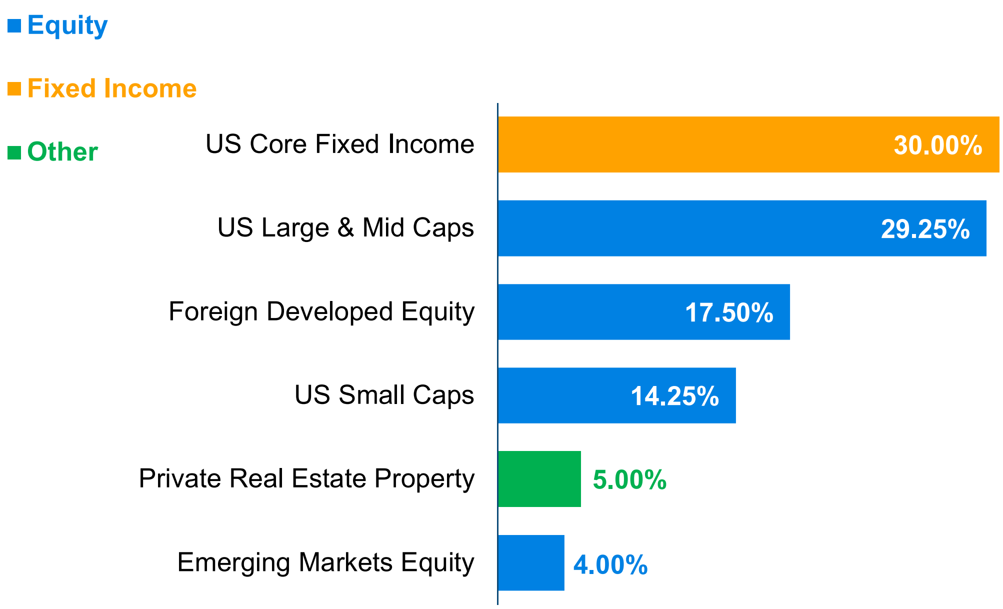
Actuarially Determined Contribution for Fiscal Year	2021-22	2022-23
Normal Cost	$5,522,534	$6,087,685
Past Service Cost	19,637,833	536,326
Interest	1,758,710	414,000
Actuarially Determined Contribution	26,919,077	7,038,011
Allocated to BOE	5,746,338	1,461,382
Allocated to Town	21,172,739	5,576,629
POB Debt Service Payment		17,661,915
Total Town Pension Cost		24,699,926

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2020	$214,812,124
Town Contributions	25,439,484
Receivable Town Contribution - (Pension Obligation Bond proceeds)	322,900,000
Member Contributions	3,303,014
Net Investment Income	63,829,773
Benefit Payments	(37,351,640)
Administrative Expenses	(319,674)
Market Value as of June 30, 2021	592,613,081
Expected Return on Market Value of Assets	14,705,673
Market Value (Gain)/Loss	(49,124,100)
Approximate Rate of Return *	30.34%

* The rate shown here is not the dollar or time weighted investment yield rate which measures investment performance. It is an approximate net return assuming all activity occurred on average midway through the fiscal year.

Target Asset Allocation as of June 30, 2021



Section II - Plan Assets
B. Development of Actuarial Value of Assets

As of July 1, 2021, the Actuarial Value of Assets has been reset to the Market Value of Assets.

Section III - Development of Contribution
A. Past Service Cost

In determining the Past Service Cost, the Unfunded Accrued Liability is amortized as a level percent over a closed 25 year period starting on July 1, 2021.

		Part A	Part B	Part B1	Part C	Part D	Part E	Total
1.	Accrued Liability							
	Active Members	$0	$86,338,754	$1,959,787	$24,708,663	$40,693,395	$4,473,910	$158,174,509
	Terminated Members	0	3,691,343	195,560	2,311	74,360	77,646	4,041,220
	Service Retirees	876,672	179,648,018	1,282,038	98,981,636	126,958,811	0	407,747,175
	Disabled Retirees	0	4,413,894	0	3,869,708	1,345,483	0	9,629,085
	Beneficiaries	526,389	6,875,905	0	5,564,346	9,288,669	0	22,255,309
	Total Accrued Liability	1,403,061	280,967,914	3,437,385	133,126,664	178,360,718	4,551,556	601,847,298
2.	Actuarial Value of Assets	1,381,534	276,656,988	3,384,645	131,084,085	175,624,108	4,481,721	592,613,081
	(see Section IIB - allocated in proportion to Total Accrued Liability)							
3.	Unfunded Accrued Liability: (1) - (2)	21,527	4,310,926	52,740	2,042,579	2,736,610	69,835	9,234,217
4.	Funded Ratio: (2) / (1)	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
5.	Amortization Period	25	25	25	25	25	25	25
6.	Amortization Growth Rate	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%
7.	Past Service Cost: (3) amortized over (5)	1,250	250,380	3,063	118,634	158,943	4,056	536,326

Section III - Development of Contribution
B. Actuarially Determined Contribution for FY 2022-23

		Part A	Part B	Part B1	Part C	Part D	Part E	Total
1.	Total Normal Cost	$0	$2,730,128	$108,578	$2,094,199	$3,119,261	$916,587	$8,968,753
2.	Expected Member Contributions	0	1,135,583	64,023	726,230	899,116	384,116	3,209,068
3.	Expected Administrative Expenses (allocated in proportion to Total Normal Cost)	0	99,844	3,971	76,588	114,076	33,521	328,000
4.	Net Normal Cost: (1) - (2) + (3)	0	1,694,389	48,526	1,444,557	2,334,221	565,992	6,087,685
5.	Past Service Cost (see Section IIIA)	1,250	250,380	3,063	118,634	158,943	4,056	536,326
6.	Interest on (4) + (5) to beginning of fiscal year	78	121,548	3,224	97,699	155,823	35,628	414,000
7.	Actuarially Determined Contribution for FY 2022-23: (4) + (5) + (6)	1,328	2,066,317	54,813	1,660,890	2,648,987	605,676	7,038,011

Section III - Development of Contribution
C. Breakdown by Town / BOE

		BOE	Town	Total
1.	Total Normal Cost	$1,968,252	$7,000,501	$8,968,753
2.	Expected Member Contributions	780,053	2,429,015	3,209,068
3.	Expected Administrative Expenses	71,982	256,018	328,000
4.	Net Normal Cost: (1) - (2) + (3)	1,260,181	4,827,504	6,087,685
5.	Accrued Liability	129,315,032	472,532,266	601,847,298
6.	Actuarial Value of Assets	127,330,936	465,282,145	592,613,081
7.	Unfunded Accrued Liability	1,984,096	7,250,121	9,234,217
8.	Past Service Cost	115,237	421,089	536,326
9.	Interest on (4) + (8) to the start of the fiscal year	85,964	328,036	414,000
10.	Actuarially Determined Contribution: (4) + (8) + (9)	1,461,382	5,576,629	7,038,011

Section III - Development of Contribution
D. Long Range Forecast

This forecast is based on the results of the July 1, 2021 actuarial valuation and assumes that the Town will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. For purposes of this forecast the amortization period declines to 1 year to illustrate the progress of the plan towards becoming fully funded; in actual practice the amortization period will not be less than 10 years in order to shield the Town from contribution volatility. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

	Values as of the Valuation Date					Cash Flows Projected to the Following Fiscal Year			
Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	Town Contributions	Member Contributions	Benefit Payments	Net Cash Flows
7/1/2021	$601,847,298	$592,613,081	$9,234,217	98.5%	2022-23	$7,038,011	$3,346,383	($40,132,308)	($29,747,914)
7/1/2022	608,291,000	591,987,000	16,304,000	97.3%	2023-24	7,550,000	3,369,000	(40,725,000)	(29,806,000)
7/1/2023	614,548,000	597,960,000	16,588,000	97.3%	2024-25	7,656,000	3,394,000	(41,309,000)	(30,259,000)
7/1/2024	620,664,000	604,238,000	16,426,000	97.4%	2025-26	7,718,000	3,430,000	(41,903,000)	(30,755,000)
7/1/2025	626,618,000	610,431,000	16,187,000	97.4%	2026-27	7,821,000	3,446,000	(42,525,000)	(31,258,000)
7/1/2026	632,441,000	616,489,000	15,952,000	97.5%	2027-28	7,950,000	3,472,000	(43,119,000)	(31,697,000)
7/1/2027	638,098,000	622,397,000	15,701,000	97.5%	2028-29	8,024,000	3,516,000	(43,593,000)	(32,053,000)
7/1/2028	643,564,000	628,211,000	15,353,000	97.6%	2029-30	8,135,000	3,545,000	(44,089,000)	(32,409,000)
7/1/2029	649,019,000	634,009,000	15,010,000	97.7%	2030-31	8,205,000	3,588,000	(44,521,000)	(32,728,000)
7/1/2030	654,371,000	639,792,000	14,579,000	97.8%	2031-32	8,368,000	3,626,000	(44,890,000)	(32,896,000)
7/1/2031	659,802,000	645,596,000	14,206,000	97.8%	2032-33	8,525,000	3,660,000	(45,301,000)	(33,116,000)
7/1/2032	665,360,000	651,578,000	13,782,000	97.9%	2033-34	8,663,000	3,701,000	(45,799,000)	(33,435,000)
7/1/2033	670,983,000	657,694,000	13,289,000	98.0%	2034-35	8,781,000	3,750,000	(46,244,000)	(33,713,000)
7/1/2034	676,576,000	663,851,000	12,725,000	98.1%	2035-36	8,908,000	3,801,000	(46,656,000)	(33,947,000)
7/1/2035	682,206,000	670,092,000	12,114,000	98.2%	2036-37	9,019,000	3,852,000	(47,018,000)	(34,147,000)
7/1/2036	687,883,000	676,469,000	11,414,000	98.3%	2037-38	9,156,000	3,908,000	(47,406,000)	(34,342,000)
7/1/2037	693,713,000	683,025,000	10,688,000	98.5%	2038-39	9,281,000	3,956,000	(47,803,000)	(34,566,000)
7/1/2038	699,638,000	689,777,000	9,861,000	98.6%	2039-40	9,416,000	4,004,000	(48,228,000)	(34,808,000)
7/1/2039	705,692,000	696,705,000	8,987,000	98.7%	2040-41	9,536,000	4,050,000	(48,703,000)	(35,117,000)
7/1/2040	711,798,000	703,802,000	7,996,000	98.9%	2041-42	9,689,000	4,092,000	(49,193,000)	(35,412,000)

Section III - Development of Contribution
E. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
July 1, 2013	$145,028,432	$350,769,991	$205,741,559	41.3%
July 1, 2014	$159,253,591	$367,481,550	$208,227,959	43.3%
July 1, 2015	173,140,717	403,746,402	230,605,685	42.9%
July 1, 2016	179,642,266	414,533,071	234,890,805	43.3%
July 1, 2017	189,993,169	452,993,244	263,000,075	41.9%
July 1, 2018	200,503,878	469,050,740	268,546,862	42.7%
July 1, 2019	209,053,093	510,843,434	301,790,341	40.9%
July 1, 2020	215,752,896	530,966,866	315,213,970	40.6%
July 1, 2021	592,613,081	601,847,298	9,234,217	98.5%

Section III - Development of Contribution
F. History of Town Contributions

Fiscal Year	Actuarially Determined Contribution	Actual Town Contribution	Payroll	Actual Contribution as a Percent of Payroll
2014-15	$17,711,861	$17,712,000	$53,742,387	33.0%
2015-16	17,916,822	17,917,000	55,892,083	32.1%
2016-17	20,551,457	20,551,457	56,648,623	36.3%
2017-18	21,615,393	21,615,393	58,064,839	37.2%
2018-19	23,880,013	23,880,000	58,707,946	40.7%
2019-20	25,231,540	25,231,002	60,175,645	41.9%
2020-21*	25,439,481	348,339,484	63,885,033	545.3%
2021-22	26,919,077	TBD	65,110,045	TBD
2022-23	7,038,011	TBD	64,437,918	TBD

*The Town contribution for fiscal year 2020-21 includes Pension Obligation Bond proceeds of $322.9 million.

Section III - Development of Contribution
G. Tread Water Amount

The **Tread Water Amount** is equal to the Town's net normal cost (see Section IIIB) plus one year's interest on the Accrued Liability less the Market Value of Assets. Below is a comparison of the Tread Water Amount to the Actuarially Determined Contribution based on the results of our long range forecast (shown in Section III D). We have included this metric at the Town's request.

Valuation Date	Net Normal Cost	Accrued Liability	Market Value of Assets	Tread Water Amount	Actuarially Determined Contribution (ADC)	ADC as a Percent of the Tread Water Amount
July 1, 2021	$6,087,685	$601,847,298	$592,613,081	$6,664,824	$7,038,011	105.6%
July 1, 2022	6,133,000	608,291,000	591,987,000	7,152,000	7,550,000	105.6%
July 1, 2023	6,189,000	614,548,000	597,960,000	7,226,000	7,656,000	106.0%
July 1, 2024	6,226,000	620,664,000	604,238,000	7,252,000	7,718,000	106.4%
July 1, 2025	6,305,000	626,618,000	610,431,000	7,317,000	7,821,000	106.9%
July 1, 2026	6,406,000	632,441,000	616,489,000	7,403,000	7,950,000	107.4%
July 1, 2027	6,454,000	638,098,000	622,397,000	7,435,000	8,024,000	107.9%
July 1, 2028	6,540,000	643,564,000	628,211,000	7,499,000	8,135,000	108.5%
July 1, 2029	6,583,000	649,019,000	634,009,000	7,522,000	8,205,000	109.1%
July 1, 2030	6,719,000	654,371,000	639,792,000	7,630,000	8,368,000	109.7%

Note that the Actuarially Determined Contribution calculated as of each valuation date is for the fiscal year that starts one year after the valuation date.

Section IV - Membership Data
A. Reconciliation of Membership from Prior Full Valuation

Details of the changes in the Plan membership since the last full valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section IV.

	Active Members	Terminated Vested Members	Nonvested Members Due Refunds	Service Retirees	Disabled Retirees	Beneficiaries	Total
Count July 1, 2019	833	52	23	1,022	36	137	2,103
Terminated							
- no benefits due	(12)	-	12	-	-	-	0
- paid refund	(33)	(1)	(9)	-	-	-	(43)
- vested benefits due	(7)	7	-	-	-	-	0
Retired	(101)	(9)	-	109	1	-	0
Died	-	-	-	-	-	-	0
- with beneficiary	(2)	(1)	1	(21)	-	23	0
- no beneficiary	(3)	-	-	(49)	(2)	(14)	(68)
Benefits expired	-	-	-	-	-	-	0
New member	118	-	1	-	-	-	119
Rehired	1	-	(1)	-	-	-	0
New Alternate Payee	-	-	-	-	-	1	1
Correction	-	-	-	-	-	2	2
Count July 1, 2021	794	48	27	1,061	35	149	2,114

Breakdown as of July 1, 2021 by plan

	Active Members	Terminated Vested Members	Nonvested Members Due Refunds	Service Retirees	Disabled Retirees	Beneficiaries	Total
Part A	0	0	0	5	0	7	12
Part B	333	45	7	741	19	68	1,213
Part B1	12	1	0	3	0	0	16
Part C	80	0	1	132	12	32	257
Part D	111	1	1	180	4	42	339
Part E	258	1	18	0	0	0	277
Total	794	48	27	1,061	35	149	2,114

Section IV - Membership Data
B. Statistics of Active Membership

		As of July 1, 2019	As of July 1, 2021
Number of Active Members	Part B	409	333
	Part B1	12	12
	Part C	76	80
	Part D	123	111
	Part E	213	258
	Total	833	794
Average Age	Part B	55.3	55.8
	Part B1	41.0	38.2
	Part C	40.6	39.2
	Part D	37.0	35.3
	Part E	43.9	46.3
	Total	48.1	47.9
Average Service	Part B	16.2	17.7
	Part B1	12.4	10.0
	Part C	10.7	8.7
	Part D	11.5	9.4
	Part E	2.6	3.8
	Total	11.5	11.0
Total Payroll	Part B	$26,341,965	$22,793,642
	Part B1	862,328	979,567
	Part C	10,105,736	11,432,438
	Part D	14,690,234	14,512,474
	Part E	11,884,770	14,719,797
	Total	63,885,033	64,437,918
Average Payroll	Part B	$64,406	$68,449
	Part B1	71,861	81,631
	Part C	132,970	142,905
	Part D	119,433	130,743
	Part E	55,797	57,053
	Total	76,693	81,156

Section IV - Membership Data
C. Distribution of Active Members as of July 1, 2021

Part B

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29		1						1
30-34	2	1	2					5
35-39		9	7	4				20
40-44	1	7	7	7	2			24
45-49		6	11	6	7	2		32
50-54		8	21	14	11	9	4	67
55-59	1	4	13	11	22	4	5	60
60-64		6	13	15	24	9	4	71
65+		2	11	13	16	5	6	53
Total	4	44	85	70	82	29	19	333

Part B1

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	1							1
25-29	1							1
30-34	1	2						3
35-39		1						1
40-44			1	3				4
45-49				1				1
50-54								0
55-59	1							1
60-64								0
65+								0
Total	4	3	1	4	0	0	0	12

Part C

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	1							1
25-29	6	3						9
30-34	11	9						20
35-39	7	10	6					23
40-44	3	2			2			7
45-49		1	2	1	1			5
50-54		1		2	5			8
55-59	1	2		1	3			7
60-64								0
65+								0
Total	29	28	8	4	11	0	0	80

Section IV - Membership Data
C. Distribution of Active Members as of July 1, 2021

Part D

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	4							4
25-29	21	6						27
30-34	7	17	4					28
35-39	1	4	15	7				27
40-44	2			7	2			11
45-49	1			2	3			6
50-54			1	3	2			6
55-59	1				1			2
60-64								0
65+								0
Total	37	27	20	19	8	0	0	111

Part E

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	7							7
25-29	20	1						21
30-34	18	8						26
35-39	24	6						30
40-44	20	8						28
45-49	26	5	1					32
50-54	34	14		1				49
55-59	25	8		1				34
60-64	19	5	1					25
65+	1	5						6
Total	194	60	2	2	0	0	0	258

Section IV - Membership Data
D. Statistics of Inactive Membership

	As of July 1, 2019	As of July 1, 2021
Terminated Vested Members		
Number	52	48
Total Annual Benefit	$585,536	$509,543
Average Annual Benefit	11,260	10,615
Average Age	50.5	51.8
Nonvested Members Due Refunds		
Number	23	27
Service Retirees		
Number	1,022	1,061
Total Annual Benefit	$30,773,957	$35,199,522
Average Annual Benefit	30,112	33,176
Average Age	70.5	70.5
Disabled Retirees		
Number	36	35
Total Annual Benefit	$839,846	$843,993
Average Annual Benefit	23,329	24,114
Average Age	64.4	65.7
Beneficiaries		
Number	137	149
Total Annual Benefit	$1,886,499	$2,332,138
Average Annual Benefit	13,770	15,652
Average Age	76.1	76.5

Section IV - Membership Data
E. Distribution of Inactive Members as of July 1, 2021

	Age	Number	Annual Benefits
Terminated Members*	< 50	32	$151,576
	50 - 59	35	311,718
	60 - 69	8	46,249
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	75	509,543
Service Retirees	< 50	34	$2,322,178
	50 - 59	126	7,686,550
	60 - 69	344	12,763,879
	70 - 79	357	8,812,912
	80 - 89	169	3,255,890
	90 +	31	358,113
	Total	1,061	35,199,522
Disabled Retirees	< 50	1	$23,733
	50 - 59	10	310,871
	60 - 69	13	230,809
	70 - 79	7	185,833
	80 - 89	4	92,748
	90 +	0	0
	Total	35	843,993
Beneficiaries	< 50	2	$101,254
	50 - 59	9	248,619
	60 - 69	27	499,518
	70 - 79	47	718,885
	80 - 89	49	663,848
	90 +	15	100,015
	Total	149	2,332,138

*Count includes terminated vested members and non-vested members who are due a refund of contributions. Annual benefits represent future annuities for terminated vested members only.

Section V - Analysis of Risk
A. Introduction

The results of this actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match these assumptions. As an example, the plan's investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the plan, or of the plan's members.

In addition, as plans mature they accumulate larger pools of assets and liabilities. The increase in size in turn increases the potential magnitude of adverse experience. As an example, the dollar impact of a 10% investment loss on a plan with $1 billion in assets and liabilities is much greater than the dollar impact for a plan with $1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to provide pension plan sponsors with information concerning the risks associated with the plan:

- Identify risks that may be significant to the plan.
- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

This section of the report uses the framework of ASOP 51 to communicate important information about significant risks to the plan, the plan's maturity, and relevant historical plan data.

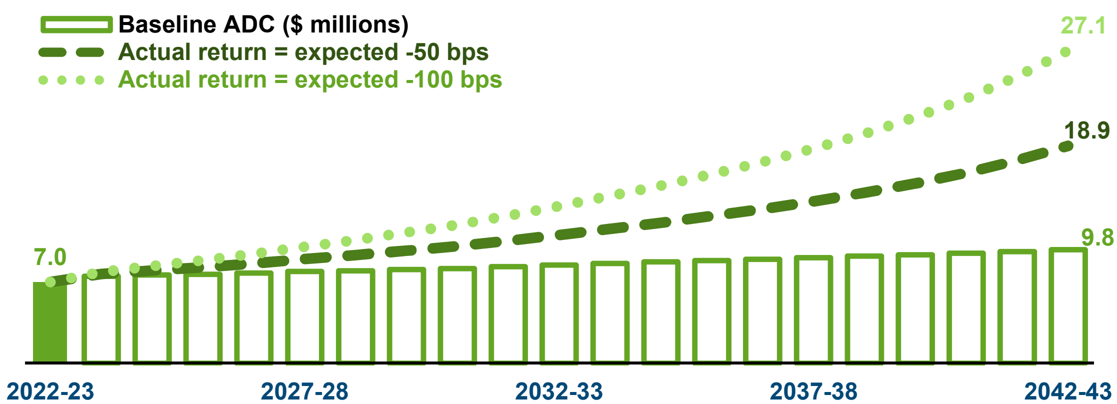
Please see Section III D for more information on the basis for the projected results shown on the following pages.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Investment Risk

Definition: This is the potential that investment returns will be different than expected.

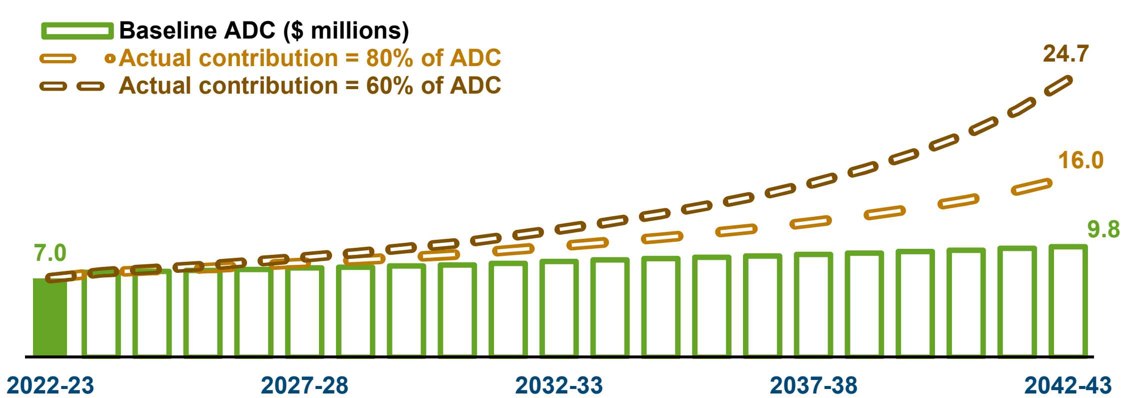
Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on future Actuarially Determined Contribution levels are illustrated below:



Contribution Risk

Definition: This is the potential that actual future contributions will be less than the Actuarially Determined Contribution.

Identification: Over the past 6 years, actual contributions have been approximately 339.8% of the Actuarially Determined Contribution in total. The consequences of persistent underfunding on future Actuarially Determined Contribution levels are illustrated below:



Section V - Analysis of Risk
B. Risk Identification and Assessment

Liquidity Risk

Definition: This is the potential that assets must be liquidated at a loss earlier than planned in order to pay for the plan's benefits and operating costs. This risk is heightened for plans with negative cash flows, in which contributions are not sufficient to cover benefit payments plus expenses.

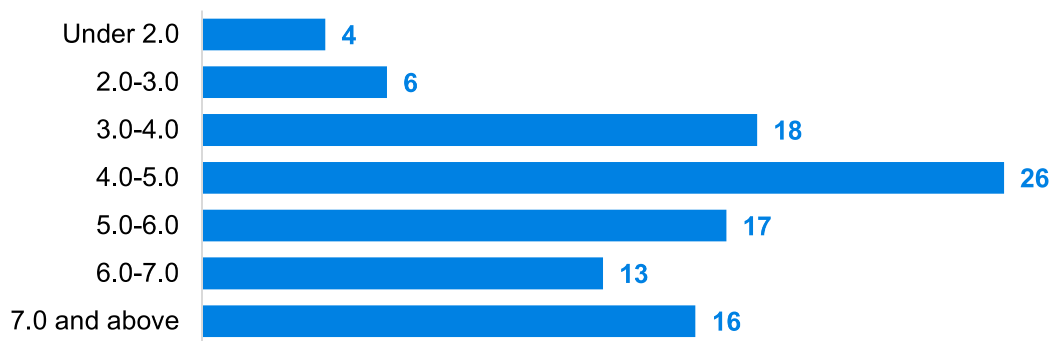
Identification: In 2020-21, the plan had positive cash flow, with town and member contributions* to the plan of $351,642,498 compared to $37,671,314 of benefit payments and administrative expenses paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity characteristics of the plan's investment holdings.

Maturity Risk

Definition: This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time, and for plan assets and/or liabilities to become larger relative to the active member liability.

Identification: The plan is subject to maturity risk because as plan assets and liabilities continue to grow, the dollar impact of any gains or losses on the assets or liabilities also becomes larger.

Assessment: As of July 1, 2021, the plan's Asset Volatility Ratio (the ratio of the market value of plan assets to payroll) is 9.2. According to Milliman's 2021 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios:



Inflation Risk

Definition: This is the potential for a pension to lose purchasing power over time due to inflation.

Identification: The members of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: This plan provides for limited postretirement benefit increases, but the increases are not directly tied to each year's rate of actual inflation; this leaves members bearing some inflation risk. In addition, not all members are eligible for these increases.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Insolvency Risk

Definition: This is the potential that a plan will become insolvent; that is, assets will be fully depleted.

Identification: If a plan becomes insolvent, contractually required benefits must be paid from the plan sponsor's other remaining assets.

Assessment: Under the GASB 67/68 depletion date methodology, the plan is not projected to become insolvent. Please see the GASB 67/68 report for more details on the underlying analysis.

Demographic Risks

Definition: This is the potential that mortality, turnover, retirement, or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. Formal Experience Studies performed on a regular basis are helpful in ensuring that the demographic assumptions reflect emerging plan experience.

Retirement Risk

Definition: This is the potential for members to retire and receive subsidized benefits that are more valuable than expected.

Identification: This plan has a range of retirement eligibility with varying retirement benefits. If members retire at different ages than are anticipated by the actuarial assumptions, this may put upward pressure on subsequent Actuarially Determined Contributions.

Pensionable Earnings Risk

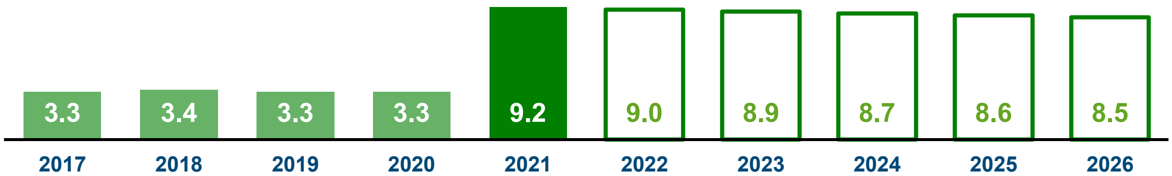
Definition: This is the potential for active members to add items to their pensionable earnings and receive pension benefits that are higher than expected.

Identification: Unused sick pay is included in pension calculations for some groups of members (see Appendix C for more details). If members include more unused sick pay than is anticipated by the actuarial assumptions, this will put upward pressure on subsequent Actuarially Determined Contributions.

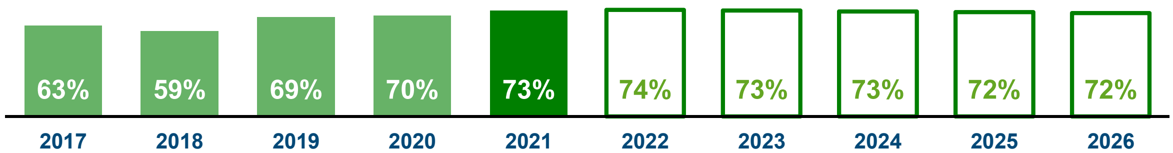
Section V - Analysis of Risk
C. Maturity Measures

The metrics presented below are different ways of understanding the plan's maturity level, both in the past and as it is expected to change in the coming years.

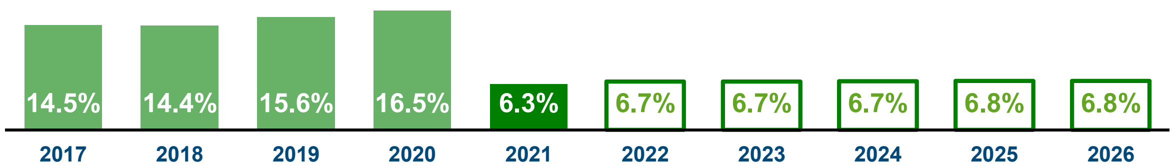
Asset Volatility Ratio: Market Value of Assets compared to Payroll



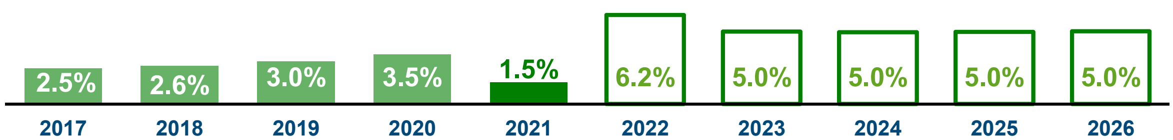
Accrued Liability for members in pay status compared to total Accrued Liability



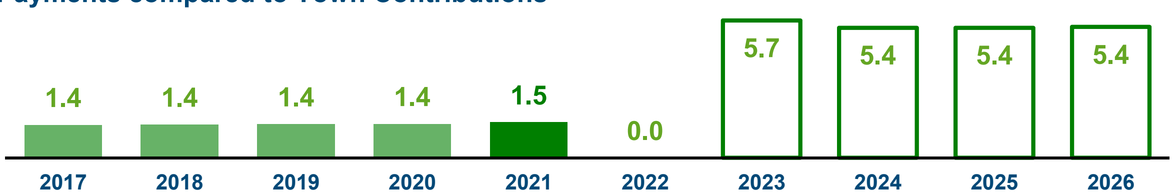
Benefit Payments compared to Market Value of Assets



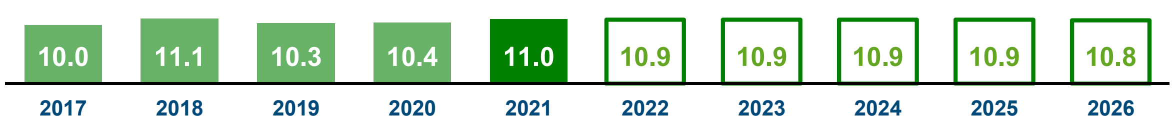
Net Cash Flows compared to Market Value of Assets*



Benefit Payments compared to Town Contributions*



Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)



*The 2021 metrics exclude the Pension Obligation Bond proceeds.

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus Interest to reflect the timing of the contribution relative to the valuation date.

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the Actuarial Value of Assets. This Unfunded Accrued Liability is amortized as a level percent over a closed 25 year period starting on July 1, 2021. The amortization period will decrease by 1 ever year. Once it reaches 10, the policy will shift to 10 year layered amortization bases. The Town will continue to fund the Net Normal Cost so long as the Plan's funded ratio is below 150%. Should the funded ratio be 150% or more as of the valuation date, surplus would be used to offset the Net Normal Cost.

The Actuarial Value of Assets is determined by recognizing market gains and losses asymptotically over a five year period. The Actuarial Value of Assets was set equal to the Market Value of Assets as of July 1, 2021.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation was set based on industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Interest Rate

6.25% (Prior: 6.99%)

Inflation

2.75%

Amortization Growth Rate

2.75%

Expenses

The prior year actual administrative expenses paid, increased with inflation and rounded to the nearest $1,000.

Salary Scale

Age	Rate
<25	6.00%
25-29	5.85%
30-34	4.65%
35-39	4.35%
40-49	3.65%
50-59	3.50%
60+	2.80%

Pay Adjustment for Unions With Open Contracts

2.00% per year back to July 1, 2018 for Town Streets.

Unused Sick Pay

Including unused sick days in Average Final Compensation is assumed to increase benefits by:

Parts B & B1 & E	5.00%
Parts C & D	5.25%

Turnover

Parts B & B1 & E:

	Service			
Age	0-2	3-5	6-9	10+
20	30%	12%	8%	6%
25	25%	11%	7%	5%
30	20%	10%	6%	4%
35	15%	9%	5%	3%
40+	10%	8%	4%	2%

Part C: None

Part D: Crocker-Sarasan Table T-1

Appendix B - Actuarial Assumptions

Retirement

Parts B & B1 & E:

Age	Rate
45-49	1%
50-54	3%
55-59	5%
60	15%
61-64	10%
65-69	40%
70	100%

Part C:

Age	Rate
40-44	1%
45-49	5%
50-55	10%
56-64	25%
65	100%

In the year in which the member becomes eligible for both an unreduced pension and retiree medical benefits, the greater of the rate from the table and 25%

Part D:

Age	Rate
30-39	1%
40-44	2%
45-54	10%
55-61	20%
62	100%

In the year in which the member becomes eligible for both an unreduced pension and retiree medical benefits, the greater of the rate from the table and 25%

Disability

Age	Rate
20	0.08%
30	0.09%
40	0.17%
50	0.51%
60	1.44%

Service-connected disabilities are assumed to comprise 20% of disabilities for Parts B & B1 & E and 50% of disabilities for Parts C & D.

The member's regular accrued benefit is assumed to be higher than the other disability benefits under the plan.

Appendix B - Actuarial Assumptions

Healthy Mortality	Pub-2010 Mortality Table with generational projection per the MP-2019 ultimate scale, with employee rates before commencement and healthy annuitant rates after benefit commencement. The Public Safety variant is used for Custodial (05), Maintenance (06), Grounds (70), Building Maintenance (71), Streets (62), Fire (61), and Police (60), and the General variant is used for all other groups. This assumption includes a margin for future improvements in longevity.
Disabled Mortality	Pub-2010 Mortality Table for disabled retirees with generational projection per the MP-2019 ultimate scale. The Public Safety variant is used for Custodial (05), Maintenance (06), Grounds (70), Building Maintenance (71), Streets (62), Fire (61), and Police (60), and the General variant is used for all other groups. This assumption includes a margin for future improvements in longevity.
Marital Status	80% of active participants are assumed to be married. Female spouses are assumed to be 3 years younger than male spouses.
Survivor Benefit	In order to approximate the additional death benefits for Parts C & D, the survivorship benefit is assumed to equal 25% of final pay and the normal form of the retirement benefit is valued as a 10% Joint & Survivor annuity.

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Many plan provisions vary by union. We have shown the applicable union codes in parentheses where appropriate to indicate which union(s) are covered by which plan provisions.

Effective Date of Plan

March 1, 1945

Covered Employees

Employees working at least 1,000 hours, excluding those teachers eligible under the State Teachers Retirement System, may participate. Participation is compulsory for new employees hired under age 50.

Employees hired after the following dates are not covered by the Pension Plan:

Nurses (07)	June 1, 2010
Cafeteria (08)	June 1, 2011
Security (12)	June 1, 2010
Directors (59)	July 1, 2012 may opt out

Classes of Members

Part A

Covered Employees on December 8, 1959 who did not elect coverage under Social Security plus certain police officers and firefighters not covered under Part C or Part D.

Part B

All Covered Employees not in Parts A, B1, C, D, or E.

Board of Education Unions	Town Unions
Secretarial/Clerical (02)	Nurses (58)
Paraprofessional (03)	Directors (59)
Printers (04)	Streets (62)
Custodial (05)	Clerical (65)
Maintenance (06)	Non-Bargaining Clerical (66)
Nurses (07)	Non-Bargaining (68)
Cafeteria (08)	Grounds (70)
Non-Bargaining (09)	Building Maintenance (71)
Custodial III/Head Custodian (10)	Professional/Management (73)
Security (12)	Supervisor (74)
Professional/Technical (14)	Parking Monitors (81)
Cafeteria Managers (15)	Corporate Counsel (87)
Non-Union Plan B (16)	Town Manager (90)

Part B1 (64)

All Covered Employees classified as public safety dispatchers.

Appendix C - Summary of Plan Provisions

Classes of Members (continued)

Part C (61) All Covered Employees classified as firefighters except those covered in Part A.

Part D (60) All Covered Employees classified as police officers except those covered in Part A.

Part E Covered employees in the following unions who were hired on or after the dates indicated:

Secretarial/Clerical (02)	05/21/2013
Paraprofessional (03)	05/21/2013
Printers (04)	10/02/2012
Custodial (05)	10/02/2012
Maintenance (06)	10/02/2012
Custodial III/Head Custodian (10)	07/01/2014
Professional/Technical (14)	10/15/2013
Cafeteria Managers (15)	07/01/2014
Nurses (58)	11/10/2015
Directors (59)	07/01/2012
Streets (62)	08/01/2016
Clerical (65)	05/24/2016
Non-Bargaining (68)	11/10/2015
Grounds (70)	09/24/2015
Building Maintenance (71)	05/24/2016
Professional/Management (73)	09/24/2015
Supervisor (74)	05/24/2016
Parking Monitors (81)	02/07/2017

Credited Service

All service including completed months from date of hire to date of actual retirement, date of death, or date of termination of employment. Solely for the purpose of calculating amount of pension (see Normal Retirement Benefit) credited service includes any additional service credited in connection with the prior governmental service purchase provision of the plan.

Compensation

All benefits except Service-Connected Disability: Gross wages including overtime and the value of maintenance.

Service-Connected Disability Benefits: Annual rate of basic pay excluding overtime and other supplemental compensation.

Compensation is limited to $200,000, indexed in accordance with the Internal Revenue Code requirements for qualified plans.

Appendix C - Summary of Plan Provisions

Average Final Compensation

Average of the three highest calendar years of compensation, prior to date of actual retirement. Unused sick pay is included in average final compensation to the extent allowed under the plan.

For Part B and Part E members who were hired on or after the dates shown below, Average Final Compensation is capped at the member's highest paid calendar year base wage, not including overtime, longevity, meal payments, or other forms of compensation.

Secretarial/Clerical (02)	05/01/2006
Paraprofessional (03)	05/01/2006
Printers (04)	07/01/2004
Custodial (05)	07/01/2006
Maintenance (06)	07/01/2004
Nurses (07)	07/01/2004
Cafeteria (08)	07/01/2004
Non-Bargaining (09)	05/01/2006
Custodial III/Head Custodian (10)	07/01/2006
Security (12)	05/01/2006
Professional/Technical (14)	07/01/2004
Cafeteria Managers (15)	07/01/2004
Non-Union Plan B (16)	05/01/2006
All Town Unions (58) - (90)	07/01/2013

For Part C members who were hired on or after 04/01/2014, final rate of compensation is used; defined as the member's highest bi-weekly rate of pay times 26.089 plus the member's highest holiday pay attained.

Covered Compensation

Covered compensation, as defined under Revenue Ruling 71-446, for persons turning age 65 during later of the year the member turns age 65 or the year of actual retirement.

Vesting

An active member will become vested after 5 years of service (10 years for Dispatchers (64) members hired on or after 06/30/2007). A vested member is eligible for a vested pension payable starting at the member’s Normal Retirement Date. The monthly benefit is equal to the accrued pension at date of termination. A vested member may elect to retire early and receive a reduced monthly benefit if the member has met the eligibility criteria. In lieu of monthly benefits, a vested member may elect to receive a refund of member contributions with credited interest.

Normal Form

Single life annuity.

Appendix C - Summary of Plan Provisions

Unused Sick Pay

Unused sick pay is included in pension calculations for members who were hired prior to the dates shown below:

Secretarial/Clerical (02)	07/01/2006
Paraprofessional (03)	07/01/2006
Printers (04)	07/01/2005
Custodial (05)	07/01/2005
Maintenance (06)	07/01/2004
Nurses (07)	07/01/2004
Cafeteria (08)	07/01/2005
Non-Bargaining (09)	07/01/2006
Custodial III/Head Custodian (10)	07/01/2005
Security (12)	07/01/2005
Professional/Technical (14)	07/01/2004
Cafeteria Managers (15)	07/01/2005
Non-Union Plan B (16)	07/01/2006
All Town Unions (58) - (90)	07/01/2003
Part C	07/01/2005
Part D	08/01/2006

Appendix C - Summary of Plan Provisions

Member Contributions

Part B

Members contribute at the Normal Rate. For certain unions, the Long Service Rate applies after 30 years of service for members hired prior to 07/01/2003, and after 35 years of service for members hired on or after 07/01/2003. (Custodial (05) date of demarkation is 01/01/2006.) For members in the Streets (62), Grounds (70), Building Maintenance (71), and Supervisor (74) unions, the contribution is based on base pay. For other members, the contribution is based on total compensation.

Note	Union	Normal Rate	Long Service Rate
	Secretarial/Clerical (02)	5.75%	
	Paraprofessional (03)	5.00%	
	Printers (04)	5.25%	2.00%
	Custodial (05)	5.50%	2.00%
	Maintenance (06)	5.25%	2.00%
	Nurses (07)	5.50%	2.00%
	Cafeteria (08)	4.50%	
	Non-Bargaining (09)	5.75%	
	Custodial III/Head Custodian (10)	7.00%	
	Security (12)	5.75%	
	Professional/Technical (14)	5.75%	
	Cafeteria Managers (15)	7.00%	
	Non-Union Plan B (16)	5.75%	
	Nurses (58)	6.25%	2.00%
	Directors (59)	6.25%	4.00%
	Streets (62)	6.25%	2.00%
a - Includes 1.00% for COLA	Clerical (65)	5.25% a	2.00% a
	Non-Bargaining Clerical (66)	5.25%	2.00%
	Non-Bargaining (68)	6.25%	2.00%
	Grounds (70)	6.25%	2.00%
a - Includes 1.00% for COLA	Building Maintenance (71)	6.25% a	2.00% a
b - Includes 1.00% for COLA. Employees hired after 09/24/2015 contribute at the Normal Rate regardless of service.	Professional/Management (73)	6.25%	2.00% b
	Supervisor (74)	6.25%	3.00%
	Parking Monitors (81)	6.25%	2.00%
	Corporate Counsel (87)	6.25%	4.00%
	Town Manager (90)	5.00%	

Part B1 (64)

6% of compensation plus 1% COLA contribution.

Part C (61)

Members hired prior to 04/01/2014, 1% of base pay plus 7% of compensation. Members hired on or after 04/01/2014, 8% of base pay.

Part D (60)

1% of base pay plus 5% of compensation. Members hired on or after 06/26/2018, 6% of base pay.

Appendix C - Summary of Plan Provisions

Member Contributions cont.

Part E 3% of base compensation.

Interest 2% compounded annually.

Normal Retirement Date Earliest of the following age/service combinations, based on date of hire. For these purposes, "service" is calculated by assuming the member continues to work beyond date of termination.

	If hired prior to the applicable date				Applicable date	If hired on or after the applicable date		
Parts B & E								
Secretarial/Clerical (02)	55/25	60/10	70/0		05/01/2006	65/15	62/35	70/0
Paraprofessional (03)	55/25	60/10	70/0		05/01/2006	65/15	62/35	70/0
Printers (04)	55/25	60/10	70/0		07/01/2004	65/15	62/35	70/0
Custodial (05)	55/25	60/10	70/0	0/30	01/01/2006	65/15	0/35	70/0
Maintenance (06)	55/25	60/10	70/0	0/30	07/01/2004	65/15	62/35	70/0
Nurses (07)	55/25	60/10	70/0		07/01/2004	65/15	62/35	70/0
Cafeteria (08)	55/25	60/10	70/0		07/01/2004	65/15	62/35	70/0
Non-Bargaining (09)	55/25	60/10	70/0		07/01/2006	65/15	62/35	70/0
Custodial III/Head Custodian (10)	55/25	60/10	70/0		07/01/2005	65/15	62/35	70/0
Security (12)	55/25	60/10	70/0		05/01/2006	65/15	62/35	70/0
Professional/Technical (14)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Cafeteria Managers (15)	55/25	60/10	70/0		07/01/2004	65/15	62/35	70/0
Non-Union Plan B (16)	55/25	60/10	70/0		07/01/2006	65/15	62/35	70/0
Nurses (58)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Directors (59)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Streets (62)	55/25	60/10	70/0	0/30	07/01/2003	65/15	0/35	70/0
Clerical (65)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Non-Bargaining Clerical (66)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Non-Bargaining (68)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Grounds (70)	55/25	60/10	70/0	0/30	07/01/2003	65/15	62/35	70/0
Building Maintenance (71)	55/25	60/10	70/0	0/30	07/01/2003	65/15	62/35	70/0
Professional/Management (73)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Supervisor (74)	55/25	60/10	70/0	0/30	07/01/2003	65/15	62/35	70/0
Parking Monitors (81)	applies to all members regardless of hire					65/15	62/35	70/0
Corporate Counsel (87)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Town Manager (90)	55/25	60/10	70/0		07/01/2003	65/15	62/35	70/0
Part B1 (64)	55/25	60/10	70/0	0/20	07/01/2007	0/25		
Part C (61)	55/10	0/20	65/0		07/01/2005	50/25	65/0	
Part D (60)	applies to all members regardless of hire					55/10	0/20	65/0

Appendix C - Summary of Plan Provisions

Normal Retirement Benefit

Part B

For service prior to 01/01/1986:

(1) 2% times Average Final Compensation times Credited Service up to 33 years, plus 1% times Average Final Compensation times Credited Service in excess of 33 years; less

(2) 5/6% times Average Final Compensation not in excess of Covered Compensation times Credited Service; plus

(3) For Members who retire before age 62, a temporary allowance calculated as in (2) above. Such benefit shall terminate with the payment for the month the member attains Social Security Normal Retirement Age if in a Town union and age 62 otherwise.

For service after 01/01/1986: 2% times Average Final Compensation times Credited Service capped at 35 years (30 years for **Custodial (05)**).

For members of the following groups hired prior to the applicable date shown below, the benefit for a member who retires with 30 years of Credited Service is 70% of Average Final Compensation:

Custodial (05)	01/01/2006
Maintenance (06)	07/01/2004
Streets (62)	07/01/2003
Non-Bargaining Clerical (66)	07/01/2003
Non-Bargaining (68)	07/01/2003
Grounds (70)	07/01/2003
Building Maintenance (71)	07/01/2003
Professional/Management (73)	07/01/2003
Supervisor (74)	07/01/2003

For Clerical (65) members hired prior to 07/01/2003, the benefit for a member who retires at age 55 with 25 years of Credited Service is 60% of Average Final Compensation; the benefit for a member who retires at age 55 with 30 years of Credited Service is 70% of Average Final Compensation.

Part B1 (64)

The same as Part B. For members hired on or after 07/01/2007:

25-27 years of Credited Service	55% of Average Final Compensation
28+ years of Credited Service	56% of Average Final Compensation plus 2% for each additional year of Credited Service capped at 35 years

Appendix C - Summary of Plan Provisions

Part C (61)

For members hired prior to 04/01/2014, 2.5% times Average Final Compensation times Credited Service, capped at 75% of Average Final Compensation (except as noted below under Maximum Benefit).

For members actively employed on 07/01/2014 who were hired prior to 04/01/2014 and retire with 30 years of Credited Service, 80% of Average Final Compensation.

For members hired on or after 04/01/2014, 2.0% times Average Final Compensation times Credited Service. For such members who retire with 30 years of Credited Service, 65% of Average Final Compensation. Maximum benefit is 65% of Average Final Compensation.

Part D (60)

For members hired prior to 08/01/2006, 2.5% times Average Final Compensation times Credited Service.

For members hired on or after 08/01/2006 and prior to 06/26/2018, 2.5% times average base pay times Credited Service (average base pay is the highest three calendar years of base pay plus 50% of overtime pay determined without regard to private duty, sick leave, or any other compensation).

For members hired on or after 06/26/2018, 2.0% times average base pay times Credited Service (average base pay is the highest three calendar years determined without regard to overtime, private duty, sick leave, or any other compensation than base pay).

For members on payroll as of 07/01/2006 or hired thereafter but prior to 06/26/2018 who retire with 30 years of Credited service, 80% of Average Final Compensation (determined with buyback time excluded).

Part E

1.0% times Average Final Compensation times Credited Service capped at 35 years.

Minimum Benefit

Parts B & B1 & E

$360 per year. For terminated vested members, the benefit is reduced by $24 per year for less than 15 years of continuous credited service.

Parts C & D

$1,000 per year. For Part C members, the benefit is reduced by $67 per year for less than 15 years of continuous credited service.

Appendix C - Summary of Plan Provisions

Maximum Benefit

Parts B & E

Except as noted below, the maximum benefit is 75% of Average Final Compensation for Part B and 35% of Average Final Compensation for Part E.

For all Board of Education unions except Printers (04) and Cafeteria (08), the maximum benefit (before the Supplemental Benefit) is 100% of the final year's base pay.

For members of Streets (62), Grounds (70), Building Maintenance (71), Professional/Management (73) who are eligible for normal retirement, and Supervisor (74) members who were hired prior to 07/01/2003 and retire with 30 years of service, the maximum benefit (before the Supplemental Benefit) is 70% of Average Final Compensation.

For all other Town union members, the maximum benefit (before the Supplemental Benefit) is 100% of the final year’s base pay.

Part B1

75% of Average Final Compensation.

Part C

For members hired prior to 07/01/2005, 95% of base pay. For members hired on or after 07/01/2005, 85% of base pay.

Part D

For members hired prior to 08/01/2006, 95% of base pay (including education incentive and holiday pay only). For members hired on or after 08/01/2006, 85% of base pay (excluding overtime, holiday pay, sick pay, vacation time or other incentive or extra pay).

Supplemental Benefit

Applies to Secretarial/Clerical (02), Paraprofessional (03) and Security (12) hired prior to 05/01/2006; Printers (04), Maintenance (06), Nurses (07), Cafeteria (08), Professional/Technical (14), and Cafeteria Managers (15) hired prior to 07/01/2004; Custodial (05) hired prior to 01/01/2006; Non-Bargaining (09) hired prior to 07/01/2006; Custodian III/Head Custodian (10) hired prior to 07/01/2005; and all Town unions and Town non-bargaining hired prior to 07/01/2003.

Members who work past Normal Retirement Date by attaining age 55 with 25 years of service or age 60 with 10 years of service receive a supplemental annual benefit equal to $600 times each full year of service worked beyond Normal Retirement Date. This supplemental benefit is not eligible for a COLA and will not be a survivor benefit. Payments are made as a single payment during the month of July, starting the first July after the member's retirement date.

Appendix C - Summary of Plan Provisions

Early Retirement

A member may retire and receive a reduced monthly benefit upon reaching the earliest of the following age/service combinations, based on date of hire.

	If hired prior to the applicable date		Applicable date	If hired on or after the applicable date		
Parts B & E						
Secretarial/Clerical (02)	45/15	50/10	05/01/2006	55/15	60/10	
Paraprofessional (03)	45/15	50/10	05/01/2006	55/15	60/10	
Printers (04)	45/15	50/10	07/01/2004	55/15	60/10	
Custodial (05)	45/15	50/10	01/01/2006	55/15	60/10	
Maintenance (06)	45/15	50/10	07/01/2004	55/15	60/10	
Nurses (07)	45/15	50/10	07/01/2004	55/15	60/10	
Cafeteria (08)	45/15	50/10	07/01/2004	55/15	60/10	
Non-Bargaining (09)	45/15	50/10	07/01/2006	55/15	60/10	
Custodial III/Head Custodian (10)	45/15	50/10	07/01/2005	55/15	60/10	
Security (12)	45/15	50/10	05/01/2006	55/15	60/10	
Professional/Technical (14)	45/15	50/10	07/01/2003	55/15	60/10	
Cafeteria Managers (15)	45/15	50/10	07/01/2004	55/15	60/10	
Non-Union Plan B (16)	45/15	50/10	07/01/2006	55/15	60/10	
Nurses (58)	45/15	50/10	07/01/2003	55/15	60/10	
Directors (59)	45/15	50/10	07/01/2003	55/15	60/10	
Streets (62)	45/15	50/10	07/01/2003	55/15	60/10	
Clerical (65)	45/15	50/10	07/01/2003	55/15	60/10	
Non-Bargaining Clerical (66)	45/15	50/10	07/01/2003	55/15	60/10	
Non-Bargaining (68)	45/15	50/10	07/01/2003	55/15	60/10	
Grounds (70)	45/15	50/10	07/01/2003	55/15	60/10	
Building Maintenance (71)	45/15	50/10	07/01/2003	55/15	60/10	
Professional/Management (73)	45/15	50/10	07/01/2003	55/15	60/10	
Supervisor (74)	45/15	50/10	07/01/2003	55/15	60/10	
Parking Monitors (81)	45/15	50/10	07/01/2003	55/15	60/10	
Corporate Counsel (87)	45/15	50/10	07/01/2003	55/15	60/10	
Town Manager (90)	45/15	50/10	07/01/2003	55/15	60/10	
Part B1 (64)	45/15	50/10	07/01/2007	45/15	50/10	0/20
Benefit reduction basis (for all listed above)	1971GAM Male-1, 6.5%			6% per year retiring prior to Normal Retirement		

Parts C & D

Any age with 10 years of Credited Service; benefit reduction basis is 1971GAM Male-1, 6.5%.

Appendix C - Summary of Plan Provisions

Deferred Retirement

Parts B, B1 & E

Members may work beyond retirement at their own option, and will continue to accrue benefits under the plan.

Parts C & D

Members may not work later than the December 31st nearest their 65th birthday.

Disability Retirement

A member regardless of age with 10 or more years of continuous service is eligible if he or she is totally and permanently disabled and unable thereby to engage in gainful occupation with the Town. The benefit amount is equal to the regular pension benefit without reduction for early commencement.

If the disability is Service-Connected, the 10-year service requirement is waived and the benefit is the greater of (a) the regular pension benefit without reduction for early commencement, or (b) 50% of base pay less any payments received on account of Social Security or Worker's Compensation.

Parts B, B1 & E: annual minimum benefit of $360.

Parts C & D: annual minimum benefit of $1,000.

Survivorship Benefit

Upon the death of a Part C (61) or Part D (60) member, either active or retired (including disability retirements), an annual benefit is paid to spouses who have not remarried, dependent minor children, or dependent parent(s). The benefit is equal to a percentage between 25% and 50% (depending on number and types of survivors) of final base rate of pay.

Preretirement Death

Return of member's contributions with regular interest. Part C (61) and Part D (60) members generally do not receive 1% of base wages contributed.

Alternatively, a surviving spouse may elect to receive a life annuity starting on or after the date the member would have been eligible for Early Retirement. The benefit is equal to what the spouse would have received had the member terminated employment on the date of death, elected a 50% Joint & Survivor annuity commencing on the death benefit start date, and then died.

Appendix C - Summary of Plan Provisions

Postretirement Death

Excess of member's contributions with regular interest to retirement date over pension payments received prior to death, unless optional form with 10-year certain period has been elected. Part C (61) and Part D (60) members generally do not receive 1% of base wages contributed.

For Part C (61) and Part D (60) members, the surviving spouse will receive a benefit (until remarriage) as follows:

Age/Service Criteria:
Part C hired prior to 07/01/2005: 0/10
Part C hired on or after 07/01/2005: 55/10 or 0/15
Part D: 55/10 or 0/15

Benefit: The benefit that would have been payable to the surviving spouse had the member elected a 50% Joint & Survivor annuity. The excess of actual benefit payments received over the payments that would have been received had the member actually elected a 50% Joint & Survivor annuity must be repaid; the repayment can be made as an offset to the surviving spouse's monthly benefit.

For all other members, postretirement death benefits are payable according to the form of annuity elected by the member at retirement.

Cost of Living Adjustments

The following groups receive a 1% annual COLA starting on the January 1 or July 1 following the third year of retirement if the member retires on or after Normal Retirement Date, or beginning three years after the member would have been eligible for a Normal Retirement benefit.

Nurses (07) hired prior to 06/30/2010
Security (12) hired prior to 06/30/2010
Dispatchers (64)
Clerical (65)
Grounds (70) who retire prior to 09/24/2015
Building Maintenance (71)
Professional Management (73)
Supervisor (74) who retire prior to 05/24/2016

Part C (61) members hired after 07/01/2005 receive a 2% COLA starting two years after retirement and payable each July 1.

Part D (60) members hired after 08/01/2006 receive a 2% COLA starting on the July 1 following the second year of retirement. Those hired on or after 06/26/2018 are only eligible for this COLA if they retire under normal retirement provisions with 25 years of Credited Service.

COLAs do not apply to Supplemental Benefits, pre-retirement death benefits, disability benefits, or benefits payable to members who terminate with a vested benefit.

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Contribution (“ADC”) - This is the employer’s periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee’s service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee’s date of hire and costs are spread across all employment.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.

FIDUCIENT Advisors

Helping Clients Prosper

West Hartford, CT

Quarterly Investment Review - First Quarter 2022

Fiducient Advisors Update

Retirement Plans

Featured Insights

- Plan Sponsor Newsletter

Coming Soon

- Defined Benefit Webcast
- Public Funds Newsletter
- Plan Sponsor Newsletter

Endowments & Foundations

Featured Insights

- The Steward Newsletter

Coming Soon

- Guide to Mission Aligned Investing

The Wealth Office®

Featured Insights

- Financial Planning Considerations
- Webcast: Cutting Through the Noise – Important 2022 Planning Updates

Coming Soon

- Advisor Newsletter

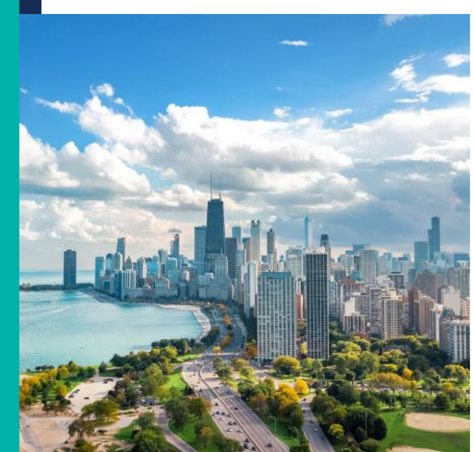
2022 Investor Conferences

Newport Investor Conference
Friday, June 17 | 8:00 am
Gurney's Newport Resort & Marina
Newport, RI

Clambake & Sunset Sail
Thursday, June 16
Book your hotel early! 833.235.7500
Group code: **211007FID2**

Register Here

Chicago Investor Conference
Save the Date: October 13, 2022
Conference details and registration coming early summer!



Fiducient Advisors Update

Research Insights

- Monthly market recaps
- Monthly market updates
  - Variations on a Theme – February
  - Inflation, the Fed, Correction; Oh My! – January
- Webcast: The Russia Ukraine Conflict: Current Impact and Future Implications
- Fixed Income Complacency – The Practical Side of Fixed Income Today
- In Focus: Russian Invasion of Ukraine – Current Update, Implications & Outlook
- Webcast: 2022 Essential Economic Update
- 2022 Outlook – Navigating Moderation

2022 New Associates – Welcome!

- Tim Black, Senior Consultant
- Teresa Dao, Consulting Analyst
- Ted Dawson, Consulting Analyst
- Kate Edler, Performance Analyst
- Gisella Ferrer, Client Service Associate
- Grant LaRussa, Performance Analyst
- Taylor Peters, Client Service Associate
- Sophie Pohlmann, Human Resources Coordinator
- John Poydence, Consulting Analyst
- Brandy Teague, Administrative Assistant
- Molly Thomas, Data Analyst

Table of Contents

Fiduciary Governance Calendar

Fiduciary Governance Calendar

Q1
Fee Focus

- **Investment Review**
- **Portfolio Expense Analysis**

Q2
Practice and Policy

- **Investment Review**
- **Investment Policy Review**
- **Fiduciary Training**

Q3
Municipal Landscape

- **Investment Review**
- **Municipal Landscape Update**
- **Annual Actuarial Review***

Q4
Asset/Liability Focus

- **Investment Review**
- **Asset Allocation Review**
- **Asset/Liability Modeling**

Fiduciary Trail® Fiduciary Lockbox®

*Timing of actuarial review is dependent on client's individual plan and/or fiscal year and actuarial input.

Portfolio Expense Analysis

	Estimated Annual Cost
Investment Portfolio (Weighted Average)	0.33%
Principal (Base Fee)	Asset based fee of 0.011% on all assets Account level fee of $500 per account
Fiducient Fee	Approximate 2021 Fees Paid: $50,000

DISCLOSURE: The figures on this page have been obtained from sources we deem to be reliable. Fiducient Advisors has not independently verified this information. A breakdown of investment management fees are detailed in the main report.

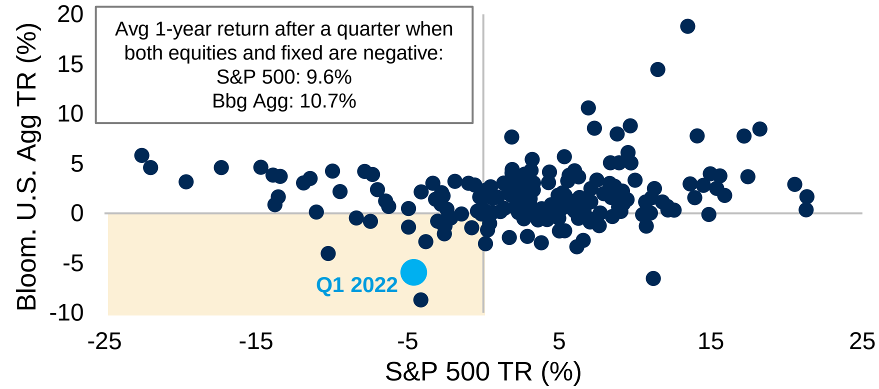
Capital Markets Overview

Market Themes

1. Capital market volatility increased notably in the quarter and asset class returns were almost uniformly negative as the Russia/Ukraine conflict, the Fed's rate hike campaign, elevated inflation and rising interest rates weighed on investor sentiment.
2. The crisis in Ukraine may temporarily impede global economic growth and exacerbate existing inflationary forces, but we think the probability of avoiding recession is greater than the probability of entering one during the remainder of the year.
3. Absent recession, equity markets have historically proven resilient when confronted by the Fed raising interest rates. However, the current level of inflation could prove to be particularly challenging for the Fed this time around.

Equity & Fixed Income Quarterly Returns

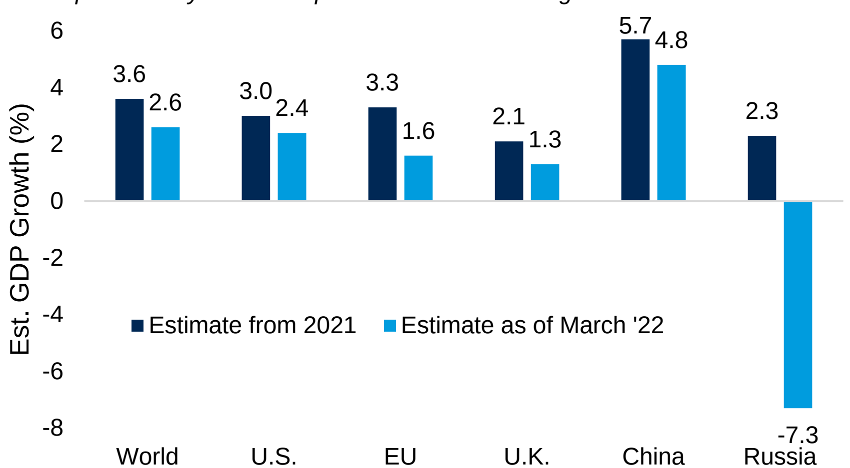
Both equity and bond markets declined during the quarter, a rare event that has occurred only 16 times since 1976.



Source: Morningstar Direct, Fiducient Advisors. Data from January 1, 1976 to March 31, 2022

Slower But Still Positive Economic Growth Estimated for 2022

The conflict in Ukraine pushed expectations for global economic growth lower. A strong U.S. consumer and pent-up demand provides support domestically, while Europe will likely feel the impact more than other regions.



Source: UNCTAD Trade and Development Report March 2022

The U.S. Yield Curve Flattens

The U.S. yield curve flattened during the quarter as the spread between the 2-year Treasury and 10-year Treasury narrowed to 4 bps, the lowest since 2019. Historically, markets have proved to be resilient following an inversion of the 2-10 spread.

Inversion Date	Next 12 Month Return		Months to Recession	
	S&P 500	Bloomberg US Agg	Recession Start	Months
8/18/1978	8.9	6.7	February-80	18
9/12/1980	5.4	-3.6	August-81	11
12/13/1988	31.7	14.6	August-90	20
5/26/1998	17.3	5.4	April-01	35
12/27/2005	13.8	4.7	January-08	37
8/27/2019	23.2	6.8	March-20	7
Average	***16.7***	***5.8***	**-**	***21***

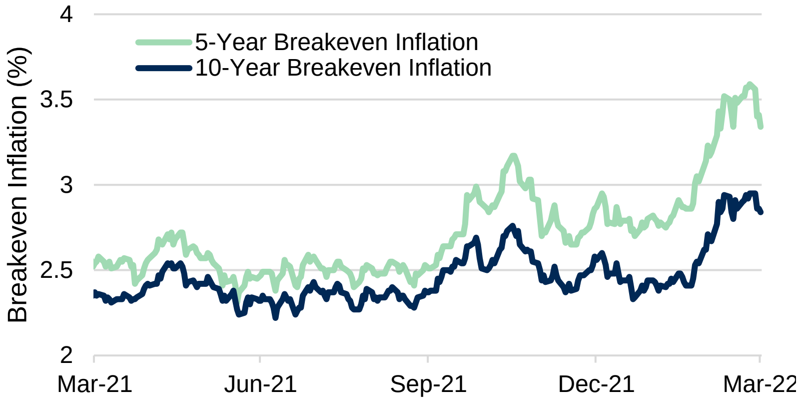
Source: FactSet, Morningstar Direct, NBER, Fiducient Advisors. Inversion based on the 2-10 U.S. Treasury spread.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

Economic Review

U.S. Breakeven Inflation Levels

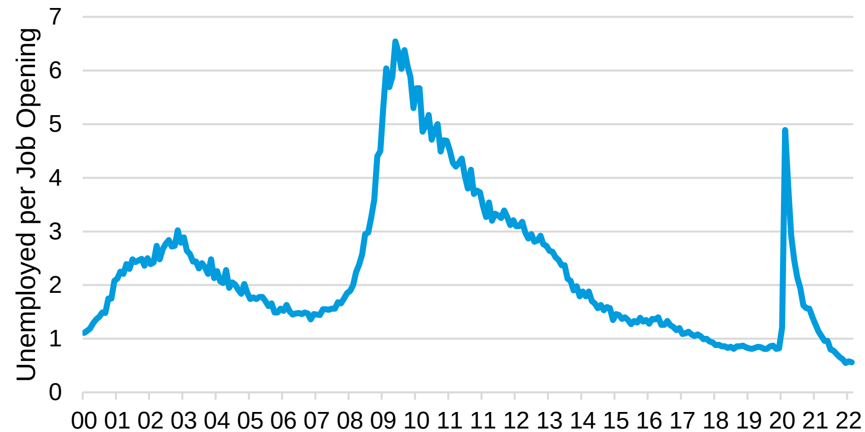
Inflation in the U.S. remains elevated. However, there is a large gap between near-term and long-term inflation expectations, with inflation expected to moderate longer-term.



Source: FactSet. As of March 31, 2022.

U.S. Labor Market – Number of Unemployed per Job Opening

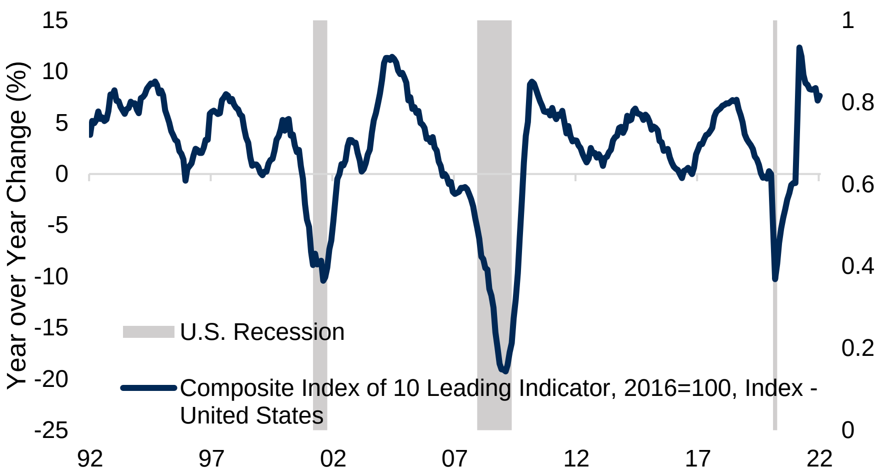
The U.S. labor market remains tight as the number of job seekers per job opening has fallen to less than 1, which may further support wage growth.



Source: FactSet, DOL, BLS. As of February 28, 2022.

Leading Economic Indicators

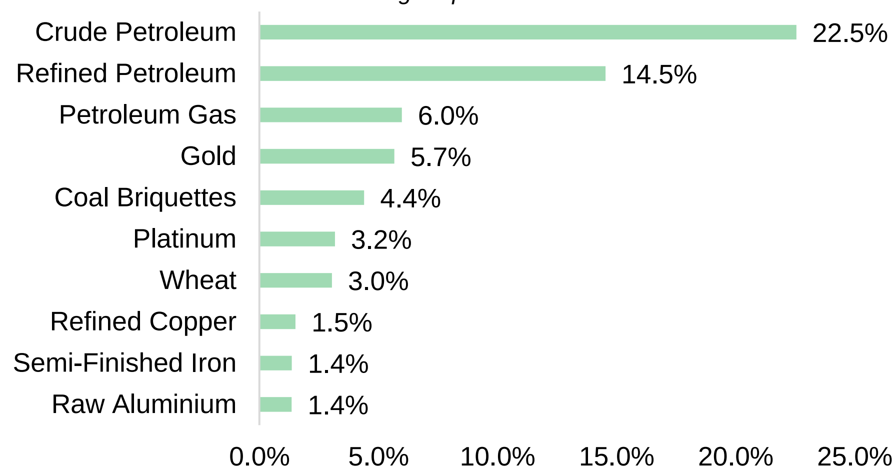
Leading economic indicators fell from peak levels but remain in positive territory supporting a positive outlook for economic growth in the near term.



Source: FactSet, Conference Board. As of February 28, 2022.

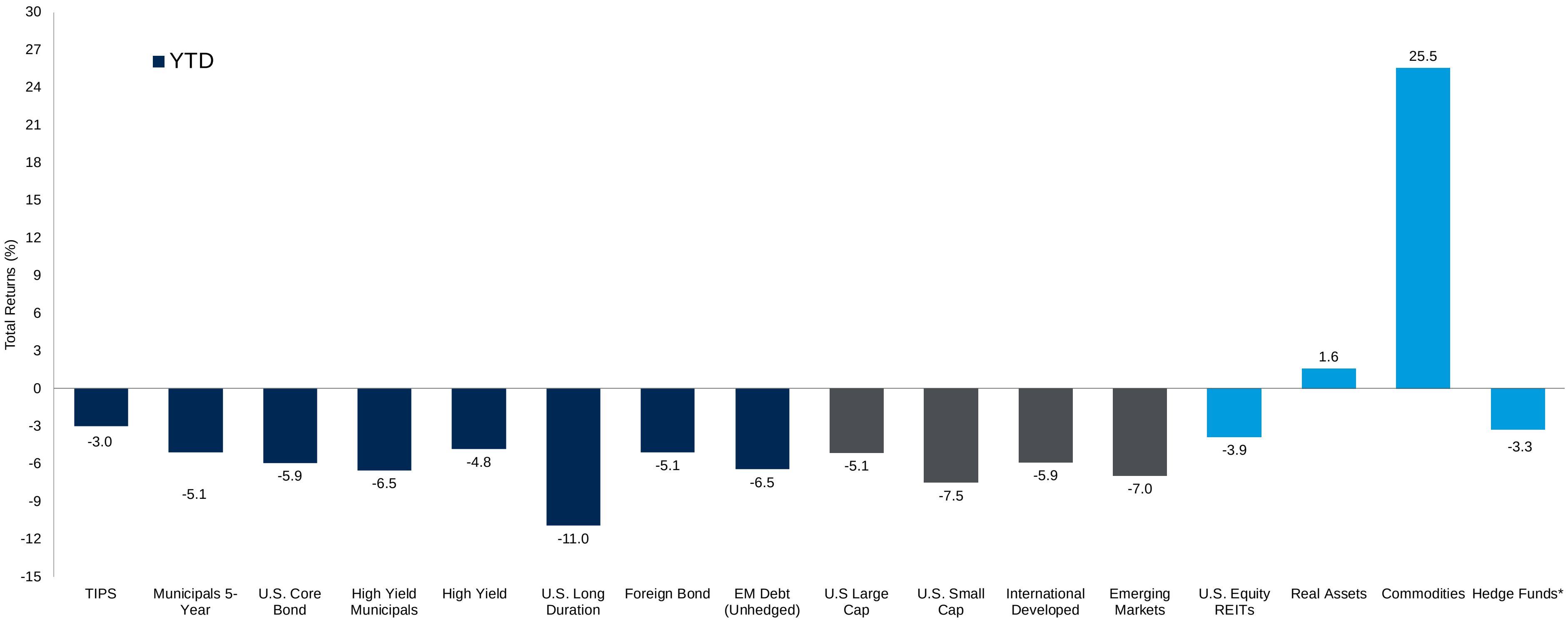
Russia's Top 10 Exports

Russia's exports are primarily commodity focused. As a result, the sanctions on Russia have been a main driver of higher prices in the commodities market.



Source: OEC. As of 2020. Percent of total Russian exports.

Asset Class Returns



Source: Morningstar Direct. As of March 31, 2022. *Hedge fund returns as of February 28, 2022.

Fixed Income (1Q)

- U.S. bonds posted the third worst quarter since 1976 as interest rates spiked amid rising inflation and ahead of the Federal Reserve's first interest rate increase since 2018.

- Despite a flattening yield curve, long duration assets suffered the most in the rising interest rate environment.

- In addition to rising yields around the world, a strengthening U.S. dollar was a headwind for non-U.S. debt.

Equity (1Q)

- Equity markets succumbed to investor uncertainty driven by a multitude of factors this quarter such as the conflict in Eastern Europe, high inflation, and tightening central bank policy.

- U.S. large cap equities fared best, led by value stocks. Growth stocks lagged value across market caps for the quarter as higher P/E companies underperformed.

- Abroad, developed markets edged out emerging markets as EM equities were driven lower by the conflict in Ukraine and weakness in China, Taiwan and South Korea.

Real Asset / Alternatives (1Q)

\+ Commodity markets were one of the few areas that generated positive results. Strong performance was driven by soaring energy and metals prices as the conflict in Ukraine added to the supply/demand imbalance.

- Equity REITs were not immune to the volatility in the market and rising interest rates put additional pressure on the sector.

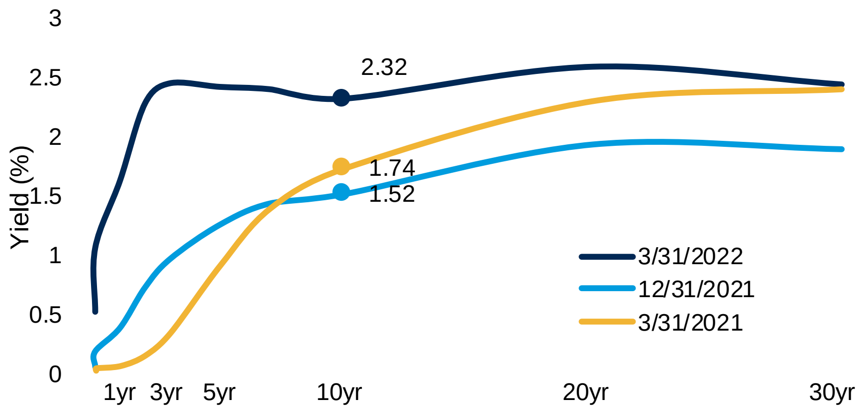
\+ Hedge funds generally outpaced both the broad equity and fixed income markets despite negative absolute returns..

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

Fixed Income Market Update

U.S. Treasury Yield Curve

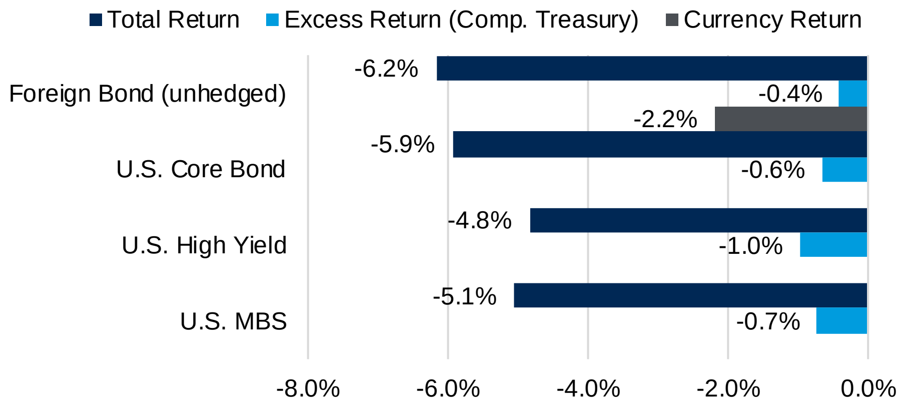
The U.S. yield curve flattened and the 2-10 spread narrowed to its lowest level since 2019, as the Federal Reserve raised its target rate by 25 basis points. The 10-year ended the quarter 80 basis points higher.



Source: FactSet. As of March 31, 2022.

Index Performance Attribution (1Q 2021)

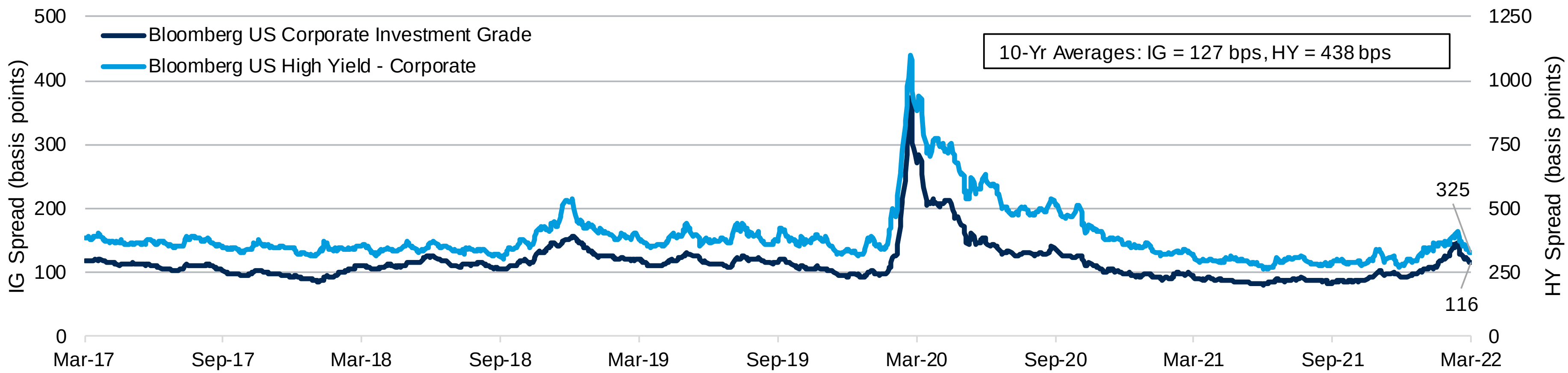
Non-government sectors generally underperformed Treasuries during the quarter, as spreads widened in the risk-off environment. A strengthening U.S. dollar further weighed on non-U.S. bond returns.



Source: FactSet. As of March 31, 2022.

Corporate Market Spreads – Trailing 5 Years

Corporate credit was not immune to the risk off mentality in the markets during the quarter. Both investment grade and high yield corporate bond spreads moved higher in the first half of the quarter before settling back in March. Heavy new issuance was met with strong demand as higher yields attracted both domestic and foreign buyers.

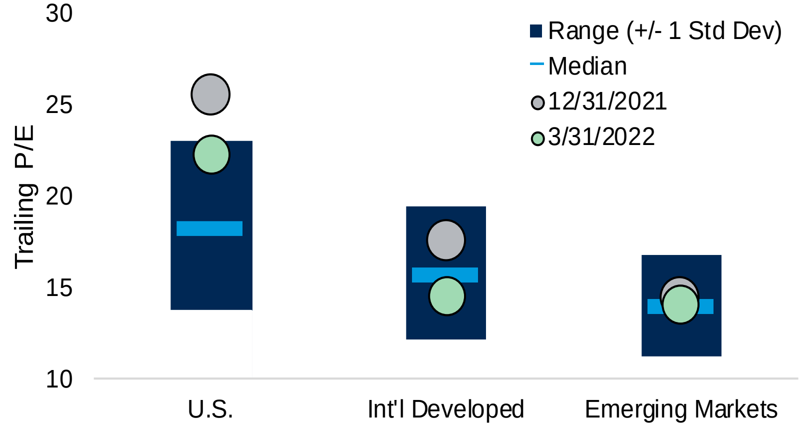


Source: FactSet. As of March 31, 2022.

Equity Market Update

Equity Valuations (Trailing PE – Last 15 Years)

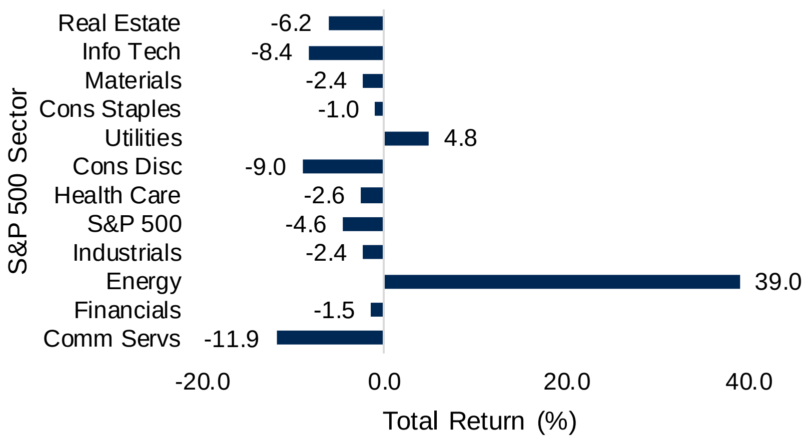
Equity multiples compressed in the quarter as prices moved lower. Valuations in the U.S. remain elevated while non-U.S. regions are at or below their 15-year median level.



Source: FactSet. As of March 31, 2022.

U.S. Equities – Return by Sector (1Q 2022)

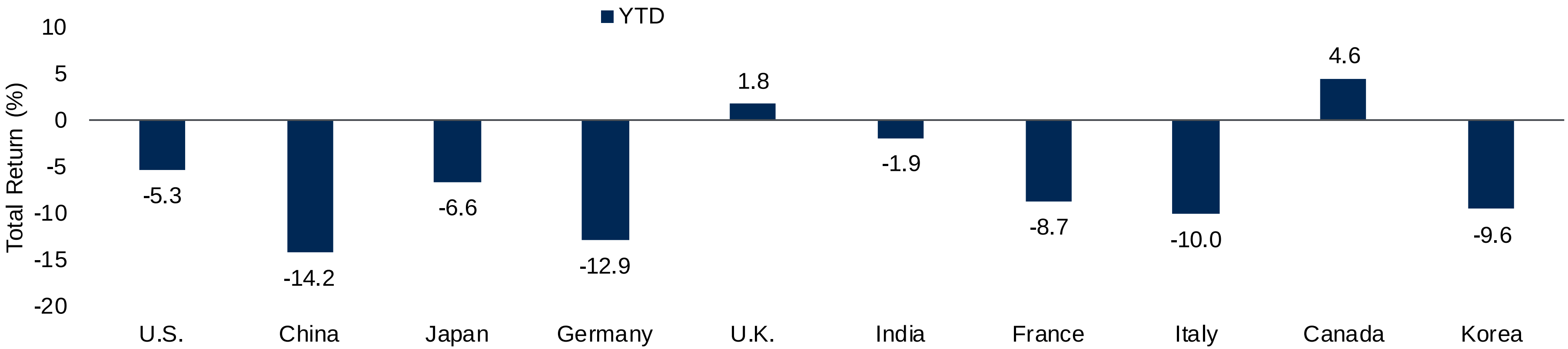
The Energy sector was the clear standout for the quarter, driven by a rally in commodity prices stemming from the conflict in Ukraine. Growth segments of the market such as information technology and consumer discretionary lagged.



Source: Morningstar Direct. As of March 31, 2022.

Country Total Returns (%) – Top 10 Largest Economies

Equities around the world were broadly negative, with select regions generating positive returns. Canada benefited from rising commodity prices. The conflict between Ukraine and Russia tugged at investor optimism. Mainland Europe will likely feel the largest impact from the conflict which pushed countries such as Germany, France and Italy lower. Chinese equities continued to struggle as COVID-19 lockdowns fueled the negative return.



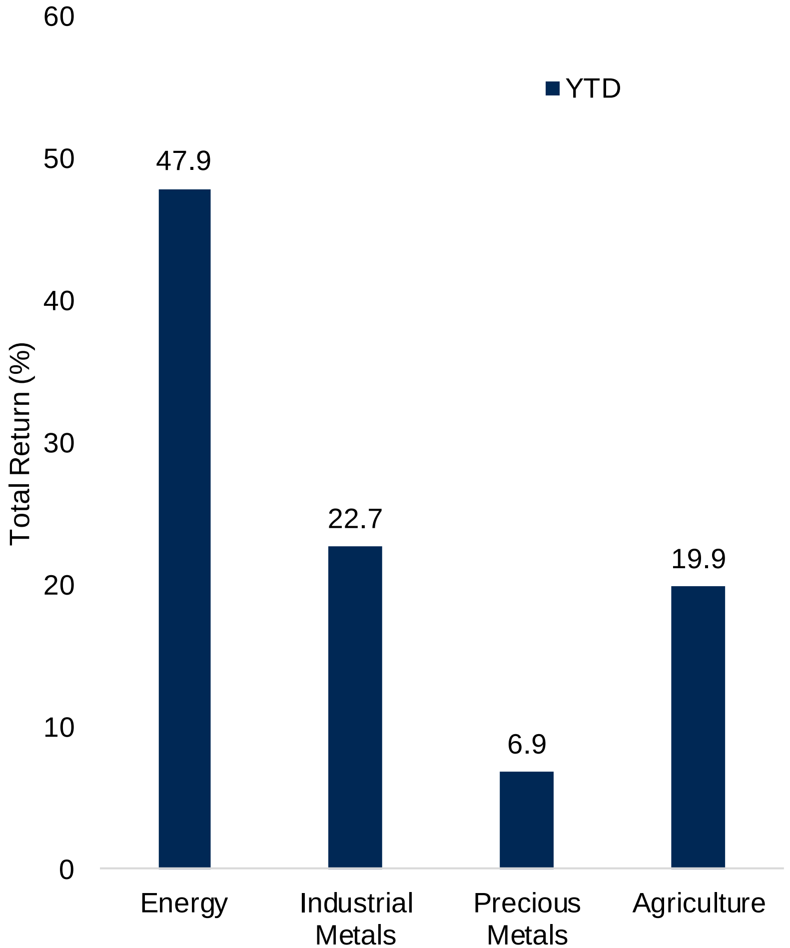
Source: Morningstar Direct. As of March 31, 2022.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

Real Assets Market Update

Commodity Performance

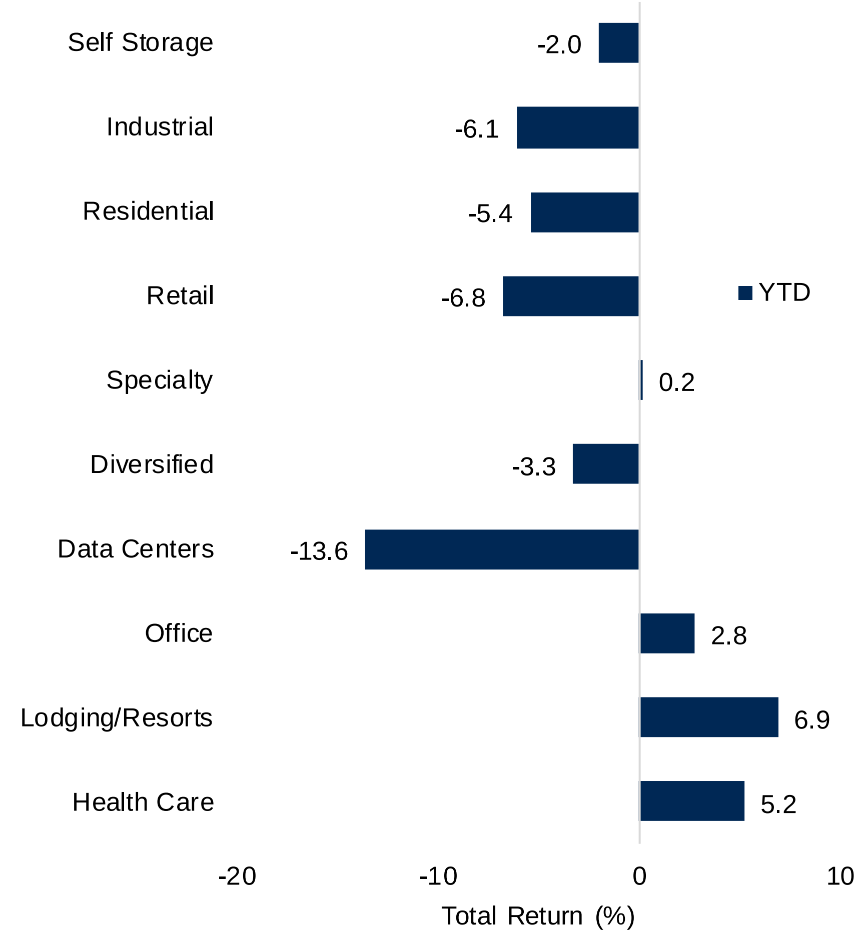
Commodities surged in the first three months of the year. The conflict between Ukraine and Russia and the continued global supply shortages pushed prices higher. Oil prices broke through the $120/barrel mark in March before settling in just above $100/barrel.



Source: Morningstar Direct. As of March 31, 2022.

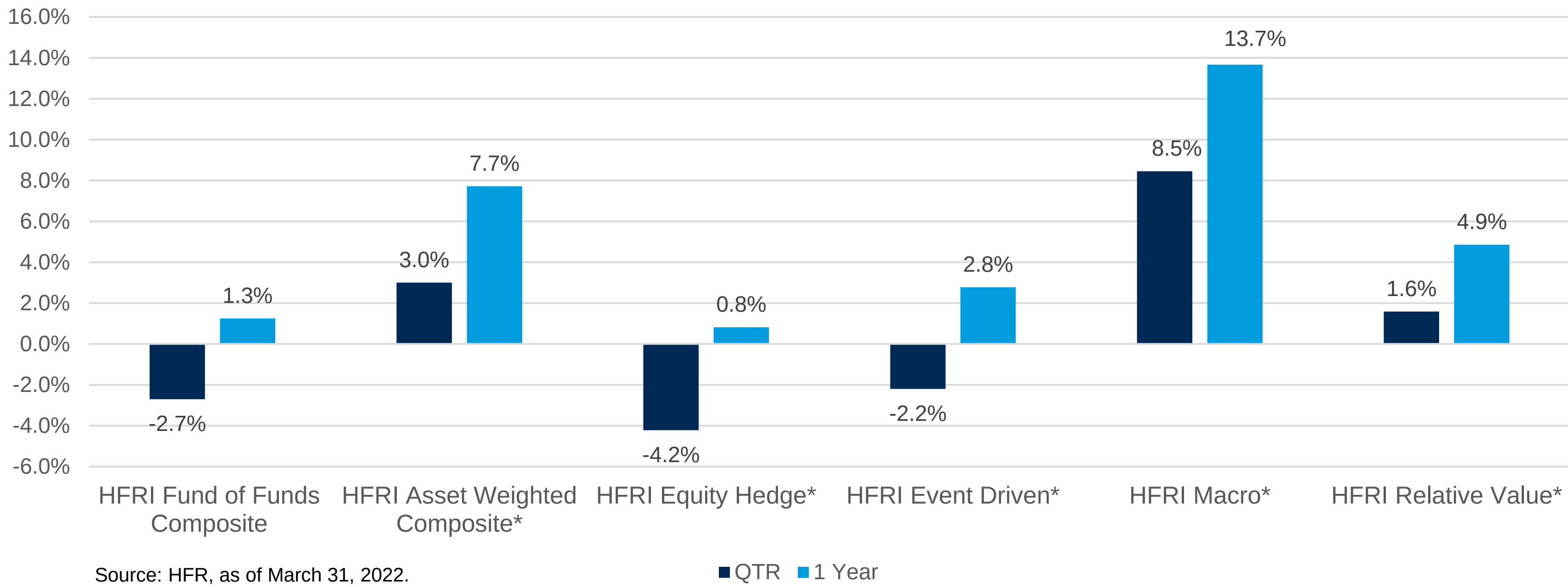
REIT Sector Performance

Higher valuation areas of the market, such as Data Centers, suffered the most as interest rates rose in the period. Easing of covid restrictions and an uptick in consumer travel benefitted Lodging/Resorts.



Source: Morningstar Direct. As of March 31, 2022.

Marketable Alternatives Market Update



Source: HFR, as of March 31, 2022.

- The HFRI Asset Weighted Composite finished the first quarter in positive territory despite a volatile start to the year headlined by Russia's invasion of Ukraine, geopolitical tensions, climbing commodity prices, rising interest rates and inflation uncertainty.
- Despite a brief rally for equities in March, Equity Hedge strategies detracted on the quarter, led by high beta, long-biased, and growth-focused strategies that struggled to protect capital as risk assets sold off in January and February.
- Event Driven strategies finished the quarter in negative territory, led by higher-beta Activist and Special Situations strategies. Meanwhile, Distressed managers generated modest positive performance.
- Macro strategies were strong performers during the quarter as managers were able to capitalize on rising commodity prices, rising interest rates and global volatility.
- Relative Value strategies gained on the quarter and were again led by fixed income-based, interest rate-sensitive strategies as rates rose. Volatility Relative Value strategies also contributed.

Benchmark Return Indices cannot be invested in directly. HFRI benchmarks are net of fees. Past performance does not indicate future performance and there is a possibility of a loss. See disclosure page for list of indices.

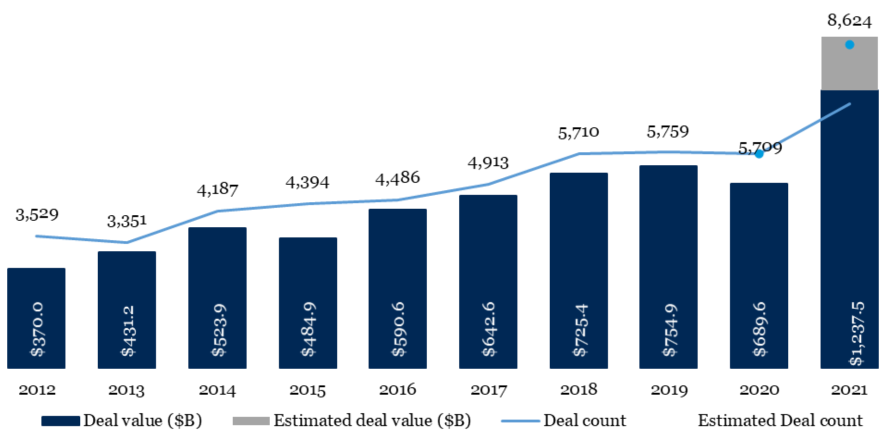
Private Equity Market Update

U.S. Private Equity deal activity continued at a robust pace through the end of the year and into the first quarter as deployment across funds remained elevated.

The fundraising market has become increasingly competitive for both investors and fund managers. With a number of funds in market and LPs closing in on targets, urgency and selectivity are simultaneously increasing.

Private equity performance remained strong through the third quarter. Trailing marks continued to move higher on a quarter over quarter basis.

U.S. Private Equity Deal Activity



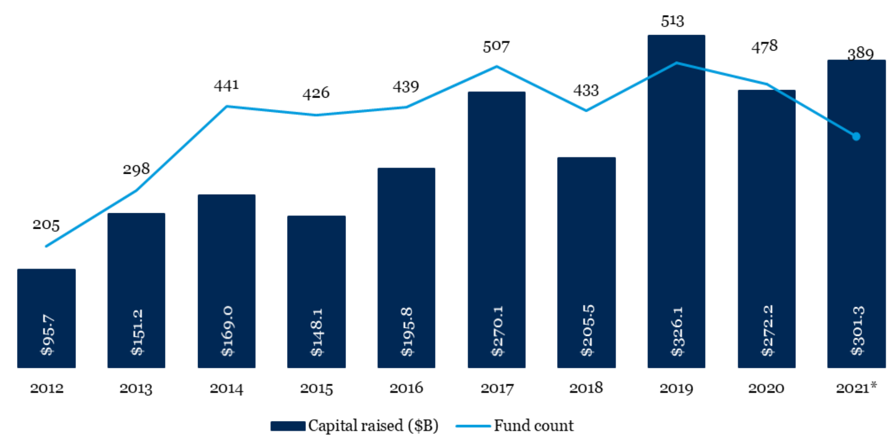
Source: Pitchbook. As of December 31, 2021.

Private Equity Performance (As of September 30, 2021)

Benchmark	1-YR	3-YR	5-YR	10-Y	15-Y
US Private Equity Index	49.7%	25.9%	22.9%	18.4%	14.1%
US Buyout Index	43.3%	22.6%	20.8%	17.6%	13.3%
US Growth Equity Index	68.7%	35.7%	29.2%	21.5%	17.2%
US Venture Capital Index	83.7%	38.4%	27.6%	20.1%	15.2%
S&P 500 Index	30.0%	16.0%	16.9%	16.6%	10.4%

Source: Cambridge Associates. As of September 30, 2021. Returns presented as horizon pooled return, net of fees.

U.S. Buyout Fundraising Activity



Source: Pitchbook. As of December 31, 2021.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

The Case for Diversification

2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	YTD	10Yr (Ann)
Emerging Markets 18.2	U.S. Small Cap 38.8	U.S. Equity REITs 30.1	U.S. Equity REITs 3.2	U.S. Small Cap 21.3	Emerging Markets 37.3	High Yield Munis 4.8	U.S. Large Cap 31.5	U.S. Small Cap 20.0	U.S. Equity REITs 43.2	Commodities 25.5	U.S. Large Cap 14.5
High Yield Munis 18.1	U.S. Large Cap 32.4	High Yield Munis 13.8	Municipals 5-Year 2.4	High Yield 17.1	International Dev. 25.0	Municipals 5-Year 1.7	U.S. Equity REITs 26.0	U.S. Large Cap 18.4	Commodities 27.1	TIPS -3.0	U.S. Small Cap 11.0
U.S. Equity REITs 18.1	International Dev. 22.8	U.S. Large Cap 13.7	High Yield Munis 1.8	U.S. Large Cap 12.0	U.S. Large Cap 21.8	Foreign Bond 0.5	U.S. Small Cap 25.5	Emerging Markets 18.3	US Large Cap 26.5	Hedge Funds -3.3	U.S. Equity REITs 9.8
International Dev. 17.3	Balanced 12.2	Core Bond 6.0	U.S. Large Cap 1.4	Commodities 11.7	EM Debt (unhedged) 15.2	Core Bond 0.0	International Dev. 22.5	TIPS 11.0	US Small Cap 14.8	U.S. Equity REITs -3.9	International Developed 6.3
EM Debt (unhedged) 16.9	Hedge Funds 9.0	Balanced 5.1	Core Bond 0.6	Emerging Markets 11.2	U.S. Small Cap 14.6	TIPS -1.3	Emerging Markets 18.4	Balanced 8.8	International Dev. 11.3	High Yield -4.8	Balanced 6.1
U.S. Small Cap 16.3	High Yield 7.4	U.S. Small Cap 4.9	Hedge Funds -0.3	EM Debt (unhedged) 9.9	Balanced 13.6	High Yield -2.1	Balanced 17.5	International Dev. 7.8	Balanced 9.8	Balanced -4.8	High Yield 5.7
U.S. Large Cap 16.0	U.S. Equity REITs 2.5	TIPS 3.6	International Dev. -0.8	U.S. Equity REITs 8.5	High Yield Munis 9.7	Hedge Funds -4.0	High Yield 14.3	Core Bond 7.5	High Yield Munis 7.8	U.S. Large Cap -5.1	High Yield Munis 5.4
High Yield 15.8	Municipals 5-Year 0.8	Hedge Funds 3.4	TIPS -1.4	Balanced 7.6	Hedge Funds 7.8	U.S. Large Cap -4.4	EM Debt (unhedged) 13.5	Hedge Funds 7.1	TIPS 6.0	Municipals 5-Year -5.1	Hedge Funds 3.9
Balanced 11.5	Foreign Bond -1.0	Municipals 5-Year 3.2	Foreign Bond -2.3	TIPS 4.7	High Yield 7.5	U.S. Equity REITs -4.6	High Yield Munis 10.7	High Yield 7.1	Hedge Funds 5.7	Foreign Bond -5.1	Emerging Markets 3.4
TIPS 7.0	Core Bond -2.0	Foreign Bond 2.9	Balanced -3.3	Foreign Bond 3.2	Foreign Bond 6.5	Balanced -5.8	Core Bond 8.7	Foreign Bond 7.0	High Yield 5.3	International Developed -5.9	TIPS 2.7
Foreign Bond 5.3	Emerging Markets -2.6	High Yield 2.5	U.S. Small Cap -4.4	High Yield Munis 3.0	U.S. Equity REITs 5.2	EM Debt (unhedged) -6.2	TIPS 8.4	High Yield Munis 4.9	Municipals 5-Year 0.3	Core Bond -5.9	Core Bond 2.2
Hedge Funds 4.8	High Yield Munis -5.5	Emerging Markets -2.2	High Yield -4.5	Core Bond 2.6	Core Bond 3.5	U.S. Small Cap -11.0	Hedge Funds 7.8	Municipals 5-Year 4.3	Core Bond -1.5	High Yield Munis -6.5	Municipals 5-Year 1.8
Core Bond 4.2	TIPS -8.6	International Dev. -4.9	Emerging Markets -14.9	International Dev. 1.0	Municipals 5-Year 3.1	Commodities -11.2	Commodities 7.7	EM Debt (unhedged) 2.7	Emerging Markets -2.5	EM Debt (unhedged) -6.5	Foreign Bond 1.6
Municipals 5-Year 3.0	EM Debt (unhedged) -9.0	EM Debt (unhedged) -5.7	EM Debt (unhedged) -14.9	Hedge Funds 0.5	TIPS 3.0	International Dev. -13.8	Foreign Bond 6.3	Commodities -3.1	Foreign Bond -4.2	Emerging Markets -7.0	Commodities -0.7
Commodities -1.1	Commodities -9.5	Commodities -17.0	Commodities -24.7	Municipals 5-Year -0.4	Commodities 1.7	Emerging Markets -14.6	Municipals 5-Year 5.4	U.S. Equity REITs -8.0	EM Debt (unhedged) -8.7	U.S. Small Cap -7.5	EM Debt (unhedged) -0.7

Source: FactSet & Morningstar as of March 31, 2022. Periods greater than one year are annualized. All returns are in U.S. dollar terms. One month lag for Hedge Funds.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

Financial Markets Performance

Total Return as of March 31, 2022

Periods greater than one year are annualized
All returns are in U.S. dollar terms

Global Fixed Income Markets	**QTD**	**YTD**	**1YR**	**3YR**	**5YR**	**7YR**	**10YR**	**15YR**
Bloomberg 1-3-Month T-Bill	0.0%	0.0%	0.1%	0.7%	1.1%	0.8%	0.6%	0.8%
Bloomberg U.S. TIPS	-3.0%	-3.0%	4.3%	6.2%	4.4%	3.6%	2.7%	4.3%
Bloomberg Municipal Bond (5 Year)	-5.1%	-5.1%	-4.5%	0.8%	1.5%	1.5%	1.8%	3.1%
Bloomberg High Yield Municipal Bond	-6.5%	-6.5%	-1.3%	4.0%	5.2%	4.9%	5.4%	4.6%
Bloomberg U.S. Aggregate	-5.9%	-5.9%	-4.2%	1.7%	2.1%	1.9%	2.2%	3.6%
Bloomberg U.S. Corporate High Yield	-4.8%	-4.8%	-0.7%	4.6%	4.7%	5.0%	5.7%	6.5%
Bloomberg Global Aggregate ex-U.S. Hedged	-4.1%	-4.1%	-3.6%	0.9%	2.3%	2.2%	3.2%	3.6%
Bloomberg Global Aggregate ex-U.S. Unhedged	-6.1%	-6.1%	-7.9%	-0.2%	1.3%	1.3%	0.1%	2.1%
Bloomberg U.S. Long Gov / Credit	-11.0%	-11.0%	-3.1%	4.2%	4.6%	3.5%	4.7%	6.1%
JPMorgan GBI-EM Global Diversified	-6.5%	-6.5%	-8.5%	-1.1%	0.2%	0.7%	-0.7%	2.8%
Global Equity Markets	**QTD**	**YTD**	**1YR**	**3YR**	**5YR**	**7YR**	**10YR**	**15YR**
S&P 500	-4.6%	-4.6%	15.6%	18.9%	16.0%	14.0%	14.6%	10.3%
Dow Jones Industrial Average	-4.1%	-4.1%	7.1%	12.6%	13.4%	12.6%	12.8%	9.8%
NASDAQ Composite	-8.9%	-8.9%	8.1%	23.6%	20.3%	17.6%	17.8%	13.7%
Russell 3000	-5.3%	-5.3%	11.9%	18.2%	15.4%	13.4%	14.3%	10.1%
Russell 1000	-5.1%	-5.1%	13.3%	18.7%	15.8%	13.7%	14.5%	10.3%
Russell 1000 Growth	-9.0%	-9.0%	15.0%	23.6%	20.9%	17.3%	17.0%	12.9%
Russell 1000 Value	-0.7%	-0.7%	11.7%	13.0%	10.3%	9.7%	11.7%	7.4%
Russell Mid Cap	-5.7%	-5.7%	6.9%	14.9%	12.6%	10.7%	12.9%	9.5%
Russell Mid Cap Growth	-12.6%	-12.6%	-0.9%	14.8%	15.1%	11.9%	13.5%	10.4%
Russell Mid Cap Value	-1.8%	-1.8%	11.5%	13.7%	10.0%	9.3%	12.0%	8.3%
Russell 2000	-7.5%	-7.5%	-5.8%	11.7%	9.7%	8.9%	11.0%	8.0%
Russell 2000 Growth	-12.6%	-12.6%	-14.3%	9.9%	10.3%	8.5%	11.2%	8.8%
Russell 2000 Value	-2.4%	-2.4%	3.3%	12.7%	8.6%	8.8%	10.5%	6.9%
MSCI ACWI	-5.4%	-5.4%	7.3%	13.7%	11.6%	9.7%	10.0%	6.5%
MSCI ACWI ex. U.S.	-5.4%	-5.4%	-1.5%	7.5%	6.8%	5.2%	5.6%	3.1%
MSCI EAFE	-5.9%	-5.9%	1.2%	7.8%	6.7%	5.1%	6.3%	2.9%
MSCI EAFE Growth	-11.9%	-11.9%	-1.5%	9.8%	8.9%	6.8%	7.5%	4.2%
MSCI EAFE Value	0.3%	0.3%	3.6%	5.2%	4.2%	3.1%	4.9%	1.4%
MSCI EAFE Small Cap	-8.5%	-8.5%	-3.6%	8.5%	7.4%	7.3%	8.3%	4.5%
MSCI Emerging Markets	-7.0%	-7.0%	-11.4%	4.9%	6.0%	4.7%	3.4%	3.8%
Alternatives	**QTD**	**YTD**	**1YR**	**3YR**	**5YR**	**7YR**	**10YR**	**15YR**
Consumer Price Index*	1.4%	1.4%	7.9%	3.9%	3.1%	2.7%	2.2%	2.2%
FTSE NAREIT Equity REITs	-3.9%	-3.9%	26.4%	11.1%	9.6%	8.0%	9.8%	6.4%
S&P Real Assets	1.6%	1.6%	13.5%	8.2%	7.2%	5.5%	5.5%	5.3%
FTSE EPRA NAREIT Developed	-3.8%	-3.8%	15.3%	6.4%	7.5%	5.8%	7.8%	3.7%
FTSE EPRA NAREIT Developed ex U.S.	-3.2%	-3.2%	3.0%	1.7%	5.4%	3.8%	5.9%	1.7%
Bloomberg Commodity Total Return	25.5%	25.5%	49.3%	16.1%	9.0%	4.3%	-0.7%	-1.4%
HFRI Fund of Funds Composite*	-3.3%	-3.3%	0.5%	6.0%	4.6%	3.3%	3.9%	2.4%
HFRI Fund Weighted Composite*	-2.2%	-2.2%	2.7%	8.3%	6.2%	5.0%	5.3%	4.3%
Alerian MLP	18.8%	18.8%	36.6%	2.7%	-0.1%	-1.9%	1.3%	4.7%

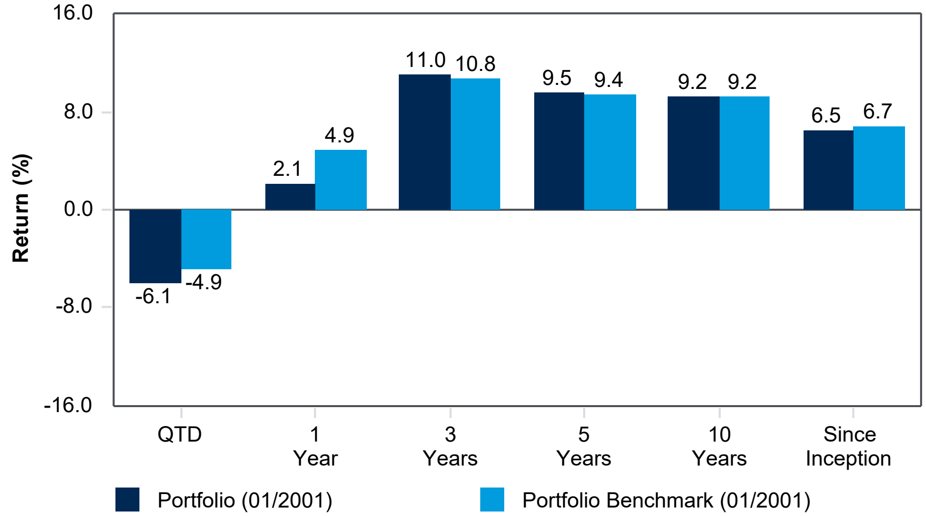
*Source: Morningstar, FactSet. As of March 31, 2022. *Consumer Price Index and HFRI indexes as of February 28, 2022.*

Portfolio and Manager Review

Portfolio Dashboard

West Hartford Total Pension — **As of March 31, 2022**

Historical Performance



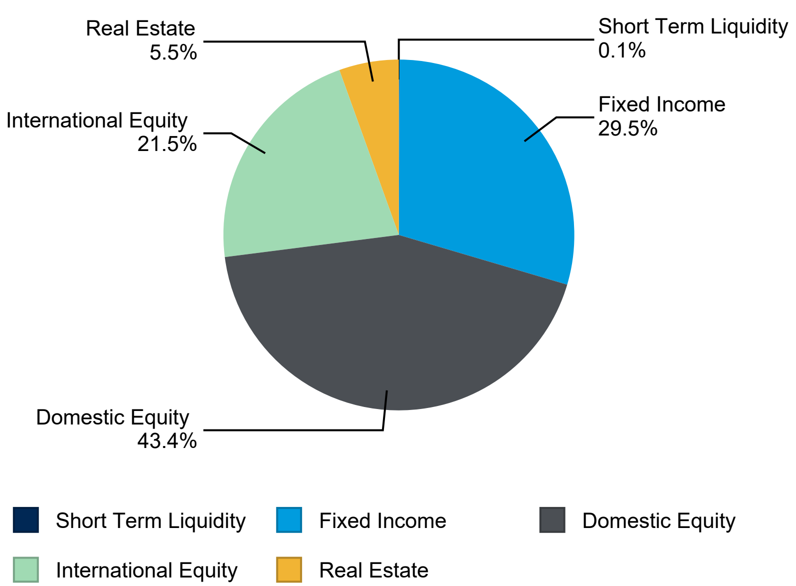
Summary of Cash Flows

	QTD	1 Year	Since Inception
Beginning Market Value	384,591,877	264,898,197	193,768,000
Net Contributions	110,047,788	203,409,120	43,798,459
Gain/Loss	-26,703,572	-371,224	230,369,634
Ending Market Value	467,936,093	467,936,093	467,936,093

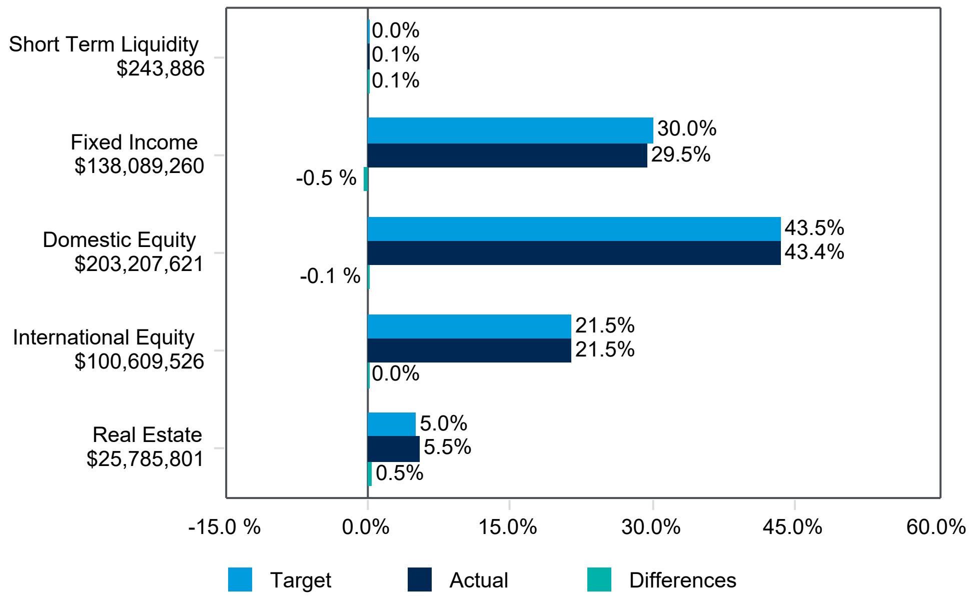
Current Benchmark Composition

From Date	To Date	
04/2018	Present	30% Blmbg. U.S. Aggregate, 43.5% Russell 3000 Index, 21.5% MSCI AC World ex USA (Net), 5% NCREIF Fund Index - ODCE (net)

Portfolio Allocation



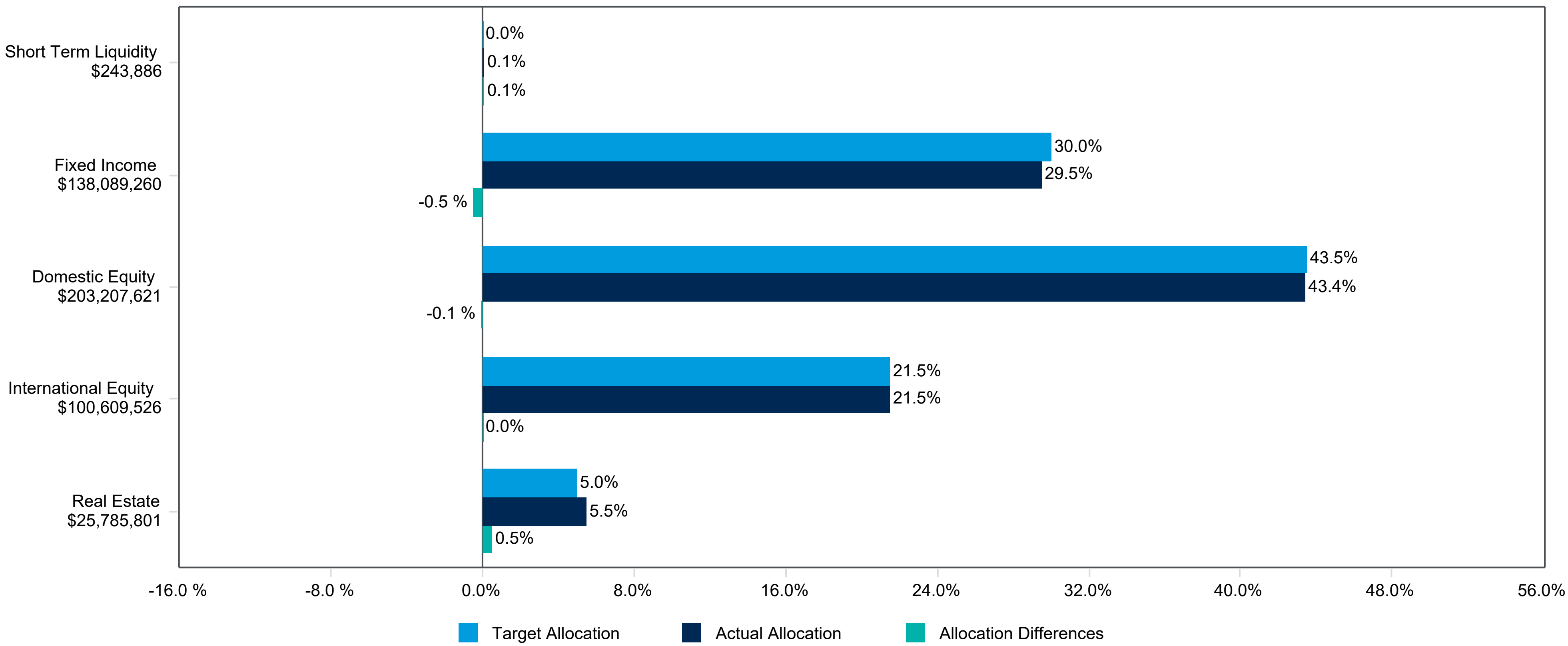
Actual vs. Target Allocations



Asset Allocation

West Hartford Total Pension — **As of March 31, 2022**

Actual vs. Target



	Asset Allocation ($)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
Short Term Liquidity	243,886	0.1	0.0	0.1	0.0	100.0
Fixed Income	138,089,260	29.5	30.0	-0.5	0.0	100.0
Domestic Equity	203,207,621	43.4	43.5	-0.1	0.0	100.0
International Equity	100,609,526	21.5	21.5	0.0	0.0	100.0
Real Estate	25,785,801	5.5	5.0	0.5	0.0	100.0
West Hartford Total Pension	**467,936,093**	**100.0**	**100.0**	**0.0**	**-**	**-**

Asset Allocation

West Hartford Total Pension As of March 31, 2022

	Asset Allocation ($)	Asset Allocation (%)	Target Allocation (%)	Differences (%)
West Hartford Total Pension	**467,936,093**	**100.0**	**100.0**	**0.0**
Short Term Liquidity	**243,886**	**0.1**	**0.0**	**0.1**
AllSpring Govt Money Market Fund	243,886	0.1	0.0	0.1
Fixed Income	**138,089,260**	**29.5**	**30.0**	**-0.5**
Vanguard Total Bond Market Index Instl	78,186,683	16.7	17.0	-0.3
Metropolitan West Total Return Bond Pl	59,902,578	12.8	13.0	-0.2
Domestic Equity	**203,207,621**	**43.4**	**43.5**	**-0.1**
Vanguard Total Stock Market Index Instl	146,272,161	31.3	31.3	0.0
T. Rowe Price Instl Large Cap Value	19,725,639	4.2	4.3	0.0
Silvercrest Small Cap Value	18,540,496	4.0	4.0	0.0
Pier Capital Small Cap Growth	18,663,605	4.0	4.0	0.0
Equity Holdings	5,720	0.0	0.0	0.0
International Equity	**100,609,526**	**21.5**	**21.5**	**0.0**
Acadian Non-US All Cap Equity Fund,USD Hedged	24,967,291	5.3	5.0	0.3
Harbor Diversified International All Cap Ret	24,853,425	5.3	5.5	-0.2
Causeway International Value Instl	25,470,821	5.4	5.5	-0.1
Vanguard International Growth Adm	25,317,988	5.4	5.5	-0.1
Real Estate	**25,785,801**	**5.5**	**5.0**	**0.5**
Barings Core Property Fund LP	25,785,801	5.5	5.0	0.5

Performance Overview

West Hartford Total Pension | As of March 31, 2022

Trailing Performance Summary

	QTD	Fiscal YTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
West Hartford Total Pension	**-6.1**	**-2.9**	**2.1**	**11.0**	**9.5**	**8.2**	**9.2**	**6.5**	**01/2001**
Pension Blended Benchmark	*-4.9*	*-0.6*	*4.9*	*10.8*	*9.4*	*8.3*	*9.2*	*6.7*	*01/2001*

Calendar Year Performance Summary

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
West Hartford Total Pension	**13.2**	**16.6**	**20.9**	**-5.4**	**15.8**	**7.7**	**0.1**	**7.1**	**21.8**	**14.1**
Pension Blended Benchmark	*13.0*	*14.3*	*20.8*	*-4.8*	*15.3*	*8.3*	*1.2*	*8.6*	*19.8*	*12.6*

Plan Reconciliation

	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
West Hartford Total Pension							**01/2001**
Beginning Market Value	384,591,877	264,898,197	211,825,836	194,727,043	147,048,301	193,768,000	
Net Contributions	110,047,788	203,409,120	189,029,331	177,381,788	152,906,903	43,798,459	
Gain/Loss	-26,703,572	-371,224	67,080,926	95,827,262	167,980,889	230,369,634	
Ending Market Value	467,936,093	467,936,093	467,936,093	467,936,093	467,936,093	467,936,093	

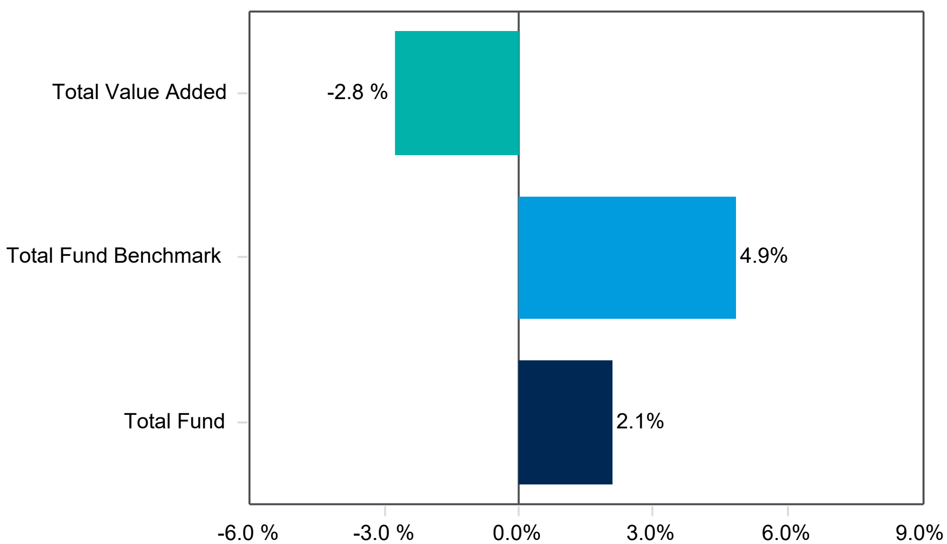
Benchmark Composition

	Weight (%)
Apr-2018	
Blmbg. U.S. Aggregate	30.0
Russell 3000 Index	43.5
MSCI AC World ex USA (Net)	21.5
NCREIF Fund Index - ODCE (net)	5.0

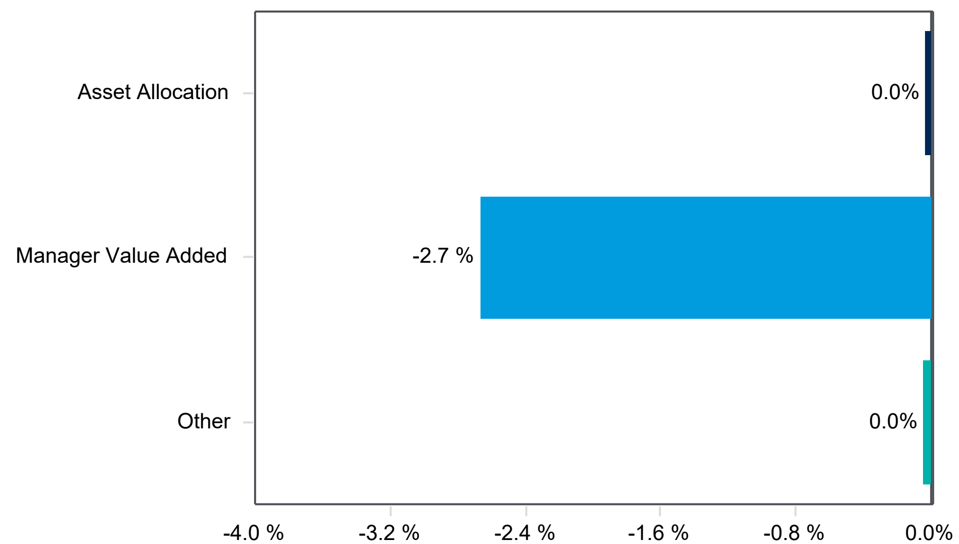
Performance Attribution

West Hartford Total Pension vs. Pension Attribution Hybrid | 1 Year Ending March 31, 2022

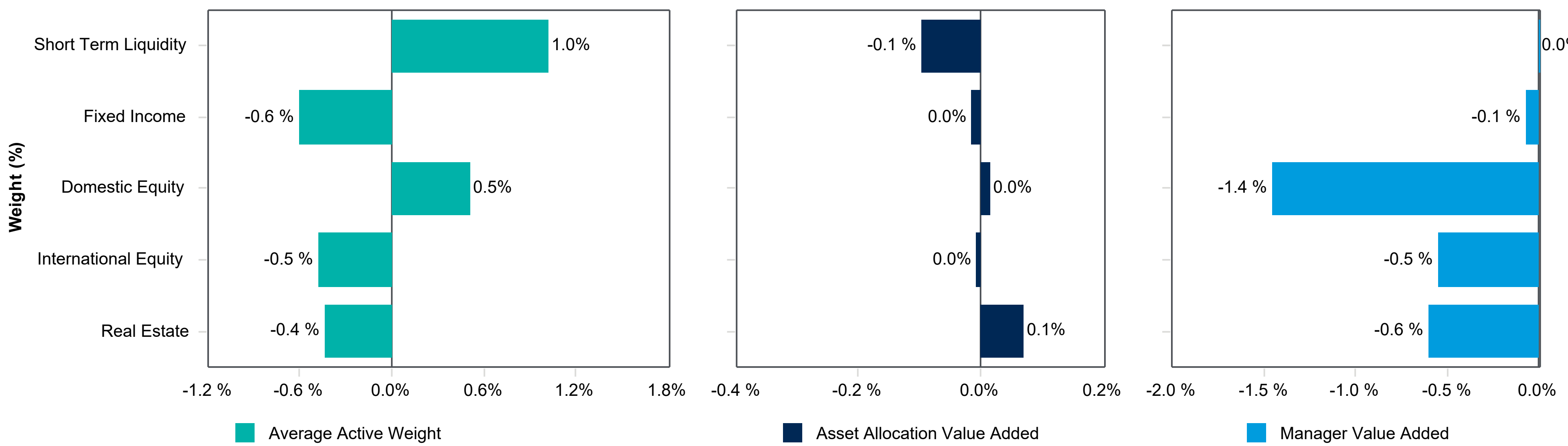
Total Fund Performance



Total Value Added:-2.8 %



Total Asset Allocation:0.0% | **Total Manager Value Added:-2.7 %**



Manager Status Commentary

As of March 31, 2022

Manager	Recommendation	Comments
Vanguard Total Bond Market Index Instl	Maintain	
Metropolitan West Total Return Bond Pl	Maintain	
Vanguard Total Stock Market Index Instl	Maintain	
T. Rowe Price Instl Large Cap Value	Maintain	
Silvercrest Small Cap Value	Maintain	
Pier Capital Small Cap Growth	Maintain	
Acadian Non-US All Cap Equity Fund,USD Hedged	Maintain	
Harbor Diversified International All Cap Ret	Watch 2Q 2021	The strategy was placed on Watch in July 2021 following the departure of Michael Godfrey and David Cull, Co-Portfolio Managers of the firm's Emerging Markets and Pacific ex-Japan sleeves. The firm hired Alex Duffy from Fidelity International to take over responsibility for managing global emerging markets investments across all the firm's strategies and elevated Justin Hill, who joined Marathon at the beginning of 2021, to manage all Pacific ex-Japan investments. We will monitor the development of the new portfolio managers over the coming quarters to ensure their investment styles and personalities are the right fit in the Marathon culture and will help the team deliver excess returns for their investors.
Causeway International Value Instl	Maintain	
Vanguard International Growth Adm	Maintain	
Barings Core Property Fund LP	Maintain	

Commentary produced upon change of status.

Manager Performance

West Hartford Total Pension | As of March 31, 2022

	Allocation		Performance(%)								Manager Status
	Market Value ($)	%	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	
West Hartford Total Pension	**467,936,093**	**100.0**	**-6.1**	**-2.9**	**2.1**	**11.0**	**9.5**	**9.2**	**6.5**	**01/2001**	
Pension Blended Benchmark			*-4.9*	*-0.6*	*4.9*	*10.8*	*9.4*	*9.2*	*6.7*		
Short Term Liquidity	**243,886**	**0.1**	**0.0**	**0.0**	**0.0**	**0.6**	**0.9**	**0.5**	**0.4**	**06/2010**	
90 Day U.S. Treasury Bill			*0.0*	*0.1*	*0.1*	*0.8*	*1.1*	*0.6*	*0.5*		
AllSpring Govt Money Market Fund	**243,886**	**0.1**	**0.0**	**0.0**	**0.0**	**0.6**	**0.9**	**0.5**	**0.4**	**06/2010**	
90 Day U.S. Treasury Bill			*0.0*	*0.1*	*0.1*	*0.8*	*1.1*	*0.6*	*0.5*		
Fixed Income	**138,089,260**	**29.5**	**-6.2**	**-6.2**	**-4.4**	**1.9**	**2.3**	**2.5**	**4.1**	**12/2008**	
Blmbg. U.S. Aggregate			*-5.9*	*-5.9*	*-4.2*	*1.7*	*2.1*	*2.2*	*3.5*		
Vanguard Total Bond Market Index Instl	**78,186,683**	**16.7**	**-6.0**	**-6.0**	**-4.1**	**1.7**	**2.1**	**2.2**	**2.5**	**11/2010**	**Maintain**
Blmbg. U.S. Aggregate			*-5.9*	*-5.9*	*-4.2*	*1.7*	*2.1*	*2.2*	*2.5*		
IM U.S. Broad Market Core Fixed Income (MF) Median			-6.0	-6.1	-4.3	2.0	2.2	2.3	2.6		
Vanguard Total Bond Market Index Instl Rank			51	40	37	64	56	61	60		
Metropolitan West Total Return Bond Pl	**59,902,578**	**12.8**	**-6.2**	**-6.2**	**-4.5**	**2.3**	**2.6**	**3.2**	**2.3**	**05/2015**	**Maintain**
Blmbg. U.S. Aggregate			*-5.9*	*-5.9*	*-4.2*	*1.7*	*2.1*	*2.2*	*1.9*		
IM U.S. Broad Market Core+ Fixed Income (MF) Median			-6.0	-6.0	-3.9	2.3	2.5	2.7	2.3		
Metropolitan West Total Return Bond Pl Rank			70	61	77	50	46	26	52		
Domestic Equity	**203,207,621**	**43.4**	**-5.8**	**1.1**	**8.5**	**17.3**	**14.8**	**13.7**	**14.9**	**12/2008**	
Russell 3000 Index			*-5.3*	*3.4*	*11.9*	*18.2*	*15.4*	*14.3*	*15.2*		
Vanguard Total Stock Market Index Instl	**146,272,161**	**31.3**	**-5.5**	**3.1**	**11.7**	**18.2**	**15.4**	**14.2**	**15.4**	**06/2009**	**Maintain**
CRSP US Total Market Spliced Index			*-5.4*	*3.2*	*11.7*	*18.2*	*15.4*	*14.3*	*15.4*		
IM U.S. Multi-Cap Core Equity (MF) Median			-5.7	2.6	10.4	15.8	13.2	12.5	13.6		
Vanguard Total Stock Market Index Instl Rank			47	44	37	22	14	11	6		
T. Rowe Price Instl Large Cap Value	**19,725,639**	**4.2**	**0.8**	**7.4**	**12.4**	**14.2**	**11.0**	**12.3**	**8.9**	**07/2005**	**Maintain**
Russell 1000 Value Index			*-0.7*	*6.1*	*11.7*	*13.0*	*10.3*	*11.7*	*8.3*		
IM U.S. Large Cap Value Equity (MF) Median			-0.4	6.7	12.7	13.5	10.7	11.2	8.0		
T. Rowe Price Instl Large Cap Value Rank			25	43	55	38	44	17	19		

Manager performance for mutual funds and ETFs is based on NAV and provided by Lipper. Performance for non-mutual fund or ETF investments is based on the returns provided by managers, calculations based on a manager statement, or calculations based on a statement or data from the client's custodian. Funds may include returns of an equivalent share class with a longer return history if period includes dates prior to the fund's inception. Returns are net of fees unless otherwise stated. The fund's inception date represents the first month the client made the investment. Composite performance includes all funds held in the composite since inception. Inception dates for asset class composites reflect the start date at which these returns could be calculated using historical and existing system capabilities and may vary from the inception dates of underlying component strategies.

Manager Performance

West Hartford Total Pension | As of March 31, 2022

	Allocation		Performance(%)								
	Market Value ($)	%	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Manager Status
Silvercrest Small Cap Value	**18,540,496**	**4.0**	**-5.7**	**-0.8**	**2.2**	**12.1**	**8.0**	**-**	**8.1**	**12/2016**	**Maintain**
Russell 2000 Value Index			*-2.4*	*-1.2*	*3.3*	*12.7*	*8.6*	*10.5*	*8.8*		
IM U.S. Small Cap Value Equity (MF) Median			-1.9	2.1	6.2	13.0	8.4	10.0	8.5		
Silvercrest Small Cap Value Rank			94	79	84	71	58	-	57		
Pier Capital Small Cap Growth	**18,663,605**	**4.0**	**-16.2**	**-19.5**	**-14.0**	**14.7**	**16.0**	**13.9**	**10.9**	**01/2001**	**Maintain**
Russell 2000 Growth Index			*-12.6*	*-17.6*	*-14.3*	*9.9*	*10.3*	*11.2*	*7.5*		
IM U.S. Small Cap Growth Equity (MF) Median			-12.9	-13.3	-9.7	13.0	12.9	11.9	8.4		
Pier Capital Small Cap Growth Rank			80	81	78	30	26	12	7		
Equity Holdings	**5,720**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**0.0**	**11/2016**	
International Equity	**100,609,526**	**21.5**	**-7.6**	**-8.8**	**-3.9**	**11.3**	**9.4**	**7.6**	**10.2**	**12/2008**	
International Equity Benchmark			*-5.4*	*-6.6*	*-1.5*	*7.5*	*6.5*	*6.1*	*7.6*		
Acadian Non-US All Cap Equity Fund,USD Hedged	**24,967,291**	**5.3**	**-2.9**	**0.4**	**6.6**	**12.8**	**-**	**-**	**8.9**	**05/2018**	**Maintain**
MSCI EAFE US Dollar Hedged Index (Net)			*-3.5*	*2.0*	*7.1*	*9.8*	*8.3*	*9.6*	*7.6*		
IM International Multi-Cap Core Equity (MF) Median			-6.5	-5.2	-0.5	7.2	6.1	5.8	3.7		
Acadian Non-US All Cap Equity Fund,USD Hedged Rank			10	3	2	3	-	-	3		
Harbor Diversified International All Cap Ret	**24,853,425**	**5.3**	**-6.0**	**-7.5**	**-2.2**	**8.0**	**6.8**	**-**	**4.5**	**03/2018**	**Watch**
MSCI AC World ex USA (Net)			*-5.4*	*-6.6*	*-1.5*	*7.5*	*6.8*	*5.6*	*3.9*		
IM International Large Cap Core Equity (MF) Median			-7.3	-6.8	-2.3	7.0	5.7	4.9	3.2		
Harbor Diversified International All Cap Ret Rank			25	57	49	42	22	-	21		
Causeway International Value Instl	**25,470,821**	**5.4**	**-5.3**	**-5.4**	**-3.4**	**5.8**	**4.6**	**5.2**	**5.4**	**05/2004**	**Maintain**
MSCI EAFE Value Index (Net)			*0.3*	*0.5*	*3.6*	*5.2*	*4.2*	*4.9*	*4.7*		
IM International Large Cap Value Equity (MF) Median			-2.9	-0.5	2.6	6.8	4.8	4.6	4.7		
Causeway International Value Instl Rank			80	78	79	60	55	26	1		
Vanguard International Growth Adm	**25,317,988**	**5.4**	**-16.5**	**-22.0**	**-16.2**	**14.9**	**14.1**	**10.5**	**9.6**	**03/2018**	**Maintain**
MSCI AC World ex USA Growth (Net)			*-10.8*	*-12.0*	*-6.2*	*9.1*	*8.6*	*6.7*	*5.5*		
IM International Large Cap Growth Equity (MF) Median			-10.8	-9.1	-3.4	9.1	7.7	6.3	4.8		
Vanguard International Growth Adm Rank			96	99	98	2	1	1	6		

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Manager Performance

West Hartford Total Pension

As of March 31, 2022

	Allocation		Performance(%)								
	Market Value ($)	%	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Manager Status
Real Estate	**25,785,801**	**5.5**	**-1.7**	**11.3**	**15.0**	**6.6**	**6.7**	**8.2**	**4.7**	**01/2008**	
NCREIF Fund Index - ODCE (net)			*7.2*	*22.8*	*27.3*	*10.3*	*8.9*	*9.9*	*5.6*		
Barings Core Property Fund LP	**25,785,801**	**5.5**	**-1.7**	**11.3**	**15.0**	**6.6**	**6.7**	**8.2**	**4.7**	**01/2008**	**Maintain**
NCREIF Fund Index - ODCE (net)			*7.2*	*22.8*	*27.3*	*10.3*	*8.9*	*9.9*	*5.6*		

Manager performance for mutual funds and ETFs is based on NAV and provided by Lipper. Performance for non-mutual fund or ETF investments is based on the returns provided by managers, calculations based on a manager statement, or calculations based on a statement or data from the client's custodian. Funds may include returns of an equivalent share class with a longer return history if period includes dates prior to the fund's inception. Returns are net of fees unless otherwise stated. The fund's inception date represents the first month the client made the investment. Composite performance includes all funds held in the composite since inception. Inception dates for asset class composites reflect the start date at which these returns could be calculated using historical and existing system capabilities and may vary from the inception dates of underlying component strategies.

Manager Performance

West Hartford Total Pension | As of March 31, 2022

	Performance(%)									
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
West Hartford Total Pension	**13.2**	**16.6**	**20.9**	**-5.4**	**15.8**	**7.7**	**0.1**	**7.1**	**21.8**	**14.1**
Pension Blended Benchmark	*13.0*	*14.3*	*20.8*	*-4.8*	*15.3*	*8.3*	*1.2*	*8.6*	*19.8*	*12.6*
Short Term Liquidity	**0.0**	**0.3**	**2.1**	**1.7**	**0.6**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**
90 Day U.S. Treasury Bill	*0.0*	*0.7*	*2.3*	*1.9*	*0.9*	*0.3*	*0.0*	*0.0*	*0.0*	*0.1*
AllSpring Govt Money Market Fund	**0.0**	**0.3**	**2.1**	**1.7**	**0.6**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**
90 Day U.S. Treasury Bill	*0.0*	*0.7*	*2.3*	*1.9*	*0.9*	*0.3*	*0.0*	*0.0*	*0.0*	*0.1*
Fixed Income	**-1.4**	**8.3**	**8.9**	**0.1**	**3.5**	**2.5**	**0.5**	**5.1**	**-2.0**	**9.0**
Blmbg. U.S. Aggregate	*-1.5*	*7.5*	*8.7*	*0.0*	*3.5*	*2.6*	*0.5*	*6.0*	*-2.0*	*4.2*
Vanguard Total Bond Market Index Instl	**-1.7**	**7.7**	**8.7**	**0.0**	**3.6**	**2.6**	**0.4**	**5.9**	**-2.1**	**4.2**
Blmbg. U.S. Aggregate	*-1.5*	*7.5*	*8.7*	*0.0*	*3.5*	*2.6*	*0.5*	*6.0*	*-2.0*	*4.2*
IM U.S. Broad Market Core Fixed Income (MF) Median	-1.3	8.2	8.8	-0.6	3.6	2.9	0.1	5.5	-2.0	6.0
Vanguard Total Bond Market Index Instl Rank	65	64	53	19	52	63	30	30	58	81
Metropolitan West Total Return Bond Pl	**-1.1**	**9.2**	**9.2**	**0.3**	**3.5**	**2.6**	**0.2**	**6.2**	**0.4**	**11.6**
Blmbg. U.S. Aggregate	*-1.5*	*7.5*	*8.7*	*0.0*	*3.5*	*2.6*	*0.5*	*6.0*	*-2.0*	*4.2*
IM U.S. Broad Market Core+ Fixed Income (MF) Median	-1.0	8.5	9.3	-0.9	4.5	4.2	-0.3	5.2	-1.1	8.2
Metropolitan West Total Return Bond Pl Rank	57	35	54	12	79	86	26	28	17	5
Domestic Equity	**24.5**	**21.2**	**29.9**	**-6.4**	**21.8**	**12.1**	**-1.0**	**10.9**	**36.5**	**16.1**
Russell 3000 Index	*25.7*	*20.9*	*31.0*	*-5.2*	*21.1*	*12.7*	*0.5*	*12.6*	*33.6*	*16.4*
Vanguard Total Stock Market Index Instl	**25.7**	**21.0**	**30.8**	**-5.2**	**21.2**	**12.7**	**0.4**	**12.6**	**33.5**	**16.4**
CRSP US Total Market Spliced Index	*25.7*	*21.0*	*30.8*	*-5.2*	*21.2*	*12.7*	*0.4*	*12.6*	*33.5*	*16.4*
IM U.S. Multi-Cap Core Equity (MF) Median	25.3	15.4	28.2	-7.2	20.6	9.9	-0.8	10.9	33.7	15.6
Vanguard Total Stock Market Index Instl Rank	42	23	27	26	40	27	32	29	52	34
T. Rowe Price Instl Large Cap Value	**25.8**	**3.0**	**26.7**	**-9.3**	**16.8**	**16.2**	**-3.3**	**13.1**	**34.0**	**17.9**
Russell 1000 Value Index	*25.2*	*2.8*	*26.5*	*-8.3*	*13.7*	*17.3*	*-3.8*	*13.5*	*32.5*	*17.5*
IM U.S. Large Cap Value Equity (MF) Median	26.2	2.6	26.1	-9.1	16.3	13.8	-3.5	10.8	32.3	15.8
T. Rowe Price Instl Large Cap Value Rank	56	44	44	58	42	26	45	12	33	25

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Manager Performance

West Hartford Total Pension | As of March 31, 2022

	Performance(%)									
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Silvercrest Small Cap Value	**24.8**	**6.8**	**24.9**	**-15.8**	**11.2**	**-**	**-**	**-**	**-**	**-**
Russell 2000 Value Index	*28.3*	*4.6*	*22.4*	*-12.9*	*7.8*	*31.7*	*-7.5*	*4.2*	*34.5*	*18.1*
IM U.S. Small Cap Value Equity (MF) Median	30.9	3.8	21.3	-16.1	8.3	26.6	-7.1	3.4	36.1	16.3
Silvercrest Small Cap Value Rank	93	25	19	48	25	-	-	-	-	-
Pier Capital Small Cap Growth	**8.4**	**57.5**	**27.7**	**-6.0**	**30.3**	**6.6**	**-0.6**	**4.7**	**52.0**	**11.1**
Russell 2000 Growth Index	*2.8*	*34.6*	*28.5*	*-9.3*	*22.2*	*11.3*	*-1.4*	*5.6*	*43.3*	*14.6*
IM U.S. Small Cap Growth Equity (MF) Median	8.9	37.2	27.8	-5.1	20.7	9.8	-2.4	2.8	42.9	13.4
Pier Capital Small Cap Growth Rank	54	15	51	59	12	78	29	29	7	71
Equity Holdings	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**
International Equity	**10.5**	**21.3**	**23.9**	**-14.4**	**28.3**	**-0.6**	**-1.5**	**-4.4**	**21.5**	**24.3**
International Equity Benchmark	*7.8*	*10.7*	*21.5*	*-14.5*	*25.0*	*1.0*	*-0.8*	*-4.9*	*22.8*	*17.3*
Acadian Non-US All Cap Equity Fund,USD Hedged	**23.4**	**9.7**	**20.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
MSCI EAFE US Dollar Hedged Index (Net)	*19.4*	*2.5*	*24.6*	*-9.0*	*16.8*	*6.1*	*5.0*	*5.7*	*26.7*	*17.5*
IM International Multi-Cap Core Equity (MF) Median	10.5	7.5	21.2	-14.9	25.2	1.1	-0.9	-5.0	20.5	17.7
Acadian Non-US All Cap Equity Fund,USD Hedged Rank	1	31	58	-	-	-	-	-	-	-
Harbor Diversified International All Cap Ret	**10.3**	**8.4**	**23.9**	**-13.7**	**24.6**	**-**	**-**	**-**	**-**	**-**
MSCI AC World ex USA (Net)	*7.8*	*10.7*	*21.5*	*-14.2*	*27.2*	*4.5*	*-5.7*	*-3.9*	*15.3*	*16.8*
IM International Large Cap Core Equity (MF) Median	10.3	8.5	22.1	-15.7	24.4	1.3	-2.7	-5.9	20.3	18.6
Harbor Diversified International All Cap Ret Rank	52	52	29	24	48	-	-	-	-	-
Causeway International Value Instl	**9.1**	**5.4**	**20.1**	**-18.6**	**27.2**	**0.4**	**-3.0**	**-6.2**	**24.2**	**24.5**
MSCI EAFE Value Index (Net)	*10.9*	*-2.6*	*16.1*	*-14.8*	*21.4*	*5.0*	*-5.7*	*-5.4*	*23.0*	*17.7*
IM International Large Cap Value Equity (MF) Median	14.5	2.5	18.5	-17.8	22.1	1.2	-2.2	-9.6	21.3	17.6
Causeway International Value Instl Rank	92	13	18	86	11	64	70	20	2	1
Vanguard International Growth Adm	**-0.7**	**59.7**	**31.5**	**-12.6**	**43.2**	**1.8**	**-0.5**	**-5.5**	**23.1**	**20.2**
MSCI AC World ex USA Growth (Net)	*5.1*	*22.2*	*27.3*	*-14.4*	*32.0*	*0.1*	*-1.3*	*-2.6*	*15.5*	*16.7*
IM International Large Cap Growth Equity (MF) Median	8.7	16.7	27.1	-15.0	29.5	-0.9	0.0	-5.0	18.5	19.0
Vanguard International Growth Adm Rank	96	1	5	32	1	16	58	62	5	28

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Manager Performance

West Hartford Total Pension **As of March 31, 2022**

	Performance(%)									
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Real Estate	**18.9**	**-0.3**	**6.0**	**6.3**	**6.5**	**8.6**	**13.0**	**8.6**	**9.8**	**10.2**
NCREIF Fund Index - ODCE (net)	*21.0*	*0.3*	*4.4*	*7.4*	*6.7*	*7.8*	*14.0*	*11.5*	*12.9*	*9.8*
Barings Core Property Fund LP	**18.9**	**-0.3**	**6.0**	**6.3**	**6.5**	**8.6**	**13.0**	**8.6**	**9.8**	**10.2**
NCREIF Fund Index - ODCE (net)	*21.0*	*0.3*	*4.4*	*7.4*	*6.7*	*7.8*	*14.0*	*11.5*	*12.9*	*9.8*

Manager performance for mutual funds and ETFs is based on NAV and provided by Lipper. Performance for non-mutual fund or ETF investments is based on the returns provided by managers, calculations based on a manager statement, or calculations based on a statement or data from the client's custodian. Funds may include returns of an equivalent share class with a longer return history if period includes dates prior to the fund's inception. Returns are net of fees unless otherwise stated. The fund's inception date represents the first month the client made the investment. Composite performance includes all funds held in the composite since inception. Inception dates for asset class composites reflect the start date at which these returns could be calculated using historical and existing system capabilities and may vary from the inception dates of underlying component strategies.

Investment Gain/Loss Summary

West Hartford Total Pension — **1 Quarter Ending March 31, 2022**

	Market Value as of 01/01/2022	Net Contributions	Gain/Loss	Market Value As of 03/31/2022
West Hartford Total Pension	**384,591,877**	**110,047,788**	**-26,703,572**	**467,936,093**
Short Term Liquidity	**243,869**	**-**	**17**	**243,886**
AllSpring Govt Money Market Fund	243,869	-	17	243,886
Fixed Income	**110,172,003**	**35,975,000**	**-8,057,743**	**138,089,260**
Vanguard Total Bond Market Index Instl	62,566,172	20,125,000	-4,504,490	78,186,683
Metropolitan West Total Return Bond Pl	47,605,831	15,850,000	-3,553,253	59,902,578
Domestic Equity	**172,641,338**	**41,547,788**	**-10,981,505**	**203,207,621**
Vanguard Total Stock Market Index Instl	124,541,051	28,900,000	-7,168,890	146,272,161
T. Rowe Price Instl Large Cap Value	16,843,186	2,750,000	132,453	19,725,639
Silvercrest Small Cap Value	16,576,070	3,007,000	-1,042,574	18,540,496
Pier Capital Small Cap Growth	14,675,311	6,890,788	-2,902,495	18,663,605
Equity Holdings	5,720	-	-	5,720
International Equity	**79,326,490**	**28,525,000**	**-7,241,964**	**100,609,526**
Acadian Non-US All Cap Equity Fund,USD Hedged	18,674,516	6,875,000	-582,224	24,967,291
Harbor Diversified International All Cap Ret	20,300,011	6,000,000	-1,446,585	24,853,425
Causeway International Value Instl	20,381,070	6,400,000	-1,310,248	25,470,821
Vanguard International Growth Adm	19,970,894	9,250,000	-3,902,906	25,317,988
Real Estate	**22,208,177**	**4,000,000**	**-422,377**	**25,785,801**
Barings Core Property Fund LP	22,208,177	4,000,000	-422,377	25,785,801

Portfolio Statistics

West Hartford Total Pension | **As of March 31, 2022**

	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Return	-6.1	2.1	11.0	9.5	9.2	6.5	01/2001
Standard Deviation	0.0	8.8	14.8	13.3	10.2	11.9	
Upside Risk	0.0	3.2	13.1	11.5	9.5	9.9	
Downside Risk	6.1	6.1	9.1	8.3	6.1	7.5	
vs. Pension Blended Benchmark							
Alpha	-	-2.8	-0.7	-0.6	-0.9	-0.6	
Beta	-	1.0	1.1	1.1	1.1	1.1	
Information Ratio	-	-3.1	0.2	0.2	0.0	-0.1	
Tracking Error	0.0	0.9	2.0	1.8	1.5	1.7	
vs. 90 Day U.S. Treasury Bill							
Sharpe Ratio	-	0.3	0.7	0.7	0.8	0.5	

Calculation based on quarterly periodicity.

Estimated Fee Analysis

West Hartford Total Pension

As of March 31, 2022

	Market Value ($)	Estimated Annual Fee ($)	Estimated Annual Fee (%)	Fee Schedule Details (Ex. Mutual Fund Investments)
West Hartford Total Pension	**467,936,093**	**1,543,432**	**0.33**	
Short Term Liquidity	**243,886**	**-**	**-**	
AllSpring Govt Money Market Fund	243,886	-	-	
Fixed Income	**138,089,260**	**249,005**	**0.18**	
Vanguard Total Bond Market Index Instl	78,186,683	27,365	0.04	
Metropolitan West Total Return Bond Pl	59,902,578	221,640	0.37	
Domestic Equity	**203,207,621**	**379,296**	**0.19**	
Vanguard Total Stock Market Index Instl	146,272,161	43,882	0.03	
T. Rowe Price Instl Large Cap Value	19,725,639	112,436	0.57	
Silvercrest Small Cap Value	18,540,496	148,324	0.80	0.80 % of First $20 M 0.72 % of Next $30 M 0.64 % of Next $50 M 0.56 % Thereafter
Pier Capital Small Cap Growth	18,663,605	74,654	0.40	Performance Based 0.40 and 20.00
Equity Holdings	5,720	-	-	
International Equity	**100,609,526**	**663,719**	**0.66**	
Acadian Non-US All Cap Equity Fund,USD Hedged	24,967,291	187,255	0.75	0.75 % of Assets
Harbor Diversified International All Cap Ret	24,853,425	178,945	0.72	
Causeway International Value Instl	25,470,821	216,502	0.85	
Vanguard International Growth Adm	25,317,988	81,018	0.32	
Real Estate	**25,785,801**	**251,412**	**0.98**	
Barings Core Property Fund LP	25,785,801	251,412	0.98	0.98 % of Assets

The figures on this page have been obtained from sources we deem to be reliable. Fiducient Advisors has not independently verified this information.

Fee calculations for mutual funds represent fees at the net expense level. Fee calculations for commingled funds and/or alternative investments reflect base management fees and exclude underlying fund expenses captured at the NAV level, any applicable performance-based fees, or incentive fees. Fees for fund of funds are shown at the fund of fund level and do not include fees charged by underlying investment managers/funds.

Liquidity Schedule

As of March 31, 2022

Investments	Inception	Subscriptions	Redemptions	Liquidity Terms	Market Value ($)	Liquid ($)	Semi Liquid ($)	Illiquid ($)
AllSpring Govt Money Market Fund	06/2010	Daily	Liquid		243,886	243,886	-	-
Vanguard Total Bond Market Index Instl	10/2010	Daily	Liquid		78,186,683	78,186,683	-	-
Metropolitan West Total Return Bond Pl	04/2015	Daily	Liquid		59,902,578	59,902,578	-	-
Vanguard Total Stock Market Index Instl	05/2009	Daily	Liquid		146,272,161	146,272,161	-	-
T. Rowe Price Instl Large Cap Value	06/2005	Daily	Liquid		19,725,639	19,725,639	-	-
Silvercrest Small Cap Value	11/2016	Daily	Liquid		18,540,496	18,540,496	-	-
Pier Capital Small Cap Growth	12/2000	Daily	Liquid		18,663,605	18,663,605	-	-
Equity Holdings	11/2016				5,720	-	-	-
Acadian Non-US All Cap Equity Fund,USD Hedged	04/2018	Daily	Liquid	Contributions and redemptions daily with 2 business days notice	24,967,291	24,967,291	-	-
Harbor Diversified International All Cap Ret	02/2018	Daily	Liquid		24,853,425	24,853,425	-	-
Causeway International Value Instl	04/2004	Daily	Liquid		25,470,821	25,470,821	-	-
Vanguard International Growth Adm	02/2018	Daily	Liquid		25,317,988	25,317,988	-	-
Barings Core Property Fund LP	01/2008	Quarterly	Semi Liquid	Contributions and redemptions quarterly with 30 days notice Redemptions subject to fund level queue	25,785,801	-	25,785,801	-
Total ($)					**467,936,093**	**442,144,573**	**25,785,801**	**-**

Liquid – daily to monthly | Semi-Liquid – greater than monthly and up to one year | Illiquid – greater than one year

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Asset Allocation

West Hartford POB ST Account | As of March 31, 2022

	Asset Allocation ($)	Asset Allocation (%)	Target Allocation (%)	Differences (%)
West Hartford POB ST Account	**104,586,469**	**100.0**	**100.0**	**0.0**
Short Term Liquidity	**74**	**0.0**	**0.0**	**0.0**
AllSpring Govt Money Market Fund	74	0.0	0.0	0.0
Fixed Income	**104,586,395**	**100.0**	**100.0**	**0.0**
Baird Ultra Short Term Bond Fund Instl	53,208,611	50.9	50.0	0.9
Payden Limited Maturity Fund SI	26,475,107	25.3	25.0	0.3
Vanguard Short Term Invst Grade Inst	24,902,677	23.8	25.0	-1.2

Performance Overview

West Hartford POB ST Account — As of March 31, 2022

Trailing Performance Summary

	QTD	Fiscal YTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
West Hartford POB ST Account	**-1.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-1.6**	**08/2021**
POB ST Blended Benchmark	*-1.0*	*-*	*-*	*-*	*-*	*-*	*-*	*-1.3*	*08/2021*

Calendar Year Performance Summary

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
West Hartford POB ST Account	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
POB ST Blended Benchmark	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*

Plan Reconciliation

	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
West Hartford POB ST Account							**08/2021**
Beginning Market Value	214,645,209	-	-	-	-	269,288,163	
Net Contributions	-108,000,000	-	-	-	-	-162,000,000	
Gain/Loss	-2,058,741	-	-	-	-	-2,701,694	
Ending Market Value	104,586,469	-	-	-	-	104,586,469	

Benchmark Composition

	Weight (%)
Aug-2021	
90 Day U.S. Treasury Bill	25.0
Blmbg. U.S. Credit 1-5 Year Index	25.0
Blmbg. Short-term Government/Corporate	50.0

Manager Performance

West Hartford POB ST Account | As of March 31, 2022

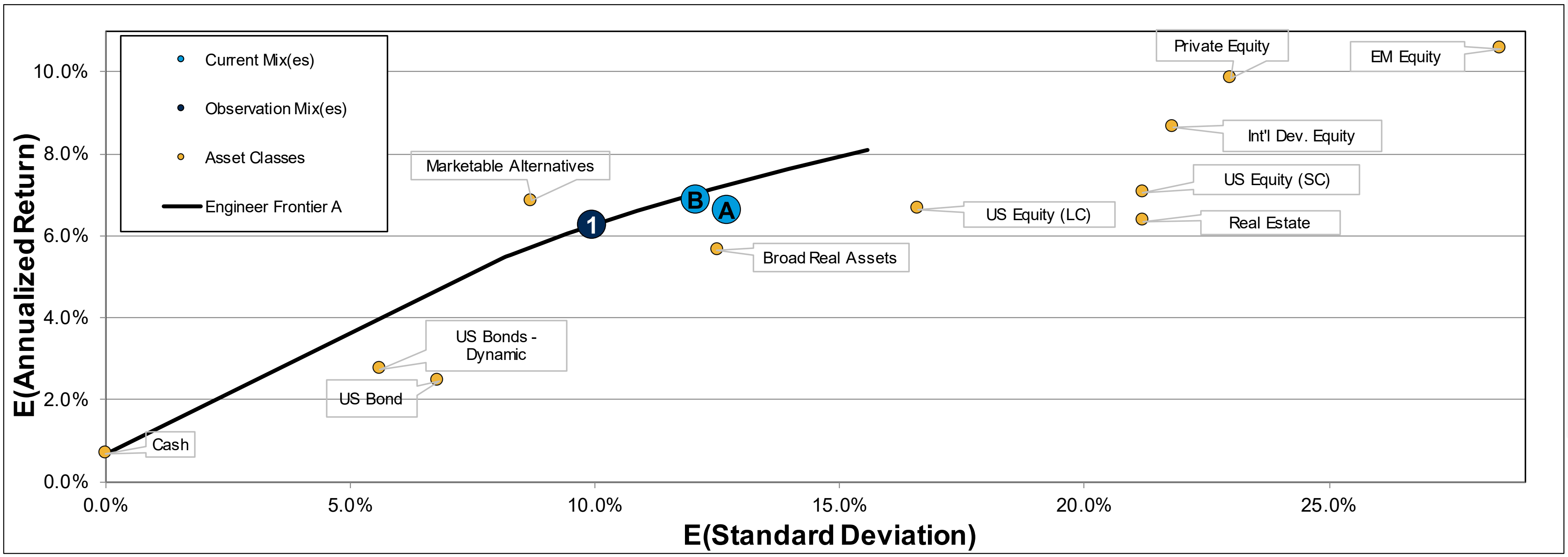
	Allocation		Performance(%)								Manager Status
	Market Value ($)	%	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	
West Hartford POB ST Account	**104,586,469**	**100.0**	**-1.3**	**-**	**-**	**-**	**-**	**-**	**-1.6**	**08/2021**	
POB ST Blended Benchmark			*-1.0*	*-*	*-*	*-*	*-*	*-*	*-1.3*		
Short Term Liquidity	**74**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**0.0**	**08/2021**	
90 Day U.S. Treasury Bill			*0.0*	*0.1*	*0.1*	*0.8*	*1.1*	*0.6*	*0.1*		
AllSpring Govt Money Market Fund	**74**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**0.0**	**08/2021**	
90 Day U.S. Treasury Bill			*0.0*	*0.1*	*0.1*	*0.8*	*1.1*	*0.6*	*0.1*		
Fixed Income	**104,586,395**	**100.0**	**-1.4**	**-**	**-**	**-**	**-**	**-**	**-1.7**	**08/2021**	
POB ST Fixed Income Benchmark			*-1.0*	*-1.2*	*-*	*-*	*-*	*-*	*-1.3*		
Baird Ultra Short Term Bond Fund Instl	**53,208,611**	**50.9**	**-0.5**	**-0.4**	**-0.3**	**1.2**	**1.5**	**-**	**-0.5**	**08/2021**	**Maintain**
Blmbg. Short-term Government/Corporate			*-0.3*	*-0.3*	*-0.2*	*1.0*	*1.3*	*0.9*	*-0.3*		
IM U.S. Short Term Investment Grade (MF) Median			-2.4	-2.6	-2.1	1.1	1.4	1.3	-2.8		
Baird Ultra Short Term Bond Fund Instl Rank			12	8	6	44	41	-	8		
Payden Limited Maturity Fund SI	**26,475,107**	**25.3**	**-0.6**	**-0.6**	**-0.4**	**1.3**	**1.6**	**1.2**	**-0.6**	**08/2021**	**Maintain**
90 Day U.S. Treasury Bill			*0.0*	*0.1*	*0.1*	*0.8*	*1.1*	*0.6*	*0.1*		
IM U.S. Short Term Investment Grade (MF) Median			-2.4	-2.6	-2.1	1.1	1.4	1.3	-2.8		
Payden Limited Maturity Fund SI Rank			15	12	11	36	32	56	13		
Vanguard Short Term Invst Grade Inst	**24,902,677**	**23.8**	**-3.8**	**-4.3**	**-3.6**	**1.5**	**1.8**	**2.0**	**-4.7**	**08/2021**	**Maintain**
Blmbg. U.S. Credit 1-5 Year Index			*-3.6*	*-4.2*	*-3.6*	*1.6*	*2.0*	*2.1*	*-4.6*		
IM U.S. Short Term Investment Grade (MF) Median			-2.4	-2.6	-2.1	1.1	1.4	1.3	-2.8		
Vanguard Short Term Invst Grade Inst Rank			98	97	91	22	18	8	98		

Manager performance for mutual funds and ETFs is based on NAV and provided by Lipper. Performance for non-mutual fund or ETF investments is based on the returns provided by managers, calculations based on a manager statement, or calculations based on a statement or data from the client's custodian. Funds may include returns of an equivalent share class with a longer return history if period includes dates prior to the fund's inception. Returns are net of fees unless otherwise stated. The fund's inception date represents the first month the client made the investment. Composite performance includes all funds held in the composite since inception. Inception dates for asset class composites reflect the start date at which these returns could be calculated using historical and existing system capabilities and may vary from the inception dates of underlying component strategies.

Appendix A – Asset Allocation

Frontier Engineer® Analysis

4/30/2022	Asset Allocation														Forecasts				Past (1/88-4/22)	
	Fixed Income	Equity	Real Assets	Alternatives	Cash	US Bond	US Bonds - Dynamic	US Equity (LC)	US Equity (SC)	Int'l Dev. Equity	EM Equity	Real Estate	Broad Real Assets	Marketable Alternatives	Private Equity	Annualized Return	Annualized Volatility	Normal 100 Year Flood*	Non-Normal 100 Year Flood**	Annualized Return	Annualized Volatility
Current Mix (A)	30%	65%	5%			30.0%		29.3%	14.3%	17.3%	4.3%	5.0%				6.6%	12.7%	-22%	-29%	8.7%	10.5%
Portfolio with Alternatives (B)	28%	58%	5%	10%		20.0%	7.5%	25.3%	13.3%	15.3%	3.8%	2.5%	2.5%	5.0%	5.0%	6.9%	12.1%	-20%	-27%	8.8%	9.7%
6.25% Unconstrained Portfolio	43%	43%	5%	10%	0.0%	35.0%	7.5%	18.5%	6.0%	12.0%	6.0%	2.5%	2.5%	5.0%	5.0%	6.26%	9.9%	-16%	-22%	8.3%	7.6%



The expected one in a hundred worst case calendar year return based on normally distributed capital market assumptions. Greater losses are possible (1% expected likelihood).
***The expected one in a hundred worst case calendar year return based on non-normally distributed capital market assumptions (factoring in skewness & kurtosis). Greater losses are possible (1% expected likelihood).*
Historical Returns and Risk Metrics for each Mix represent back-tested calculations developed with the benefit of hindsight. Return calculations use an asset-weighted methodology based on the target asset allocation of each mix and the total return of index proxies used to represent each asset class and are gross of fees. Historical returns are hypothetical and do not represent returns earned by a client. It is not possible to invest in an index. Please see disclosures at the end of this presentation for additional important information, including index proxies used to represent each asset class. Please ask for a copy of Fiducient Advisor's white paper titled 10-Year Capital Market Forecasts. Past performance does not indicate future performance and it is possible to lose money when investing.

Capital Market Assumptions

Return & Risk Assumptions (Forecasts)	Arithmetic Return	Geometric Return	Standard Deviation	Skewness	Kurtosis
Cash	0.7%	0.7%	0.0%	0	0
US Bond	2.7%	2.5%	6.8%	-0.21	0.94
US Bonds - Dynamic	2.9%	2.8%	5.6%	-1.09	8.41
US Equity (LC)	8.0%	6.6%	16.6%	-0.60	1.08
US Equity (SC)	9.3%	7.0%	21.2%	-0.51	1.42
Int'l Dev. Equity	11.0%	8.6%	21.8%	-0.58	1.50
EM Equity	14.6%	10.5%	28.5%	-0.69	2.06
Real Estate	8.6%	6.3%	21.2%	-0.74	7.73
Broad Real Assets	6.4%	5.6%	12.5%	-1.70	10.31
Marketable Alternativ es	7.2%	6.8%	8.7%	-0.87	5.07
Private Equity	12.5%	9.8%	23.0%	0.00	0.00

January 1, 2022 Tw enty-Year Forecasted CMAs

Correlation Assumptions (Forecasts)	Cash	US Bond	US Bonds - Dynamic	US Equity (LC)	US Equity (SC)	Int'l Dev. Equity	EM Equity	Real Estate	Broad Real Assets	Marketable Alternatives	Private Equity
Cash	1	0	0	0	0	0	0	0	0	0	0
US Bond	0	1.00	0.35	0.18	0.09	0.15	0.03	0.21	0.33	0.08	-0.14
US Bonds - Dynamic	0	0.35	1.00	0.52	0.51	0.47	0.53	0.53	0.72	0.50	0.16
US Equity (LC)	0	0.18	0.52	1.00	0.84	0.69	0.67	0.62	0.61	0.59	0.37
US Equity (SC)	0	0.09	0.51	0.84	1.00	0.62	0.67	0.70	0.63	0.63	0.37
Int'l Dev. Equity	0	0.15	0.47	0.69	0.62	1.00	0.71	0.50	0.59	0.58	0.32
EM Equity	0	0.03	0.53	0.67	0.67	0.71	1.00	0.47	0.58	0.67	0.31
Real Estate	0	0.21	0.53	0.62	0.70	0.50	0.47	1.00	0.82	0.35	0.19
Broad Real Assets	0	0.33	0.72	0.61	0.63	0.59	0.58	0.82	1.00	0.52	0.22
Marketable Alternativ es	0	0.08	0.50	0.59	0.63	0.58	0.67	0.35	0.52	1.00	0.50
Private Equity	0	-0.14	0.16	0.37	0.37	0.32	0.31	0.19	0.22	0.50	1.00

For additional information on forecast methodologies, please speak with your advisor. Please see Index Proxy Summary slide at the end of this presentation for summary of indexes used to represent each asset class. Past performance does not indicate future performance.

Current & Prospective Portfolios

	Current Portfolio	Prospective Portfolio
Short Term Liquidity	**0.0%**	**0.0%**
Allspring Money Market Fund	0.0%	0.0%
Fixed Income	**30.0%**	**27.5%**
Vanguard Total Bond Market Index Instl	17.0%	14.0%
Metropolitan West Total Return Bond Pl	13.0%	6.0%
Core + FI Manager #2 - Dynamic	0.0%	7.5%
Domestic Equity	**43.5%**	**38.5%**
Vanguard Total Stock Market Index Instl	31.3%	26.3%
T. Rowe Price Instl Large Cap Value	4.3%	4.3%
Silvercrest Small Cap Value	4.0%	2.0%
SCV Manager #2	0.0%	2.0%
Pier Small Cap Growth	4.0%	2.0%
SCG Manager #2	0.0%	2.0%
International Equity	**21.5%**	**19.0%**
Acadian Non-US All Cap Equity Fund	5.0%	4.5%
Harbor Diversified International All Cap R	5.5%	5.0%
Causeway International Value Instl	5.5%	4.8%
Vanguard International Growth Adm	5.5%	4.8%
Real Assets	**5.0%**	**5.0%**
Baring Core Property Fund LP	5.0%	2.5%
Real Estate / Real Asset Manager #2	0.0%	2.5%
Marketable Alternatives	**0.0%**	**5.0%**
Private Equity	**0.0%**	**5.0%**

HarbourVest Global Fund 2022

The HarbourVest Global Fund intends to construct a diversified portfolio over the course of an 18-to-24-month investment period and expects allocations of 45-55 percent in primary investments (15-20 investments), 25-35 percent in secondary investments and 15-25 percent in direct co-investments.

Firm & Team

- Founded as one of the first closed-end, institutionally-backed US private equity fund of funds in 1982.
- HarbourVest has committed more than $88 billion in capital to primary, secondary, and direct co-investments.
- The Firm has offices around the globe and manages capital for a wide variety of clients with specialized strategies across Private Equity, Private Credit and Real Assets.

Fund Strategy

- The Global Fund is an annual offering from HarbourVest that began in 2014 and has raised approximately $6.5B to date.
- The 2022 Global Fund intends to construct a diversified portfolio over the course of an 18 to 24 month investment period, taking advantage of attractive opportunities across the global private equity market with an emphasis on North America and Europe.
- The Fund intends allocate to 45-55% in primary investments (other private equity managers), 25-35% in secondary investments and 15-25% in direct co-investments.
- The Fund will primarily consist of traditional buyout investments (65-75%) and will also be diversified across other private equity strategy types including venture capital, growth equity, and special situation investments.

Key Terms

Strategy: Fund of Funds
Geography: Global
Target AUM: $1.4 B
Vintage Year: 2022
Final Closing: Q4 2022
Stated Minimum: $5 MM
Qualification: Qualified Purchasers
Structure: Limited Partnership
Fund Terms: 10-year term with 3 one-year extensions

Fees

Management Fee: 0.69%
Carried Interest: 0% on Fund Investments 12.5% on Secondary and Co-Investments
Preferred Return: 8%

Competitive Advantages

- ***Global market presence with low-cost fund structure* –** HarbourVest's local presence in Europe and Asia, extensive experience and track record of success in all areas of private equity helps distinguish HarbourVest from other fund of funds offerings. No carried interest on primary investments, and a large allocation to secondary and co-investments all help to mitigate the impact of fees in a fund of fund structure.
- ***Inclusion of secondary investments helps reduce J- curve* –** The early integration of secondary investments should help reduce the Fund's J-curve, accelerate the capital deployment, and return money to investors quicker, all of which are common drawbacks in a traditional fund of funds structure.
- ***Long-standing relationships with established private equity managers* –** HarbourVest is viewed as a stable and crucial fundraising partner for GPs which helps when negotiating fund capacity and occasionally leads to preferential fee terms that are passed along to the limited partners.

Risks

- ***Size of the HarbourVest allocations will limit ability to invest with smaller funds and emerging managers*** – The check sizes, along with the allocation from the parallel HarbourVest strategies, makes it difficult to partner with emerging managers and funds in the lower middle market and middle market. Although many of the market dynamics in the lower end of the market create compelling opportunities, the Global Fund program provides a solution that minimizes administrative burden and likely lowers the dispersion of potential outcomes through broad diversification and concentration in large funds.
- ***Increased single vintage year risk compared to traditional fund of funds* –** HarbourVests's Global Fund program will typically invest over an 18-month timeframe compared to traditional private equity fund of funds that will invest across three vintage years or more.

Ironwood Capital Management

Ironwood Capital Management ("Ironwood", or "the Firm") launched Ironwood Partners L.P. ("the Fund") in 1996 as a global multi strategy hedge fund of funds with a focus on relative value, event-driven, equity market neutral, credit opportunities, distressed securities, and various arbitrage-based strategies.

Firm & Team

- Ironwood was founded in 1996 by Frederick Gans following his employment as a Managing Director at Bear, Stearns & Co. Jonathan Gans is the current CEO and President of Ironwood, while Frederick Gans now serves in an advisory role.
- The investment allocation process is overseen and driven by the Investment & Risk Committee, which is made up of Jonathan Gans, Benjamin Zack, Managing Director, and Simon Hong, Director.
- The Firm manages approximately $4 billion in assets and is headquartered in San Francisco with an additional office in Chicago.
- Ironwood employs 32 professionals and is wholly owned by its employees and founding partners.
- The Firm manages three product offerings intended for different types of investors: Ironwood Partners, Ironwood Non-Dollar Fund SPC, and Ironwood Institutional Multi-Strategy Fund LLC.

Fund Strategy

- The Fund focuses on institutional quality managers in relative value, event-driven, equity market neutral, credit opportunities, distressed securities, and various arbitrage-based investment strategies. The Fund will avoid investing in more volatile strategies such as directional long/short, global macro, commodity trading advisors, and managed futures.
- Ironwood's portfolio construction process combines bottom-up manager identification and top-down sector forecasting centered on gaining comfort with an underlying fund's strategy, management team, operations, and track record.
- The Fund will hold 15 to 25 underlying managers at any given time with approximately 65% to 80% of the total allocation represented by the top 10 holdings.

Reasons to Own

- ***Investment Banking Pedigree*** – Given the investment banking background of key professionals, Ironwood has an edge in vetting managers that focus on corporate restructuring and merger/risk arbitrage.
- ***Boutique Firm Structure*** **–** The boutique structure results in a specialized and efficient investment decision making process.
- ***Stable Leadership at the Firm and Fund*** **–** Tenure of key leadership and investment professionals at Ironwood average 15 years.

Risks

- ***Portfolio Concentration*** – It is essential to continuously monitor the number of underlying positions in the Fund to ensure top managers are allocated as impactful portions of Fund capital and more volatile managers are prohibited from negatively impacting the risk parameters outlined by the Fund. The total number of underlying positions in the Fund has steadily declined over the years resulting in a more concentrated portfolio.

Key Terms

Strategy: Hedge Fund of Funds
Geography: Global
Inception Year: 1996
Stated Minimum: $1 MM
Qualification: Qualified Purchasers
Structure: Limited Partnership
Liquidity Terms: Semiannually with 95 days notice
Lock Up: 1-year

Fees

Management: 0.95%
Performance: None

1Q.2022

DWS RREEF Real Assets Fund

Eligible for $250,000 NAV purchase privilege†

DWS

Share Class: A I AAAAX C I AAAPX S I AAASX INST I AAAZX R I AAAQX R6 I AAAVX

Morningstar® Rating[3]

Morningstar World Allocation Category

OVERALL RATING (as of 3/31/22)

Class S ★ ★ ★ ★

Overall Morningstar ratings 4 stars; 407 funds. Three year rating 5 stars; 407 funds. Five year rating 5 stars; 361 funds. Ten year rating 3 stars; 251 funds. Morningstar ratings are based on risk-adjusted performance. Source: Morningstar, Inc. Ratings are historical and do not guarantee future results. Ratings for other share classes may vary.

REFINITIV LIPPER FUND AWARDS

2022 WINNER
UNITED STATES

BEST REAL RETURN FUND OVER 5 AND 10 YEARS

Class R6: 5 years, of 16 funds;
Institutional Class: 10 years, of 13 funds.
Based on risk adjusted return**

Objective

The fund seeks total return in excess of inflation through capital growth and current income.

Strategy

The fund's investment process is based on the team's philosophy that macro-economic environments have historically driven top-down sector performance within the real asset universe while stock selection has been a key driver of returns within the asset classes. As such, the investment process combines top-down strategic and tactical allocations with fundamental bottom-up stock selection to create a holistic portfolio of real assets across real estate, infrastructure, natural resource equities, commodity futures and TIPS.

AVERAGE ANNUAL TOTAL RETURNS* (as of 3/31/22)

Share class	YTD	1-year	3-year	5-year	10-year	Since inception	Inception date
Share classes with no sales charge							
S	4.24%	21.65%	12.99%	11.05%	6.21%	4.82%	7/30/07
INST	4.31%	21.83%	13.17%	11.19%	6.37%	4.93%	7/30/07
R	4.18%	21.16%	12.54%	10.59%	5.80%	4.40%	6/1/11
R6	4.31%	21.92%	13.20%	11.21%	–	7.25%	11/28/14
Blended benchmark[1]	5.50%	21.68%	9.86%	8.26%	5.83%	–	–
MSCI World Index[2]	-5.15%	10.12%	14.98%	12.42%	10.88%	–	–
Unadjusted for sales charge (would be lower if adjusted)							
A	4.20%	21.49%	12.83%	10.89%	6.05%	4.65%	7/30/07
C	4.07%	20.53%	12.01%	10.06%	5.25%	3.84%	7/30/07
Adjusted for maximum sales charge							
A (max 5.75% load)	-1.79%	14.50%	10.62%	9.58%	5.42%	4.22%	7/30/07
C (max 1.00% CDSC)	3.07%	20.53%	12.01%	10.06%	5.25%	3.84%	7/30/07

HISTORICAL TOTAL RETURNS (as of 3/31/22)

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
S	23.64%	3.88%	21.54%	-5.17%	14.83%	4.20%	-9.66%	3.32%	0.91%	9.52%

Performance is historical and does not guarantee future results. Investment returns and principal fluctuate so your shares may be worth more or less when redeemed. Current performance may differ from the data shown. Please visit www.dws.com for the fund's most recent month-end performance. Performance includes reinvestment of all distributions. Index returns assume reinvestment of all distributions and do not reflect fees or expenses. It is not possible to invest directly in an index. Not all share classes are available to all investors. A minimum investment of $1 million is required to open an account for Institutional shares.

* Class R performance prior to inception reflects that of Class A. Returns prior to inception reflect the original share class performance, adjusted for higher operating expenses and/or the maximum sales charge.

† If you're investing $250,000 or more, you may be eligible to purchase Class A shares of this fund without a sales charge. However, redemptions within 12 months may be subject to sales charges. See the prospectus for details.

**The Refinitiv Lipper Fund Awards, granted annually, highlight funds and fund companies that have excelled in delivering consistently strong risk-adjusted performance relative to their peers. The Refinitiv Lipper Fund Awards are based on the Lipper Leader for Consistent Return rating, which is a risk-adjusted performance measure calculated over 36, 60 and 120 months. The fund with the highest Lipper Leader for Consistent Return (Effective Return) value in each eligible classification wins the Refinitiv Lipper Fund Award. For more information, see lipperfundawards.com Although Refinitiv Lipper makes reasonable efforts to ensure the accuracy and reliability of the data contained herein, the accuracy is not guaranteed by Refinitiv Lipper.

EXPENSE RATIO (as of latest prospectus)

Class	Net	Gross	Contractual Waiver
A	1.22%	1.33%	07/31/2022
C	1.97%	2.08%	07/31/2022
S	1.07%	1.16%	07/31/2022
INST	0.90%	1.03%	07/31/2022
R	1.47%	1.71%	07/31/2022
R6	0.90%	0.95%	07/31/2022

PORTFOLIO AND RISK STATISTICS[4] (3/31/22)

Fund inception date	7/30/2007
Number of holdings	181
Total net assets	$5.5 billion
Beta[§]	1.09
Standard deviation[§]	13.56

PORTFOLIO MANAGEMENT/INDUSTRY EXPERIENCE

John W. Vojticek	26 years
Francis X. Greywitt III	22 years
Evan Rudy CFA	15 years

FUND INFORMATION

Class	Symbol	CUSIP
A	AAAAX	25159K879
C	AAAPX	25159K887
S	AAASX	25159K804
INST	AAAZX	25159K705
R	AAAQX	25159K200
R6	AAAVX	25159K713

FUND DETAILS (fund data as of 3/31/22)

Fund inception date	7/30/2007
Total net assets	$5.5 billion

TOP EQUITY HOLDINGS (3/31/22)

Crown Castle	4.8%
Sempra Energy	3.5%
SBA Communications	3.2%
Cheniere Energy	2.9%
Nutrien	2.6%
CSX	2.0%
National Grid	2.0%
Prologis	1.8%
Welltower	1.8%
Williams Companies	1.8%

Holdings-based data is subject to change.

SECTOR ALLOCATION (3/31/22)

Infrastructure	37%
Real estate	25%
Commodity futures	15%
Natural resource equities	14%
TIPS	9%

SECURITY TYPE (3/31/22)

Common stocks	66%
U.S. gov/agency	19%
Mutual funds	13%
Cash equivalents	3%

[1] Portfolio management believes that the blended index reflects the different components of the fund's typical asset allocations. Blended Index: 30% Dow Jones Brookfield Global Infrastructure Index measures the stock performance of companies that exhibit strong infrastructure characteristics. Index components are required to have more than 70% of cash flows derived from infrastructure lines of business. The index intends to measure all sectors of the infrastructure market (as of 3/31/22; 17.45% for the 1-yr, 8.57% for the 3-yr, 8.00% for the 5-yr, 8.55% for the 10-yr); 30% FTSE EPRA/NAREIT Developed Index represents general trends in global real estate equities (as of 3/31/22; 14.48% for the 1-yr, 5.43% for the 3-yr, 6.50% for the 5-yr, 6.91% for the 10-yr); 15% Bloomberg Commodity Index is composed of a diversified group of commodities and futures contracts on physical commodities (as of 3/31/22; 49.25% for the 1-yr, 16.12% for the 3-yr, 9.00% for the 5-yr, -0.70% for the 10-yr); 15% S&P Global Natural Resources Index includes 90 of the largest publicly-traded companies in natural resources and commodities businesses that meet specific investability requirements, offering investors diversified and investable equity exposure across 3 primary commodity-related sectors: agribusiness, energy and metals/mining (as of 3/31/22; 29.96% for the 1-yr, 14.57% for the 3-yr, 11.73% for the 5-yr, 4.84% for the 10-yr);.10% Bloomberg U.S. Treasury Inflation Notes Total Return Index includes all publicly-traded U.S. Treasury inflation-protected securities that have at least one year remaining to maturity, are rated investment grade and have $250 million or more of outstanding face value (as of 3/31/22; 4.29% for the 1-yr, 6.22% for the 3-yr, 4.43% for the 5-yr, 2.69% for the 10-yr).

[2] The MSCI World Index tracks the performance of stocks in select developed markets around the world, including the United States.

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[4] Beta is a historical measurement of a fund's sensitivity to the movements of the fund's benchmark index. A fund with a beta greater than one is more volatile than the benchmark. A fund with a beta less than one is less volatile. Beta is based on a three-year period relative to the index. Standard deviation is a three-year statistical measure of the volatility of a fund's returns. Generally, the greater the standard deviation, the greater the fund's volatility. [§]Source: Morningstar, Inc. as of 02/28/2022.

War, terrorism, sanctions, economic uncertainty, trade disputes, public health crises and related geopolitical events have led and, in the future, may lead to significant disruptions in U.S. and world economies and markets, which may lead to increased market volatility and may have significant adverse effects on the fund and its investments.

Fund risk: Stocks may decline in value. Investing in foreign securities presents certain risks, such as currency fluctuations, political and economic changes, and market risks. Emerging markets tend to be more volatile and less liquid than the markets of more mature economies, and generally have less diverse and less mature economic structures and less stable political systems than those of developed countries. There are special risks associated with an investment in real estate, including REITs. These risks include credit risk, interest rate fluctuations and the impact of varied economic conditions. Companies in the infrastructure, transportation, energy and utility industries may be affected by a variety of factors, including, but not limited to, high interest costs, energy prices, high degrees of leverage, environmental and other government regulations, the level of government spending on infrastructure projects, intense competition and other factors. The fund invests in commodity-linked derivatives which may subject the fund to special risks. Market price movements or regulatory and economic changes will have a significant impact on the fund's performance. Bond investments are subject to interest-rate, credit, liquidity and market risks to varying degrees. When interest rates rise, bond prices generally fall. Credit risk refers to the ability of an issuer to make timely payments of principal and interest. Investing in derivatives entails special risks relating to liquidity, leverage and credit that may reduce returns and/or increase volatility. Any fund that focuses in a particular segment of the market or region of the world will generally be more volatile than a fund that invests more broadly. The fund may lend securities to approved institutions. Please read the prospectus for details.

Consider the investment objective, risks, charges and expenses carefully before investing. For a summary prospectus, or prospectus that contains this and other information, download one from www.dws.com or talk to your financial representative. Read the prospectus carefully before investing.

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Definitions & Disclosures

Please note: Due to rounding methodologies of various data providers, certain returns in this report might differ slightly when compared to other sources

REGULATORY DISCLOSURES

Offer of ADV Part 2A: Rule 204-3 under the Investment Advisers Act of 1940 requires that we make an annual offer to clients to send them, without charge, a written disclosure statement meeting the requirements of such rule. We will be glad to send a copy of our ADV Part 2A to you upon your written request to compliance@fiducient.com.

INDEX DEFINITIONS

- **Citigroup 3 Month T-Bill** measures monthly return equivalents of yield averages that are not marked to market. The Three-Month Treasury Bill Indexes consist of the last three three-month Treasury bill issues.
- **Ryan 3 Yr. GIC** is an arithmetic mean of market rates of $1 million Guaranteed Interest Contracts held for three years.
- **Bloomberg Barclays Treasury U.S. T-Bills-1-3 Month Index** includes aged U.S. Treasury bills, notes and bonds with a remaining maturity from 1 up to (but not including) 3 months. It excludes zero coupon strips.
- **Bloomberg Barclays Capital US Treasury Inflation Protected Securities Index** consists of Inflation-Protection securities issued by the U.S. Treasury.
- **Bloomberg Barclays Muni Index** is a rules-based, market-value-weighted index engineered for the long-term tax-exempt bond market. Bonds must be rated investment-grade by at least two ratings agencies.
- **Bloomberg Barclays Muni 1 Year Index** is the 1-year (1-2) component of the Municipal Bond index.
- **Bloomberg Barclays Muni 3 Year Index** is the 3-year (2-4) component of the Municipal Bond index.
- **Bloomberg Barclays Muni 5 Year Index** is the 5-year (4-6) component of the Municipal Bond index.
- **Bloomberg Barclays Muni 7 Year Index** is the 7-year (6-8) component of the Municipal Bond index.
- **Bloomberg Barclays Intermediate U.S. Gov't/Credit** is the Intermediate component of the U.S. Government/Credit index, which includes securities in the Government and Credit Indices. The Government Index includes treasuries and agencies, while the credit index includes publicly issued U.S. corporate and foreign debentures and secured notes that meet specified maturity, liquidity, and quality requirements.
- **Bloomberg Barclays U.S. Aggregate 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.
- **Bloomberg Barclays Global Aggregate ex. USD Indices** represent a broad-based measure of the global investment-grade fixed income markets. The two major components of this index are the Pan-European Aggregate and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds and Canadian government, agency and corporate securities.
- **Bloomberg Barclays U.S. Corporate High Yield Index** covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.
- **JP Morgan Government Bond Index-Emerging Market (GBI-EM) Index** is a comprehensive, global local emerging markets index, and consists of regularly traded, liquid fixed-rate, domestic currency government bonds to which international investors can gain exposure.
- **The S&P 500** is a capitalization-weighted index of 500 stocks designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.
- **The Dow Jones Industrial Index** is a price-weighted average of 30 blue-chip stocks that are generally the leaders in their industry.
- **The NASDAQ** is a broad-based capitalization-weighted index of stocks in all three NASDAQ tiers: Global Select, Global Market and Capital Market.
- **Russell 3000** is a market-cap-weighted index which consists of roughly 3,000 of the largest companies in the U.S. as determined by market capitalization. It represents nearly 98% of the investable U.S. equity market.
- **Russell 1000** consists of the largest 1000 companies in the Russell 3000 Index.
- **Russell 1000 Growth** measures the performance of those Russell 1000 companies with higher P/B ratios and higher forecasted growth values.
- **Russell 1000 Value** measures the performance of those Russell 1000 companies with lower P/B ratios and lower forecasted growth values.
- **Russell Mid Cap** measures the performance of the 800 smallest companies in the Russell 1000 Index.
- **Russell Mid Cap Growth** measures the performance of those Russell Mid Cap companies with higher P/B ratios and higher forecasted growth values.
- **Russell Mid Cap Value** measures the performance of those Russell Mid Cap companies with lower P/B ratios and lower forecasted growth values.
- **Russell 2000** consists of the 2,000 smallest U.S. companies in the Russell 3000 index.
- **Russell 2000 Growth** measures the performance of the Russell 2000 companies with higher P/B ratios and higher forecasted growth values.
- **Russell 2000 Value** measures the performance of those Russell 2000 companies with lower P/B ratios and lower forecasted growth values.
- **Russell 2500** consists of the 2,500 smallest U.S. companies in the Russell 3000 index.
- **Russell 2500 Growth** measures the performance of the Russell 2500 companies with higher P/B ratios and higher forecasted growth values.
- **Russell 2500 Value** measures the performance of those Russell 2500 companies with lower P/B ratios and lower forecasted growth values.
- **MSCI World** captures large and mid-cap representation across 23 Developed Markets countries. With 1,645 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.
- **MSCI ACWI (All Country World Index) ex. U.S. Index** captures large and mid-cap representation across 22 of 23 Developed Markets countries (excluding the United States) and 23 Emerging Markets countries. With 1,859 constituents, the index covers approximately 85% of the global equity opportunity set outside the US.
- **MSCI ACWI (All Country World Index) ex. U.S. Small Cap Index** captures small cap representation across 22 of 23 Developed Markets countries (excluding the US) and 23 Emerging Markets countries. With 4,368 constituents, the index covers approximately 14% of the global equity opportunity set outside the US.
- **MSCI EAFE** is an equity index which captures large and mid-cap representation across Developed Markets countries around the world, excluding the US and Canada. With 930 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

- **MSCI EAFE Value** captures large and mid-cap securities exhibiting overall value style characteristics across Developed Markets countries around the world, excluding the US and Canada. 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. With 507 constituents, the index targets 50% coverage of the free float- adjusted market capitalization of the MSCI EAFE Index.
- **MSCI EAFE Growth** captures large and mid-cap securities exhibiting overall growth style characteristics across Developed Markets countries around the world, excluding the US and Canada. 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. With 542 constituents, the index targets 50% coverage of the free float-adjusted market capitalization of the MSCI EAFE Index.
- **MSCI Emerging Markets** captures large and mid-cap representation across 23 Emerging Markets countries. With 836 constituents, the index covers approximately 85% of the free-float adjusted market capitalization in each country.
- **Consumer Price Index** is a measure of prices paid by consumers for a market basket of consumer goods and services. The yearly (or monthly) growth rates represent the inflation rate.
- **FTSE NAREIT Equity REITs Index** contains all Equity REITs not designed as Timber REITs or Infrastructure REITs.
- **S&P Developed World Property** defines and measures the investable universe of publicly traded property companies domiciled in developed markets. The companies in the index are engaged in real estate related activities, such as property ownership, management, development, rental and investment.
- **S&P Developed World Property x U.S.** defines and measures the investable universe of publicly traded property companies domiciled in developed countries outside of the U.S. The companies included are engaged in real estate related activities, such as property ownership, management, development, rental and investment.
- **Fund Specific Broad Real Asset Benchmarks:**
  - **DWS Real Assets:** 30%: Dow Jones Brookfield Infrastructure Index, 30%: FTSE EPRA/NAREIT Developed Index,15%: Bloomberg Commodity Index, 15%: S&P Global Natural Resources Index, 10%: Barclays U.S. Treasury Inflation Notes Total Return Index
  - **PIMCO Inflation Response Multi Asset Fund:** 45% Barclays U.S. TIPS, 20% Bloomberg Commodity Index, 15% JP Morgan Emerging Local Markets Plus, 10% Dow Jones Select REIT, 10% Bloomberg Gold Subindex Total Return
  - **Principal Diversified Real Assets:** 35% BBgBarc U.S. Treasury TIPS Index, 20% S&P Global Infrastructure Index NTR, 20% S&P Global Natural Resources Index NTR, 15% Bloomberg Commodity Index, and 10% FTSE EPRA/NAREIT Developed Index NTR
  - **Wellington Diversified Inflation H:** 50% MSCI ACWI Commodity Producers Index, 25% Bloomberg Commodity Index, and 25% Bloomberg Barclays US TIPS 1 – 10 Year Index
- **Bloomberg Commodity Index** is calculated on an excess return basis and reflects commodity futures price movements. The index rebalances annually weighted 2/3 by trading volume and 1/3 by world production and weight-caps are applied at the commodity, sector and group level for diversification.
- **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.
- **The Alerian MLP Index** is the leading gauge of energy Master Limited Partnerships (MLPs). The float adjusted, capitalization-weighted index, whose constituents represent approximately 85% of total float-adjusted market capitalization, is disseminated real-time on a price-return basis (AMZ) and on a total-return basis.
- **The Adjusted Alerian MLP Index** is commensurate with 65% of the monthly returns of the Alerian MLP Index to incorporate the effect of deferred tax liabilities incurred by MLP entities.
- **Cambridge Associates U.S. Private Equity Index** is based on data compiled from more than 1,200 institutional-quality buyout, growth equity, private equity energy, and mezzanine funds formed between 1986 and 2015.
- **Cambridge Associates U.S. Venture Capital Index** is based on data compiled from over 1,600 institutional-quality venture capital funds formed between 1986 and 2015.
- **Vanguard Spliced Bloomberg Barclays US1-5Yr Gov/Cr Flt Adj Index:** Bloomberg Barclays U.S. 1–5 Year Government/Credit Bond Index through December 31, 2009; Bloomberg Barclays U.S. 1–5 Year Government/Credit Float Adjusted Index thereafter.
- **Vanguard Spliced Bloomberg Barclays US5-10Yr Gov/Cr Flt Adj Index:** Bloomberg Barclays U.S. 5–10 Year Government/Credit Bond Index through December 31, 2009; Bloomberg Barclays U.S. 5–10 Year Government/Credit Float Adjusted Index thereafter.
- **Vanguard Spliced Bloomberg Barclays US Agg Flt Adj Index:** Bloomberg Barclays U.S. Aggregate Bond Index through December 31, 2009; Bloomberg Barclays U.S. Aggregate Float Adjusted Index thereafter.
- **Vanguard Spliced Bloomberg Barclays US Long Gov/Cr Flt Adj Index:** Bloomberg Barclays U.S. Long Government/Credit Bond Index through December 31, 2009; Bloomberg Barclays U.S. Long Government/Credit Float Adjusted Index thereafter.
- **Vanguard Balanced Composite Index:** Made up of two unmanaged benchmarks, weighted 60% Dow Jones U.S. Total Stock Market Index (formerly the Dow Jones Wilshire 5000 Index) and 40% Bloomberg Barclays U.S. Aggregate Bond Index through May 31, 2005; 60% MSCI US Broad Market Index and 40% Bloomberg Barclays U.S. Aggregate Bond Index through December 31, 2009; 60% MSCI US Broad Market Index and 40% Bloomberg Barclays U.S. Aggregate Float Adjusted Index through January 14, 2013; and 60% CRSP US Total Market Index and 40% Blomberg Barclays U.S. Aggregate Float Adjusted Index thereafter.
- **Vanguard Spliced Intermediate-Term Tax-Exempt Index:** Bloomberg Barclays 1–15 Year Municipal Bond Index.
- **Vanguard Spliced Extended Market Index:** Dow Jones Wilshire 4500 Index through June 17, 2005; S&P Transitional Completion Index through September 16, 2005; S&P Completion Index thereafter.
- **Vanguard Spliced Value Index:** S&P 500 Value Index (formerly the S&P 500/Barra Value Index) through May 16, 2003; MSCI US Prime Market Value Index through April 16, 2013; CRSP US Large Cap Value Index thereafter.
- **Vanguard Spliced Large Cap Index:** Consists of MSCI US Prime Market 750 Index through January 30, 2013, and the CRSP US Large Cap Index thereafter.
- **Vanguard Spliced Growth Index:** S&P 500 Growth Index (formerly the S&P 500/Barra Growth Index) through May 16, 2003; MSCI US Prime Market Growth Index through April 16, 2013; CRSP US Large Cap Growth Index thereafter.
- **Vanguard Spliced Mid Cap Value Index:** MSCI US Mid Cap Value Index through April 16, 2013; CRSP US Mid Cap Value Index thereafter.
- **Vanguard Spliced Mid Cap Index:** S&P MidCap 400 Index through May 16, 2003; the MSCI US Mid Cap 450 Index through January 30, 2013; and the CRSP US Mid Cap Index thereafter.
- **Vanguard Spliced Mid Cap Growth Index:** MSCI US Mid Cap Growth Index through April 16, 2013; CRSP US Mid Cap Growth Index thereafter.
- **Vanguard Spliced Total Stock Market Index:** Dow Jones U.S. Total Stock Market Index (formerly known as the Dow Jones Wilshire 5000 Index) through April 22, 2005; MSCI US Broad Market Index through June 2, 2013; and CRSP US Total Market Index thereafter.
- **Vanguard Spliced Small Cap Value Index:** SmallCap 600 Value Index (formerly the S&P SmallCap 600/Barra Value Index) through May 16, 2003; MSCI US Small Cap Value Index through April 16, 2013; CRSP US Small Cap Value Index thereafter.

- **Vanguard Spliced Small Cap Index:** Russell 2000 Index through May 16, 2003; the MSCI US Small Cap 1750 Index through January 30, 2013; and the CRSP US Small Cap Index thereafter.
- **Vanguard Spliced Small Cap Growth Index:** S&P SmallCap 600 Growth Index (formerly the S&P SmallCap 600/Barra Value Index) through May 16, 2003; MSCI US Small Cap Growth Index through April 16, 2013; CRSP US Small Cap Growth Index thereafter.
- **Vanguard Spliced Total International Stock Index:** Consists of the Total International Composite Index through August 31, 2006; the MSCI EAFE + Emerging Markets Index through December 15, 2010; the MSCI AC USA IMI Index through June 2, 2013; and FTSE Global All Cap ex US Index thereafter. Benchmark returns are adjusted for withholding taxes.
- **Vanguard Spliced Developed Markets Index:** MSCI EAFE Index through May 28, 2013; FTSE Developed ex North America Index through December 20, 2015; FTSE Developed All Cap ex US Transition Index through May 31, 2016; FTSE Developed All Cap ex US Index thereafter. Benchmark returns are adjusted for withholding taxes.
- **Vanguard Spliced Emerging Markets Index:** Select Emerging Markets Index through August 23, 2006; MSCI Emerging Markets Index through January 9, 2013; FTSE Emerging Transition Index through June 27, 2013; FTSE Emerging Index through November 1, 2015; and FTSE Emerging Markets All Cap China A Transition Index thereafter. Benchmark returns are adjusted for withholding taxes.
- **Vanguard REIT Spliced Index:** MSCI US REIT Index adjusted to include a 2% cash position (Lipper Money Market Average) through April 30, 2009; MSCI US REIT Index through January 31, 2018; MSCI US Investable Market Real Estate 25/50 Transition Index through July 24, 2018; MSCI US Investable Market Real Estate 25/50 Index thereafter.

Additional:

- Equity sector returns are calculated by Russell and MSCI for domestic and international markets, respectively. MSCI sector definitions correspond to the MSCI GICS® classification (Global Industry Classification System); Russell uses its own sector and industry classifications.
- MSCI country returns are calculated by MSCI and are free float-adjusted market capitalization indices that are designed to measure equity market performance in each specific country.
- Currency returns are calculated using Bloomberg's historical spot rate indices and are calculated using the U.S. dollar as the base currency.
- The Index of Leading Economic Indicators, calculated by The Conference Board, is used as a barometer of economic activity over a range of three to six months. The index is used to determine the direction and stability of the economy. The composite index of leading indicators, which is derived from 10 leading indicators, helps to signal turning points in the economy and forecast economic cycles. The leading indicators are the following: average weekly hours, average weekly initial claims, manufacturers' new orders, both consumer and non-defense capital goods, vendor performance, building permits, stock prices, money supply (M2), the interest rate spread and the index of consumer expectations.
- S&P Target Date Indexes are constructed using a survey method of current target date investments with $100 million or more in assets under management. Allocations for each vintage are comprised of exchange-traded- funds that represent respective asset classes used in target date portfolios. The indexes are designed to represent a market consensus glide path.

DEFINITION OF KEY STATISTICS AND TERMS

- **Returns:** A percentage figure used when reporting historical average compounded rate of investment return. All returns are annualized if the period for which they are calculated exceeds one year.
- **Universe Comparison:** The universe compares the fund's returns to a group of other investment portfolios with similar investment strategies. The returns for the fund, the index and the universe percentiles are displayed. A percentile ranking of 1 is the best, while a percentile ranking of 100 is the worst. For example, a ranking of 50 indicates the fund outperformed half of the universe. A ranking of 25 indicates the fund was in the top 25% of the universe, outperforming75%.
- **Returns In Up/Down Markets:** This measures how the fund performed in both up and down markets. The methodology is to segregate the performance for each time period into the quarters in which the market, as defined by the index, was positive and negative. Quarters with negative index returns are treated as down markets, and quarters with positive index returns are treated as up markets. Thus, in a 3 year or 12 quarter period, there might be 4 down quarters and 8 up quarters. A simple arithmetic average of returns is calculated for the fund and the index based on the up quarters. A simple arithmetic average of returns is calculated for the fund and the index based on the down quarters. The up market capture ratio is the ratio of the fund's return in up markets to the index. The down market capture ratio is the ratio of the fund's return in down markets to the index. Ideally, the fund would have a greater up market capture ratio than down market capture ratio.
- **Standard Deviation:** Standard deviation is a statistical measure of the range of performance within which the total returns of a fund fall. When a fund has a high standard deviation, the range of performance is very wide, meaning there is a greater volatility. Approximately 68% of the time, the total return of any given fund will differ from the average total return by no more than plus or minus the standard deviation figure. Ninety-five percent of the time, a fund's total return will be within a range of plus or minus two times the standard deviation from the average total return. If the quarterly or monthly returns are all the same the standard deviation will be zero. The more they vary from one another, the higher the standard deviation. Standard deviation can be misleading as a risk indicator for funds with high total returns because large positive deviations will increase the standard deviation without a corresponding increase in the risk of the fund. While positive volatility is welcome, negative is not.
- **R-Squared**: This reflects the percentage of a fund's movements that are explained by movements in its benchmark index. An R-squared of 100 means that all movements of a fund are completely explained by movements in the index. Conversely, a low R-squared indicates very few of the fund's movements are explained by movements in the benchmark index. R-squared can also be used to ascertain the significance of a particular beta. Generally, a higher R-squared will indicate a more reliable beta figure. If the R-squared is lower, then the beta is less relevant to the fund's performance. A measure of diversification, R-squared indicates the extent to which fluctuations in portfolio returns are explained by market. An R-squared = 0.70 implies that 70% of the fluctuation in a portfolio's return is explained by the fluctuation in the market. In this instance, overweighting or underweighting of industry groups or individual securities is responsible for 30% of the fund's movement.
- **Beta**: This is a measure of a fund's market risk. The beta of the market is 1.00. Accordingly, a fund with a 1.10 beta is expected to perform 10% better than the market in up markets and 10% worse that the market in down markets. It is important to note, however, a low fund beta does not imply the fund has a low level of volatility; rather, a low beta means only that the fund's market-related risk is low. Because beta analyzes the market risk of a fund by showing how responsive the fund is to the market, its usefulness depends on the degree to which the markets determine the fund's total risk (indicated by R-squared).
- **Alpha:** The Alpha is the nonsystematic return, or the return that can't be attributed to the market. It can be thought of as how the manager performed if the market's return was zero. A positive alpha implies the manager added value to the return of the portfolio over that of the market. A negative alpha implies the manager did not contribute any value over the performance of the market.
- **Sharpe Ratio:** The Sharpe ratio is the excess return per unit of total risk as measured by standard deviation. Higher numbers are better, indicating more return for the level of risk experienced. The ratio is a fund's return minus the risk-free rate of return (30-day T-Bill rate) divided by the fund's standard deviation. The higher the Sharpe ratio, the more reward you are receiving per unit of total risk. This measure can be used to rank the performance of mutual funds or other portfolios.
- **Treynor Ratio:** The Treynor ratio measures returns earned in excess of that which could have been earned on a riskless investment per each unit of market risk. The ratio relates excess return over the risk-free rate to the additional risk taken; however, systematic risk is used instead of total risk. The Treynor ratio is similar to the Sharpe ratio, except in the fact that it uses the beta to evaluate the returns rather than the standard deviation of portfolio returns. High values mean better return for risk taken.

- **Tracking Error:** Tracking error measures the volatility of the difference in annual returns between the manager and the index. This value is calculated by measuring the standard deviation of the difference between manager and index returns. For example, a tracking error of +/- 5 would mean there is about a 68% chance (1 standard deviation event) that the manager's returns will fall within +/- 5% of the benchmark's an return.
- **Information Ratio:** The information ratio is a measure of the consistency of excess return. This value is determined by taking the annualized excess return over a benchmark (style benchmark by default) and dividin the standard deviation of excess return.
- **Consistency:** Consistency shows the percent of the periods the fund has beaten the index and the percent of the periods the index has beat the fund. A high average for the fund (e.g., over 50) is desirable, indicating the fund has beaten the index frequently.
- **Downside Risk:** Downside risk is a measure similar to standard deviation but focuses only on the negative movements of the return series. It is calculated by taking the standard deviation of the negative quarterly set of returns. The higher the factor, the riskier the product.
- **M-Squared:** M-squared, or the Modigliani risk-adjusted performance measure is used to characterize how well a portfolio's return rewards an investor for the amount of risk taken, relative to that of some benchmark portfolio and to the risk-free rate.

DEFINITION OF KEY PRIVATE EQUITY TERMS

- **PIC (Paid in Capital):** The amount of committed capital that has been transferred from the limited partner to the general partner.
- **TVPI (Total Value to Paid in Capital):** Money returned to limited partners plus the fund's unrealized investments, divided by money paid-in to the partnership. The TVPI should equal RVPI plus DPI.
- **DPI (Distribution to Paid In Capital):** Money returned (distributions) to limited partners divided by money paid in to the partnership. Also called cash-on-cash multiple.
- **RVPI (Residual Value to Paid In Capital):** The value of a fund's unrealized investments divided by money paid-in to the partnership.
- **Internal rate of return (IRR):** This is the most appropriate performance benchmark for private equity investments. It is a time-weighted return expressed as a percentage. IRR uses the present sum of cash drawdowns (money invested), the present value of distributions (money returned from investments) and the current value of unrealized investments and applies a discount.
- **Commitment:** Every investor in a private equity fund commits to investing a specified sum of money in the fund partnership over a specified period of time. The fund records this as the limited partnership's capital commitment. The sum of capital commitments is equal to the size of the fund.
- **Capital Distribution:** These are the returns that an investor in a private equity fund receives. It is the income and capital realized from investments less expenses and liabilities. Once a limited partner has had their cost of investment returned, further distributions are actual profit. The partnership agreement determines the timing of distributions to the limited partner. It will also determine how profits are divided among the limited partners and general partner.
- **Carried Interest:** The share of profits that the fund manager is due once it has returned the cost of investment to investors. Carried interest is normally expressed as a percentage of the total profits of the fund.
- **Co-Investment**: Co-Investments are minority investments made alongside a private equity investor in an LBO, a recapitalization, or an expansion capital transaction. It is a passive, non-controlling investment, as the private equity firm involved will typically exercise control and perform monitoring functions.
- **General Partner (GP):** This can refer to the top-ranking partners at a private equity firm as well as the firm managing the private equity fund.
- **GP Commitments:** It is normal practice for the GP managing a private equity fund to also make a financial commitment to the fund on the same basis as the LPs in the fund, and this is seen as an important factor driving the alignment of GP and LP interests. The historic benchmark for GP commitments has been 1% of the total fund size, but this is by no means universal, and many GPs commit significantly larger amounts. Furthermore, there has been a marked trend towards GPs making larger commitments to their funds over recent years.
- **Leveraged Buy-Out (LBO):** The acquisition of a company using debt and equity finance.
- **Limited Partner (LP):** Institutions or high-net-worth individuals/sophisticated investors that contribute capital to a private equity fund.
- **Public Market Equivalent (PME):** Performance measure used to evaluate performance relative to the market. It is calculated as the ratio of the discounted value of the LP's inflows divided by the discounted value of outflows, with the discounting performed using realized market returns.
- **Primaries:** An original investment vehicle that invests directly into a company or asset.

VALUATION POLICY

Fiducient Advisors does not engage an independent third-party pricing service to value securities. Our reports are generated using the security prices provided by custodians used by our clients. Our custodial pricing hierarchy is available upon request. If a client holds a security not reported by the first custodian within the hierarchy, the valuation is generated from the next custodian within the hierarchy, and so forth. Each custodian uses pricing services from outside vendors, where the vendors may generate nominally different prices. Therefore, this report can reflect minor valuation differences from those contained in a custodian's report. In rare instances where FA overrides a custodial price, prices are taken from Bloomberg.

REPORTING POLICY

Custodian reports are the reports that govern the account. There will be different account values between Fiducient Advisors' reports and the custodian reports based on whether the report utilizes trade date or date to calculate value. Additionally, difference between values contained on reports may be caused by different accrued income values. Any forecasts represent future expectations and actual returns, volatilities and will differ from forecasts. This report does not represent a specific investment recommendation. Please consult with your advisor, attorney, and accountant, as appropriate, regarding specific advice. Past perfor not indicate future performance and there is a possibility of a loss.

Manager performance for mutual funds and ETFs is based on NAV and provided by Lipper. Performance for non-mutual fund or ETF investments is based on the returns provided by managers, calculations based on a manager statement, or calculations based on a statement or data from the client's custodian. Unless specified otherwise, all returns are net of individual manager fees, represent total returns and are annualized for periods greater than one year. The deduction of fees produces a compounding effect that reduces the total rate of return over time. As an example, the effect of investment management fees on the total value of a client's portfolio assuming (a) quarterly fee assessment, (b) $1,000,000 investment, (c) portfolio return of 8% a year, and (d) 0.50% annual investment advisory fee would be $5,228 in the first year, and cumulative effects of $30,342 over five years and $73,826 over ten years. Additional information on advisory fees charged by Fiducient Advisors are described in Part 2 of the Form ADV.

OTHER

By regulation, closed-end funds utilizing debt for leverage must report their interest expense, as well as their income tax expense, as part of their total expense ratio. To make for a useful comparison between closed-end funds and both open-end funds and exchange-traded funds, adjusted expense ratios excluding interest and income tax expenses are utilized for closed-end funds within this report. See disclosure on closed-end fund fact sheets for information regarding the total expense ratio of each closed-end fund.

Please advise us of any changes in your objectives or circumstances.

CUSTODIAN STATEMENTS

Please remember to review the periodic statements you receive from you custodian. If you do not receive periodic statements from your custodian or notice issues with the activity reported in those statements, please contact FA or your custodian immediately.

GENERAL DISCLOSURES

Barron's Institutional Consulting Teams ranking is based on quantitative and qualitative factors including team's assets, revenue, size and character of the team itself. Barron's invites firms that, in their opinion, are competitive given size and sophistication. There is no fee associated with participating in the ranking. Fiducient Advisors' ranking took into consideration the combined capabilities of the firm and its subsidiary, Fiduciary Investment Advisors, LLC.

P&I's 2020 Best Places to Work in Money Management ranking is a proprietary survey produced by Pension & Investment in partnership with Best Companies Group. 94 companies were recognized in 2020 and results are based on evaluating each nominated company's workplace policies, practices, philosophy, systems, and demographics, as well as an employee survey to measure employee experience. Fiducient Advisors' rankings are representative of the firm and its subsidiary, Fiduciary Investment Advisors, LLC. There is no fee associated with participating in the ranking.

P&I's Consultant Ranking is a proprietary survey produced by Pension & Investment. Results are based on 80 questionnaire responses sent to 213 consultants determined by P&I that self-reported institutional assets under advisement as of June 30, 2020. Consultants with multiple subsidiaries are asked to provide information on a consolidated basis. There is no fee associated with participating in the ranking. The ranking is not indicative of Fiducient Advisors' future performance.

FIDUCIENT
Advisors
Helping Clients Prosper

West Hartford, CT

Alternative Asset Class Materials

Table of Contents

Private Equity Intro

Private Equity has the Potential to Achieve Excess Returns Over Public Equities

WHAT IS PRIVATE EQUITY?

- Ownership in privately held enterprises
- Illiquid investment vehicles with long investment horizons

WHY OWN PRIVATE EQUITY?

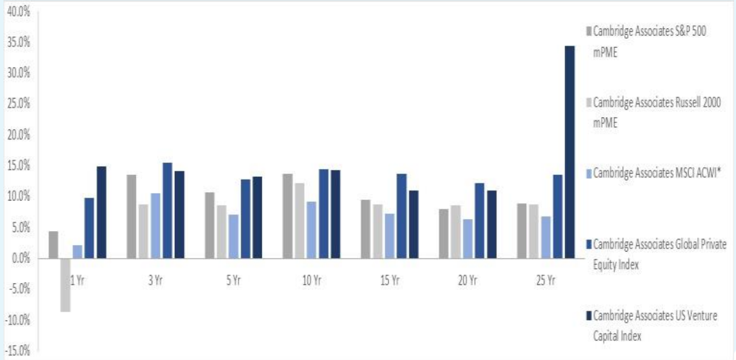
- Historical risk premium over public equity
- Enhances portfolio diversification when mixed with public assets

PORTFOLIO CONSTRUCTION

Diversified across:

1) Asset class
2) Vintage year
3) Geography

HISTORICAL RETURNS OF PRIVATE EQUITY



* Gross returns. Source: Cambridge Associates 09/30/2019. Past performance does not indicate future results and there is a possibility of a loss.

Private Equity Funds Target Niche Opportunities

What are private equity funds?	Private equity fund sub-asset classes
Illiquid investment vehicles	Leveraged Buyout (“LBO”)
Contain privately held companies	Growth Equity (“GE”)
Long capital lock-ups	Venture Capital (“VC”)
Not marked to market daily	Distressed/Special Situations

Private equity fund structure

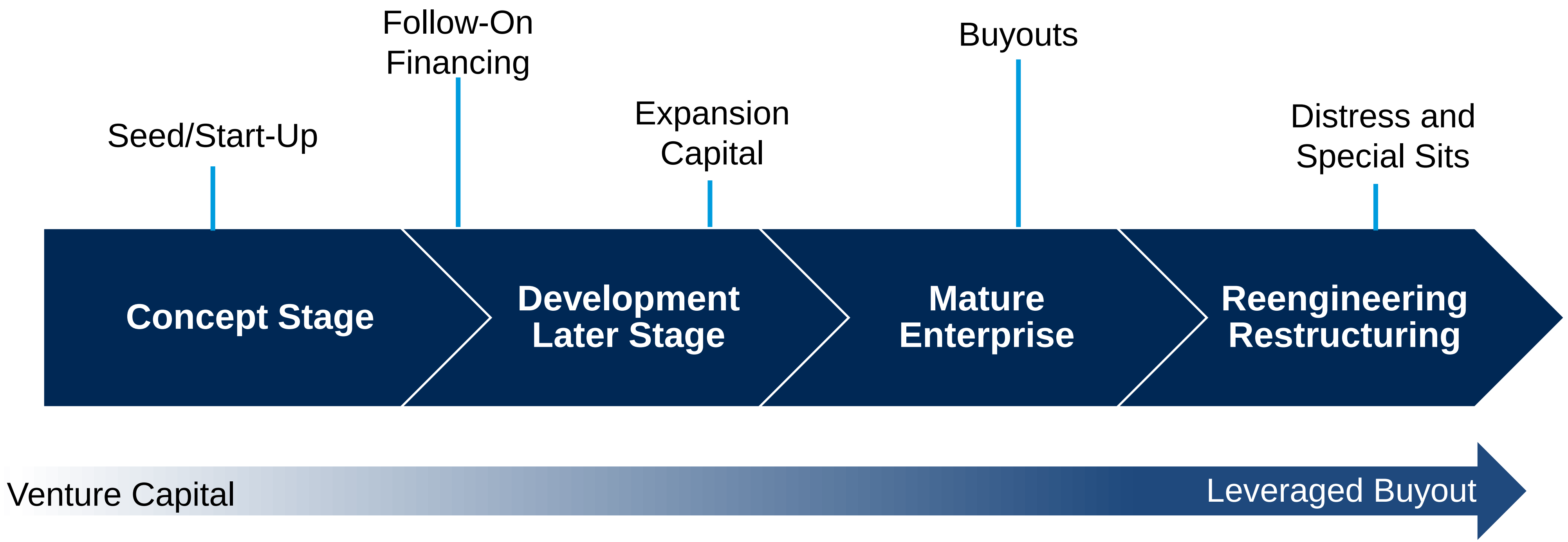
- The fund management company is considered the General Partner (“GP”).
- GP creates an investment vehicle that is a limited partnership
- Investors are considered Limited Partners (“LP”)
- LPs provide capital to the GPs who, in turn, invest on behalf of the fund
- LPs pay fees to the GP for fund management and investment performance
- The early impact of fees before investments mature, produce early negative returns, also known as the J-Curve

Key private equity terms

Capital Calls	LPs commit capital to a fund, but do not supply capital until investments are made. Notice given to investors to contribute capital on a specified date.
Capital Distributions	Capital is returned to investors when sales of underlying portfolio companies occur.
Carried Interest (“Carry”)	The GP charges performance-based fees on investment gains

Private Equity Spectrum

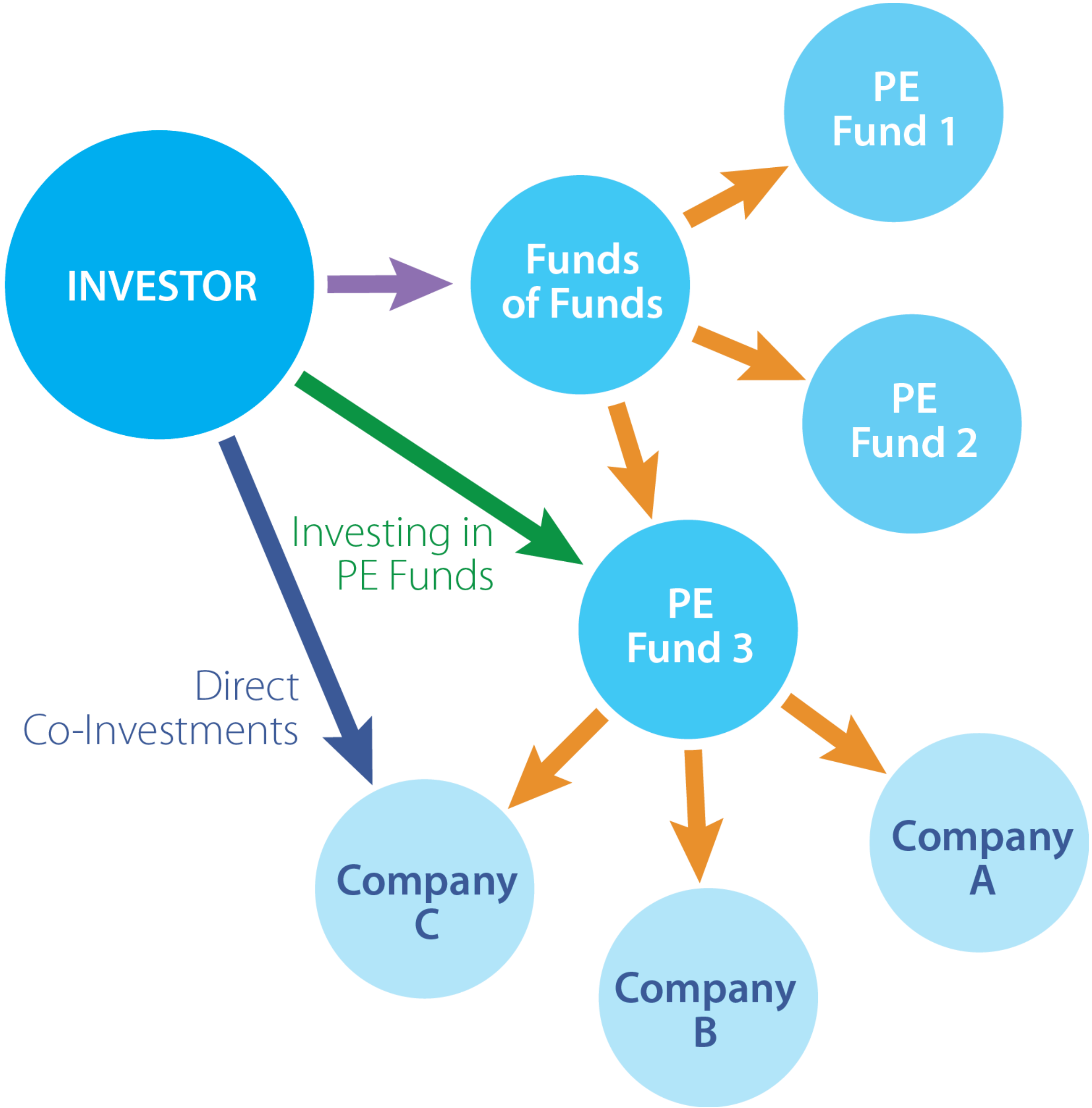
Private equity investment occurs across the life-cycle of a company with strategies typically focusing on a particular stage



Varying Risk Profiles, Growth Profiles and Stages of Investment Cycle

Asset Class	Seed & Early Stage Venture Capital	Late Stage Venture Capital	Growth Equity	Buyout	Distressed/ Special Situations
Risk Type	Development and Market Risk		Execution Risk		Execution and Market Risk
Description	Concept Stage	Unproven Business Models	Established Companies with Proven Business Models	Mature Companies with Proven Business Models	Mature Companies with Finite or Ongoing Business Concerns
Revenues	Pre-Revenue	>50% Revenue Growth	>20% Annual Revenue Growth	<15% Annual Revenue Growth	Slow Growth or Declining Revenues
EBITDA	Cash Burn to Fund Rapid Growth		Breakeven / Cash Flow Positive	Cash Flow Positive	Various
Leverage	None		Modest or No Use of Leverage	Yes	Varies
Control	Minority			Majority	Varies
Structure	Preferred Equity; Multiple Funding Rounds; Limited Structuring Ability		Preferred Equity; Typically One Funding; Often Highly Structured	Preferred or Common Equity; Single Control Transactions; Some Structure	Minority or Majority Debt; Preferred or Common Equity; Often Structured
Strategy	Large Portfolio; Target Emerging Market Leader		Concentrated Portfolio; Target Clear Market Leader		Concentrated Portfolio
Thesis	Aggressive Revenue Growth; Valued on Revenue Multiple		Profitable Revenue Growth; Valued on EBITDA or Revenue Multiple	Growth, Cost Synergies or M&A; Valued on EBITDA Multiple	Businesses Could Be Recapitalized or Fixed Through Major Strategic Overhauls

Three Primary Routes for Private Equity



1. Primary Fund Investments: **green arrow**
2. Fund of Fund Investments: **purple arrow**
3. Co-Investments: **blue arrow**
4. Underlying Investments: **orange arrows**

Access to a Broader Investible Universe

Diversification and Access

Private equity provides diversification across vintage years, sectors and geographies in a market that encompasses a larger population of potential investments as compared to their public peers.

- Over 11,000 private U.S. companies with annual revenues over $100 million vs. approximately 2,700 public U.S. companies with the same annual revenues*
- Exposure to efficiently structured companies with strong corporate governance and growth potential
- Proprietary deal flow such as early stage/innovative technologies and companies, corporate spin-offs, carve-outs, turnaround situations, and distressed debt

Control and Value-add

The potential to control a business and drive strategic changes allows private equity managers to drive returns in ways that are uncommon within publicly traded companies.

- Access to proprietary information/company management during the due diligence phase and ownership
- Ability to execute significant influence; hands-on, activist investing, heavy board involvement
- Access to resources such as capital markets expertise, industry contacts, senior management recruiting and growth capital
- Commitment to long-term value creation with no public market pressure
- Various exit opportunities - IPO, M&A, dividend recapitalization, secondary (fund-to-fund) transactions

*Capital IQ as of 9/2016

Opportunities to Generate Excess Returns By:
Targeted Expertise, Market Inefficiencies and Information Asymmetry

Historical Returns and Illiquidity Premium

- Asymmetric information allows private market investors to achieve returns that may differ substantially from public markets
- Private equity displays imperfect correlation with other asset classes

Global Private Equity and US Venture Capital Index Annualized Total Returns (in %) – as of 09/30/2020**

	1 Year	3 Year	5 Year	10 Year	15 Year	20 Year	25 Year
Cambridge Associates Global Private Equity Index	**18.19**	**14.83**	**14.85**	**14.15**	**12.61**	**11.77**	**13.45**
Cambridge Associates MSCI ACWI Constructed mPME	11.33	7.91	11.08	9.30	7.08	6.60	6.94
Cambridge Associates Russell 2000® mPME	0.87	2.01	8.49	11.12	7.96	7.99	8.31
Cambridge Associates S&P 500 mPME	15.33	12.40	14.34	14.17	9.65	8.17	8.99
Cambridge Associates US Venture Capital Index	**25.92**	**19.84**	**13.45**	**15.93**	**11.76**	**5.09**	**35.19**
Cambridge Associates Nasdaq Constructed mPME	40.44	20.61	20.30	17.89	12.67	9.10	11.45
Cambridge Associates Russell 2000® mPME	0.43	1.85	8.29	10.72	7.59	7.80	8.37
Cambridge Associates S&P 500 mPME	14.96	12.21	14.18	14.01	9.45	7.68	9.22

***Source: Cambridge Associates 09/30/20*

Key Risk Considerations

The nature of private transactions and private equity funds comes with unique risks.

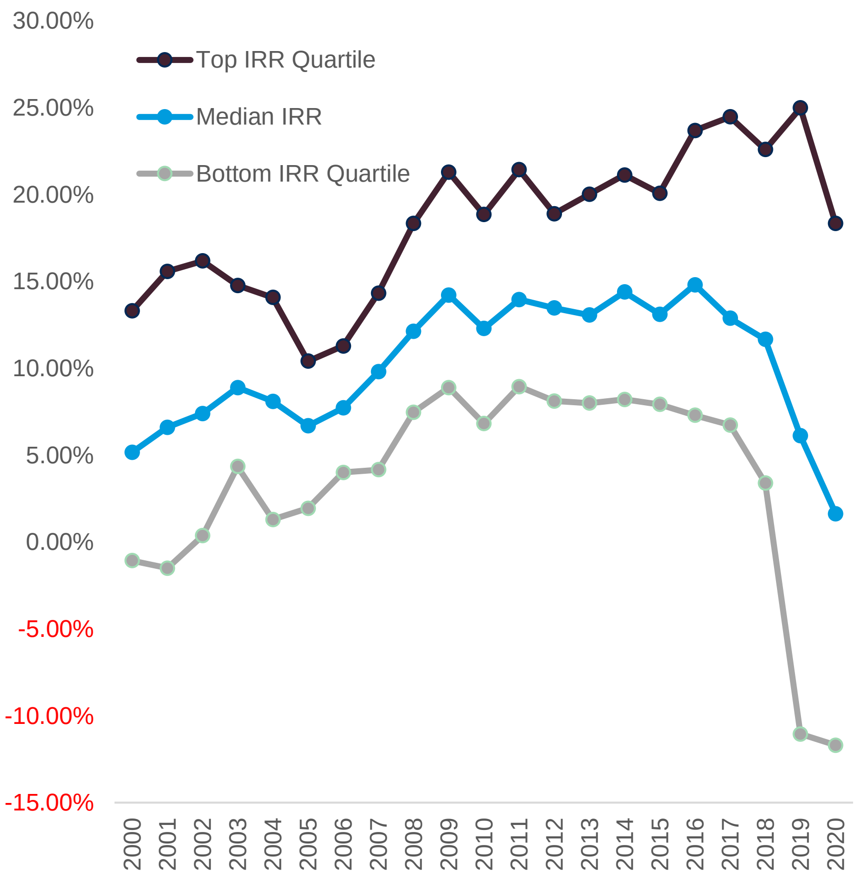
- Illiquid assets, with long-duration holds and investment time horizons
  - LP interests are not redeemable and cannot easily be sold to an outside LP
- Valuations
  - Valuation typically reported on a quarterly delay
  - Subjective valuations until a realization
- Speculative Investment
  - Portfolio may be highly concentrated into a few investments
  - May include control and non-control positions
  - Investment strategies rely on fund manager assumptions when underwriting investments
- Manager Selection
  - Performance dispersions among managers are much wider than in public markets
  - Cannot replace/fire managers during fund life or control liquidation timing of unrealized assets
- "Blind Pool" Investing
  - Investments are generally not known at time of commitment
- Leverage
  - While the appropriate use of leverage can benefit both fund managers and portfolio companies by creating optimal capital structures, it can be detrimental in times of stress

Unique Tax Implications

- Private equity funds are structured into both onshore and offshore vehicles
- Tax-exempt and non-us investors should consider offshore vehicles to avoid unnecessary tax filings
- US taxable investors generally invest in onshore vehicles
- Majority of gains generated by private markets funds are long term in nature and therefore taxed at a more favorable rate
- All gains, losses, income and expenses are passed through a private equity partnership to each individual investor
- Tax advantage may be greater for investors domiciled in the United States
- Distribution and filing of Schedule K-1 statements creates administrative burden
- K-1s are usually unavailable by April 15 filing deadline
- Multi-state filing may be required based on fund investments

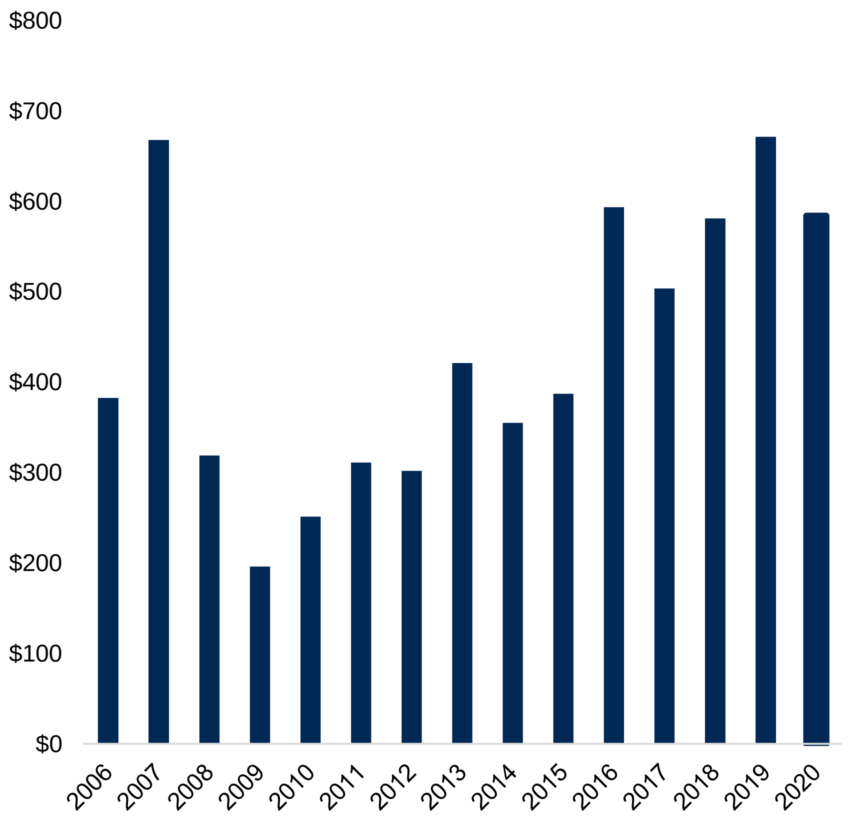
Wide Dispersion of Returns By:
Vintage Year, Fund Size and Top vs. Bottom Quartiles

IRR dispersion by Vintage Year



Source: Pitchbook. As of 12/31/2020

Average U.S. PE Buyout size



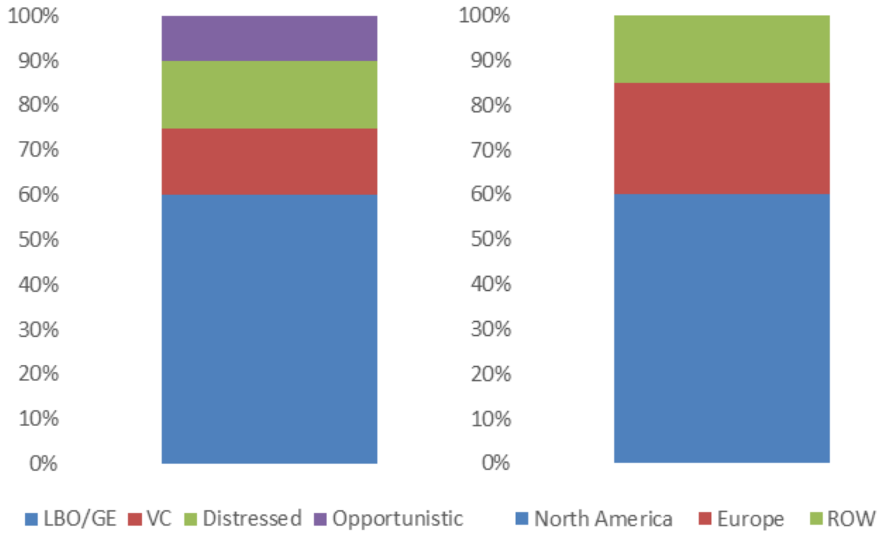
Source: Pitchbook 2020 Annual US PE Breakdown; As of 12/31/2020

Implementation Guidelines

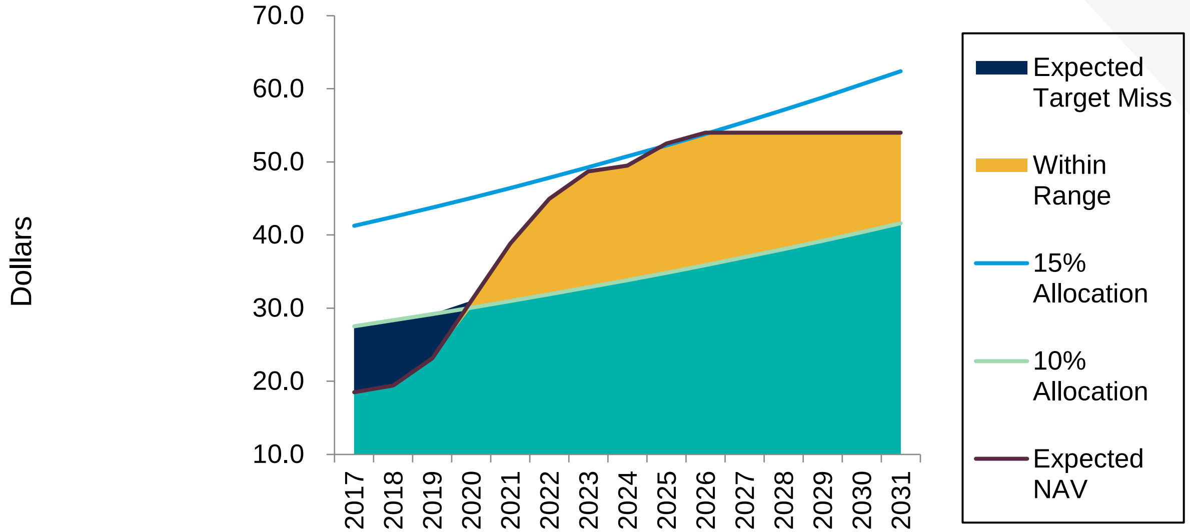
Diversify over time, asset class and geography

- Private equity fund return dispersion by manager, vintage year, asset class and geography suggests that building a diversified portfolio over time may help smooth return outcomes.
- Private equity funds often start distributing capital prior to becoming fully funded. A slight over commitment strategy with consistent annual pacing will generally take three-four years to build a diversified portfolio.
- Investors should acknowledge the market environment and maintain a flexible approach, without attempting to market time and move in or out of asset classes.

Sample Sector and Geographic Allocations



Sample Pacing Model



Pacing table assumes a $275 million total portfolio with an existing six percent allocation to PE that runs-off by 2023. Portfolio hits target allocation range of 10-15% in 2020 by making annual $15 million commitments. Past performance does not indicate future performance and there is a possibility of a loss.

Private Equity Portfolio
Implementation Options & Factors

Implementation	Approach	Targets per Year	Pros	Cons
Fund of Funds (“FoF”)	• Commitments to established FoF managers • May include a secondary allocation	• 1 -2 FoFs	• Operational benefits (fewer calls/distributions, consolidated investment and tax reporting) • Maintain fewer manager relationships • Lower investment minimums	• Second layer of fees • Slower capital deployment, elongated j-curve • Potential to over-diversify and generate private equity market beta
Core + Satellite Portfolio	• Core commitments to established, diversified private equity managers • Satellite commitments to specialized direct and/or FoF managers (e.g., small buyout, venture capital)	• 1-2 core funds • 1-2 satellite funds or FoFs	• Direct core holdings provide diversification with limited volatility • Satellite exposure provides access to less efficient parts of the market for potential alpha generation	• Number of fund commitments increases operational complexity • FoF commitments have second layer of fees • Higher investment minimums • While diversified, manager concentration introduces additional idiosyncratic manager risks
Focused Direct Portfolio	• Multiple commitments to direct private equity funds with a focus on smaller, specialist managers in order to maximize alpha	• 0-2 core funds • 3+ satellite funds	• Single layer of fees • Concentration of satellite funds within less efficient parts of the market create opportunity to maximize alpha	• Number of fund commitments increases operational complexity (calls/distributions, reporting) • Higher investment minimums, compounded by multiple commitments
Opportunistic	• Opportunistic commitments to high-conviction funds	• As available	• Look to take advantage of specific market opportunities or dislocations	• Market timing a draw-down asset class is extremely difficult • Concentrated portfolio introduces additional risks

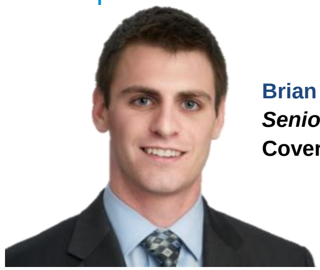
Dedicated Global Private Markets Team

Matthew Kaminski, CFA
Partner, Research Director
Coverage: Generalist

Angelique Pappas, CFA
Senior Research Analyst
Coverage: Generalist

Matthew Smith, CFA
Senior Research Analyst
Coverage: Real Assets

Michael Sustarsic, CFA
Senior Research Analyst
Coverage: Generalist



Brian Rooke, CAIA®
Senior Research Associate
Coverage: Generalist

Pooja Vyas
Research Associate
Coverage: Generalist

Private Markets Manager Research

- Experienced alternative investments research team
- Approximately $9 billion in alternative investment assets under advisement*

Sourcing and Idea Generation

Apply philosophy to proactively source managers with a focus on those with differentiated sourcing, operating or structuring expertise

Quantitative, Qualitative and Operational Due Diligence

Extensive vetting of investment process, team and how firms are creating value paired with a deep look at back office functions

Diligence Report and Committee Debate

Diligence materials are prepared and key points debated in an open forum amongst private markets committee members

All values are approximate as of December 31, 2020.

HarbourVest Global Fund 2022

The HarbourVest Global Fund intends to construct a diversified portfolio over the course of an 18-to-24-month investment period and expects allocations of 45-55 percent in primary investments (15-20 investments), 25-35 percent in secondary investments and 15-25 percent in direct co-investments.

Firm & Team

- Founded as one of the first closed-end, institutionally-backed US private equity fund of funds in 1982.
- HarbourVest has committed more than $88 billion in capital to primary, secondary, and direct co-investments.
- The Firm has offices around the globe and manages capital for a wide variety of clients with specialized strategies across Private Equity, Private Credit and Real Assets.

Fund Strategy

- The Global Fund is an annual offering from HarbourVest that began in 2014 and has raised approximately $6.5B to date.
- The 2022 Global Fund intends to construct a diversified portfolio over the course of an 18 to 24 month investment period, taking advantage of attractive opportunities across the global private equity market with an emphasis on North America and Europe.
- The Fund intends allocate to 45-55% in primary investments (other private equity managers), 25-35% in secondary investments and 15-25% in direct co-investments.
- The Fund will primarily consist of traditional buyout investments (65-75%) and will also be diversified across other private equity strategy types including venture capital, growth equity, and special situation investments.

Competitive Advantages

- ***Global market presence with low-cost fund structure* –** HarbourVest's local presence in Europe and Asia, extensive experience and track record of success in all areas of private equity helps distinguish HarbourVest from other fund of funds offerings. No carried interest on primary investments, and a large allocation to secondary and co-investments all help to mitigate the impact of fees in a fund of fund structure.
- ***Inclusion of secondary investments helps reduce J- curve* –** The early integration of secondary investments should help reduce the Fund's J-curve, accelerate the capital deployment, and return money to investors quicker, all of which are common drawbacks in a traditional fund of funds structure.
- ***Long-standing relationships with established private equity managers* –** HarbourVest is viewed as a stable and crucial fundraising partner for GPs which helps when negotiating fund capacity and occasionally leads to preferential fee terms that are passed along to the limited partners.

Risks

- ***Size of the HarbourVest allocations will limit ability to invest with smaller funds and emerging managers*** – The check sizes, along with the allocation from the parallel HarbourVest strategies, makes it difficult to partner with emerging managers and funds in the lower middle market and middle market. Although many of the market dynamics in the lower end of the market create compelling opportunities, the Global Fund program provides a solution that minimizes administrative burden and likely lowers the dispersion of potential outcomes through broad diversification and concentration in large funds.
- ***Increased single vintage year risk compared to traditional fund of funds* –** HarbourVests's Global Fund program will typically invest over an 18-month timeframe compared to traditional private equity fund of funds that will invest across three vintage years or more.

Key Terms

Strategy: Fund of Funds
Geography: Global
Target AUM: $1.4 B
Vintage Year: 2022
Final Closing: Q4 2022
Stated Minimum: $5 MM
Qualification: Qualified Purchasers
Structure: Limited Partnership
Fund Terms: 10-year term with 3 one-year extensions

Fees

Management Fee: 0.69%
Carried Interest: 0% on Fund Investments
12.5% on Secondary and
Co-Investments
Preferred Return: 8%

Marketable Alternatives Intro

Introduction to Marketable Alternatives

What Are Marketable Alternatives?
Semi-illiquid investment vehicles
Invest in both public and private securities
Typically trade equity, credit and derivative instruments
Marked to market daily and/or monthly
Ability to short securities and deploy leverage

Marketable Alternatives Strategy Buckets
Equity Hedge
Event Driven
Macro
Relative Value
Multi-Strategy

Introduction to Marketable Alternatives

Marketable Alternatives Structure
• The fund management company is considered the General Partner ("GP"). • GP creates an investment vehicle that is a limited partnership • Investors are considered Limited Partners ("LP"). • LPs provide capital to the GPs who, in turn, invest on behalf of the fund. • LPs pay fees to the GP for fund management and investment performance.

Key Marketable Alternatives Terms	
Performance Fees ("Carry")	The GP charges performance-based fees on investment gains.
Gates	A Fund may place redemption limits, or gates, limiting the amount of redemptions that can occur during a redemption window.
Lock-ups	The lock-up period varies but usually ranges from one to three years.
High-water marks	Ensure that a fund manager cannot collect a performance fee until investors recoup previous losses.

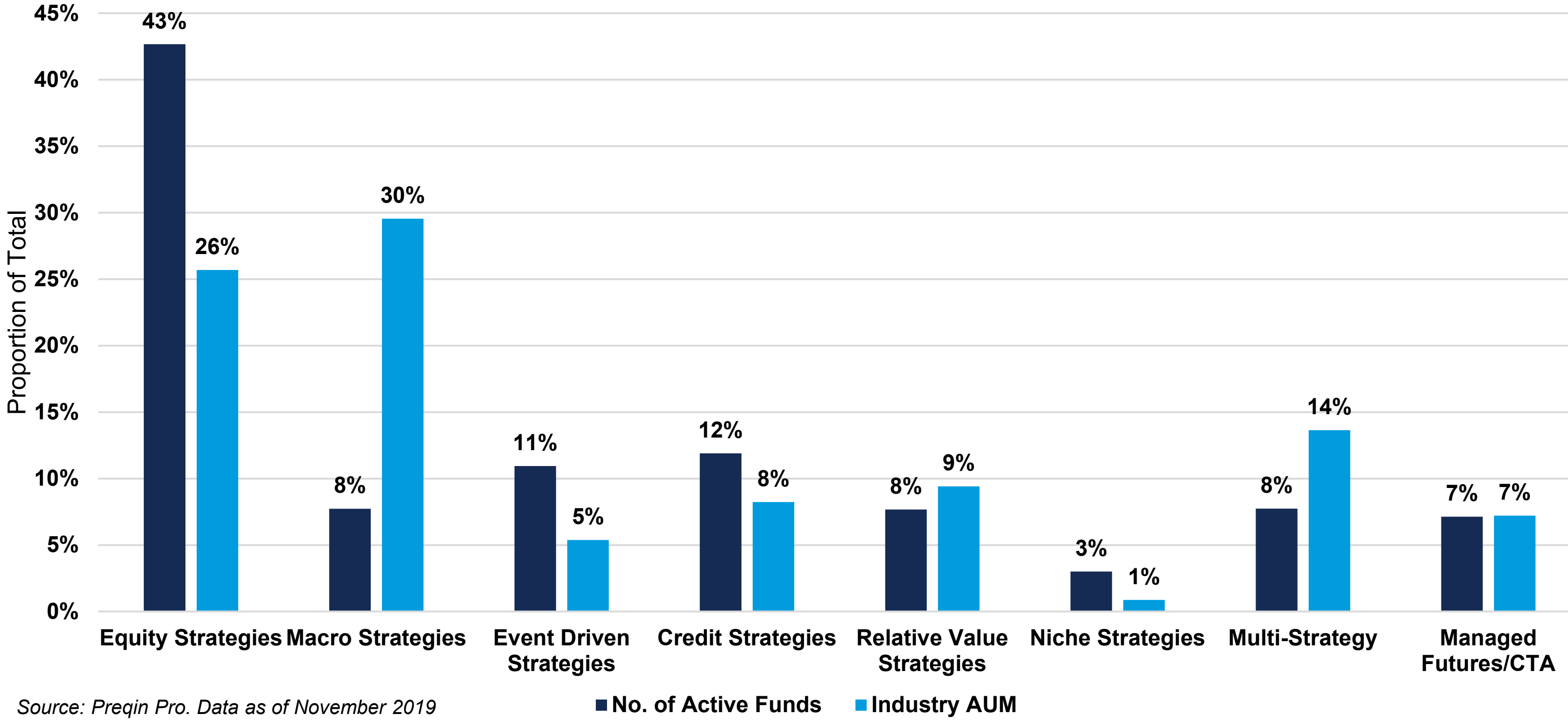
Introduction to Marketable Alternatives

Strategy Type	Strategy Definition
Equity Hedge	Equity hedge managers maintain long and short positions primarily in equity and derivative securities. Portfolio selection can be driven by either quantitative or fundamental analysis. Strategies can be broad (generalist) or narrow (sector specific) and fund profiles vary greatly depending on net exposure, leverage, holding periods and portfolio construction.
Event Driven	Event driven managers take positions in companies involved in corporate transactions such as mergers, restructurings, tender offers, shareholder buybacks, debt exchanges, management or board changes, security issuance or other capital structure events. Security types can include equity, debt and derivatives. The investment theses are typically fundamentally driven and range from hard catalyst situations to soft catalyst situations.
Macro	Macro managers take a top-down, economic world view. They engage in strategies where economic and political change impacts equity, fixed income, currency and commodities markets.
Relative Value	Relative Value managers seek to exploit pricing discrepancies between securities. They employ a variety of fundamental and quantitative techniques to develop investment theses. They trade equities, fixed income, convertible bonds and derivatives.
Multi-Strategy	Multi-strategy funds allocate capital opportunistically among various marketable alternatives categories, strategies and styles. Multi-strategy managers typically lever the whole portfolio. Total portfolio assets back the obligations of each specific underlying leveraged position. There is an important difference between single multi-strategy manager and multi-strategy fund of funds. A multi-strategy fund of funds allocates capital to several firms, so this cross collateralization does not occur.

Introduction to Marketable Alternatives

Industry Breakout By Strategy Type

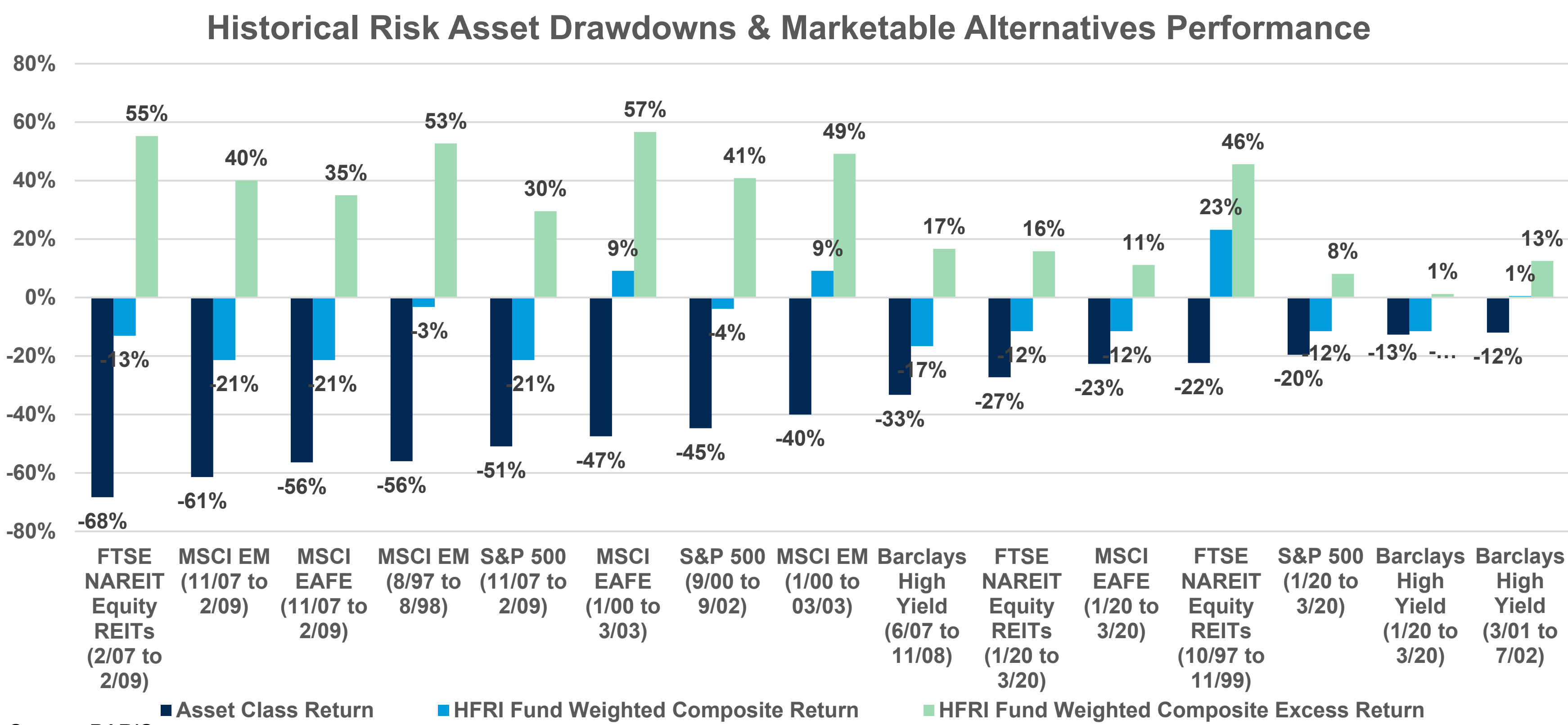
Proportion of Number and AUM of Marketable Alternatives by Top-Level Strategy



Source: Preqin Pro. Data as of November 2019

Introduction to Marketable Alternatives

Consistent Excess Returns During Risk Asset Drawdowns

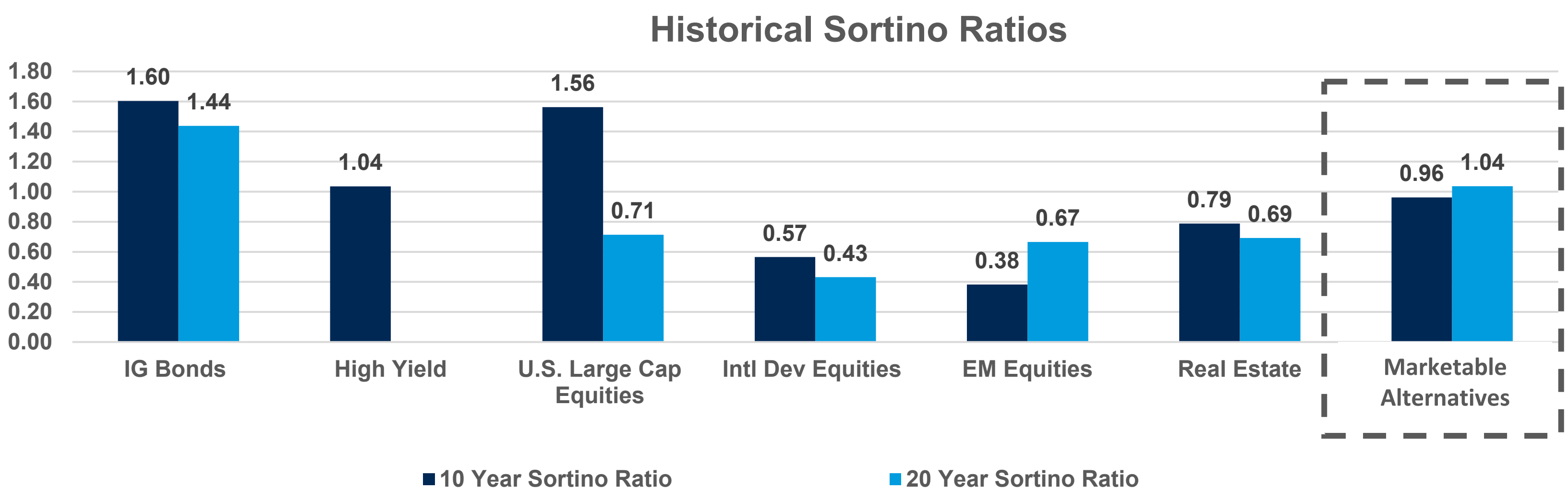


Source: PARIS

Past performance does not indicate future performance and there is a possibility of a loss.

Introduction to Marketable Alternatives

Attractive Long-Term Risk-Adjusted Returns

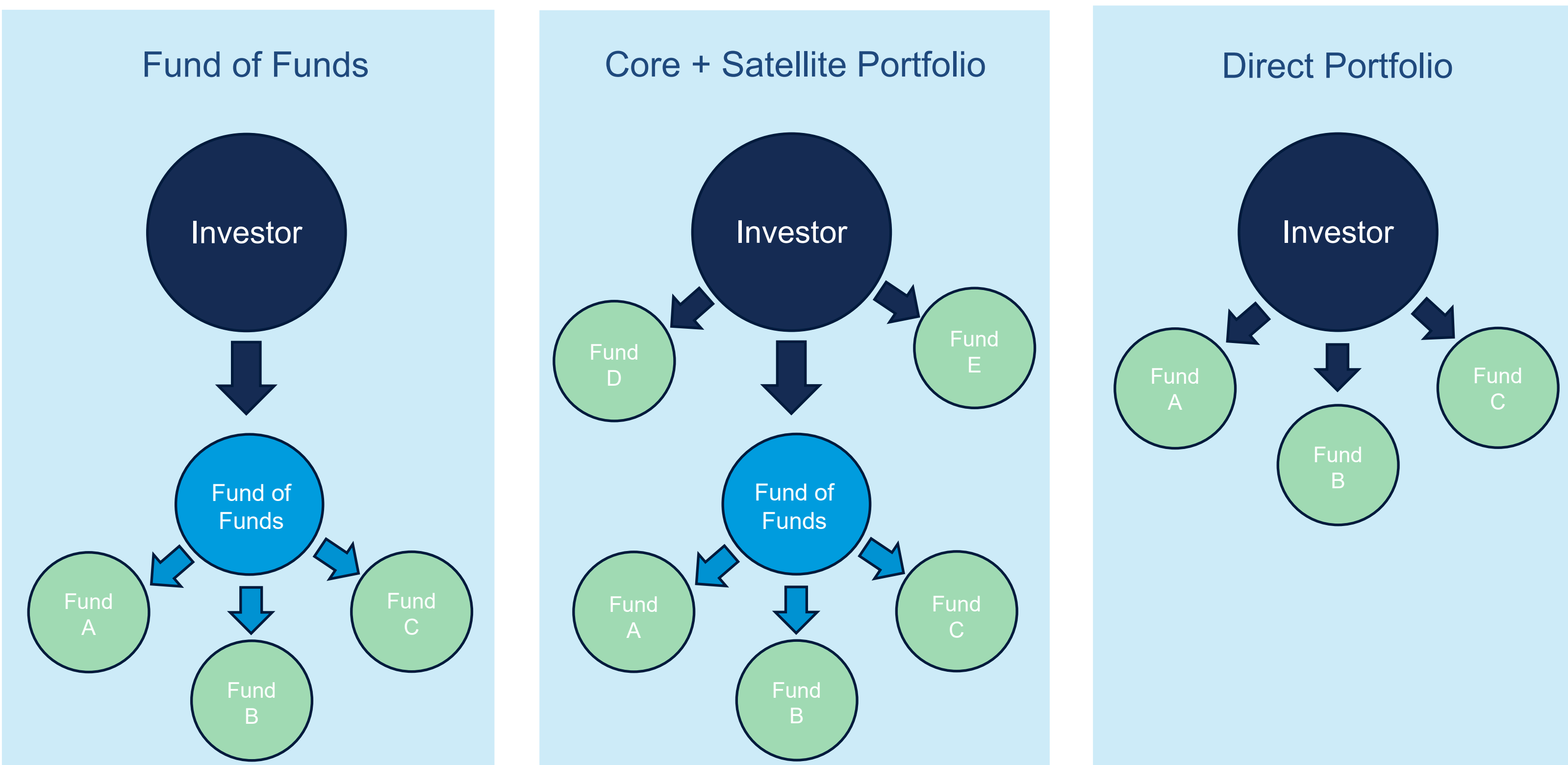


Data as of: February 28, 2021

Past performance does not indicate future performance and there is a possibility of a loss.

Introduction to Marketable Alternatives

Three Primary Ways to Invest in Marketable Alternatives



Introduction to Marketable Alternatives

Portfolio Implementation Options & Factors

Implementation	Approach	Underlying Allocations	Pros	Cons
Fund of Funds ("FOF")	• Commitments to established FOF managers	• 1 FOF Manager	• Operational benefits (consolidated investment and tax reporting) • Maintain fewer manager relationships • Lower investment minimums	• Second layer of fees • Potential to over-diversify and generate marketable alternatives market beta
Core + Satellite Portfolio	• Core commitment to an established, diversified FOF manager • Satellite commitments to specialized direct and/or FoF managers (e.g., Macro, Event Driven)	• 1 core FOF • 2-5 satellite, direct funds	• FOF core holdings provide diversification with limited volatility • Satellite exposure provides access to differentiated managers and strategies to improve alpha generation	• Number of fund commitments increases operational complexity • FOF commitments have second layer of fees • Higher investment minimums • While diversified, manager concentration introduces additional idiosyncratic manager risks
Direct Portfolio	• Multiple investments in direct funds with a focus on low beta managers in order to maximize alpha	• 10-18 direct funds	• Single layer of fees • A diversified portfolio across various strategy buckets and strategy types creates opportunity to maximize alpha	• Number of fund commitments increases operational complexity (reporting, liquidity management, etc) • Higher investment minimums, compounded by multiple commitments

Introduction to Marketable Alternatives

Direct Funds vs. Fund of Funds

Characteristics	Direct Funds	Fund of Funds (FOF)
Fees / Expenses	Single Layer	Double Layer
Manager Evaluation	Evaluation and due diligence required for all underlying managers	Evaluation required for one FOF manager who performs underlying manager due diligence
Diversification	Investor must diversify among many managers and strategies	Single FOF can diversify among many underlying managers and strategies
Liquidity Management	Managed by an investor	Managed by the FOF
Portfolio Control	Investor builds and controls the marketable alternatives portfolio	FOF manager controls overall investment strategy and investor has no control in building the portfolio
Investor Minimums	Requires higher asset levels to build a diversified portfolio	Can diversify with significantly lower asset levels
Customization	Bespoke portfolio to fit specific risk and return parameters	One size fits all approach

Introduction to Marketable Alternatives

Investing in Marketable Alternatives Comes with Unique Risks

Leverage

- While the appropriate use of leverage has the potential to result in higher returns for the fund's investors, it can be detrimental in times of stress by magnifying losses.

Lack of Transparency

- Managers may be reluctant to share position level information or may provide it with a considerable lag

Speculative Investment

- Portfolio may be highly concentrated into a few investments
- Investment strategies rely on fund manager assumptions when underwriting investments

Manager Selection

- Performance dispersions among managers are much wider than in public markets

Use of Complex Financial Instruments

- Trading complex financial instruments such as warrants and derivatives require knowledge and experience in the technical structure, financial risks, and contractual terms of legal agreements.

Regulatory Oversight

- Marketable alternatives avoid the bulk of federal regulations in part by making only private offerings to investors who meet the accredited investor, qualified client, and qualified purchaser restrictions.

Limited Liquidity

- Typically, marketable alternatives provide quarterly liquidity. However, some funds may have locks or gates in place that may limit the frequency or amount that can be redeemed during a redemption window.

Disclosures

Key terms

- **Limited Partners ("LP"):** LP refers to the institutions or high-net-worth investors who contribute capital to the fund.
- **General Partners ("GP"):** GP refers to the top-ranking partners at the fund firm, as well as the firm managing the fund.

Fees

- **Carried Interest ("Carry"):** Carry refers to a performance fee wherein the manager will charge for positive return.

Drawdown Slide:

- The three largest historical drawdowns for the S&P 500, MSCI EAFE, MSCI EM, FTSE NAREIT Equity REITs, and Barclays Corporate High Yield Indices are shown, which results in 15 total drawdowns displayed. During each drawdown, the performance of the HFRI Fund Weighted Composite is calculated and compared to the corresponding index over the same period.

Sortino Slide:

- Each ratio is defined as: total annualized return less risk free rate (3 month T-Bill) divided by downside deviation, or the standard deviation of returns when monthly returns are below zero.
- The following funds are used as proxies for each corresponding asset class:
  - **Investment-Grade Bonds:** Vanguard Total Bond Market Index
  - **Corporate High Yield:** iShares iBoxx $ High Yield Corporate Bd
  - **U.S. Large Cap Equities:** Vanguard Institutional Index Instl
  - **International Developed Equities:** Vanguard Developed Markets Index Adm
  - **Emerging Markets Equities:** Vanguard Emerging Mkts Stock Idx
  - **Real Estate:** Vanguard REIT Index
  - **Marketable Alternatives:** HFRI Fund Weighted Composite Index

Ironwood Capital Management

Ironwood Capital Management ("Ironwood", or "the Firm") launched Ironwood Partners L.P. ("the Fund") in 1996 as a global multi strategy hedge fund of funds with a focus on relative value, event-driven, equity market neutral, credit opportunities, distressed securities, and various arbitrage-based strategies.

Firm & Team

- Ironwood was founded in 1996 by Frederick Gans following his employment as a Managing Director at Bear, Stearns & Co. Jonathan Gans is the current CEO and President of Ironwood, while Frederick Gans now serves in an advisory role.
- The investment allocation process is overseen and driven by the Investment & Risk Committee, which is made up of Jonathan Gans, Benjamin Zack, Managing Director, and Simon Hong, Director.
- The Firm manages approximately $4 billion in assets and is headquartered in San Francisco with an additional office in Chicago.
- Ironwood employs 32 professionals and is wholly owned by its employees and founding partners.
- The Firm manages three product offerings intended for different types of investors: Ironwood Partners, Ironwood Non-Dollar Fund SPC, and Ironwood Institutional Multi-Strategy Fund LLC.

Fund Strategy

- The Fund focuses on institutional quality managers in relative value, event-driven, equity market neutral, credit opportunities, distressed securities, and various arbitrage-based investment strategies. The Fund will avoid investing in more volatile strategies such as directional long/short, global macro, commodity trading advisors, and managed futures.
- Ironwood's portfolio construction process combines bottom-up manager identification and top-down sector forecasting centered on gaining comfort with an underlying fund's strategy, management team, operations, and track record.
- The Fund will hold 15 to 25 underlying managers at any given time with approximately 65% to 80% of the total allocation represented by the top 10 holdings.

Reasons to Own

- ***Investment Banking Pedigree*** – Given the investment banking background of key professionals, Ironwood has an edge in vetting managers that focus on corporate restructuring and merger/risk arbitrage.
- ***Boutique Firm Structure*** **–** The boutique structure results in a specialized and efficient investment decision making process.
- ***Stable Leadership at the Firm and Fund*** **–** Tenure of key leadership and investment professionals at Ironwood average 15 years.

Risks

- ***Portfolio Concentration*** – It is essential to continuously monitor the number of underlying positions in the Fund to ensure top managers are allocated as impactful portions of Fund capital and more volatile managers are prohibited from negatively impacting the risk parameters outlined by the Fund. The total number of underlying positions in the Fund has steadily declined over the years resulting in a more concentrated portfolio.

Key Terms

Strategy: Hedge Fund of Funds
Geography: Global
Inception Year: 1996
Stated Minimum: $1 MM
Qualification: Qualified Purchasers
Structure: Limited Partnership
Liquidity Terms: Semiannually with 95 days notice
Lock Up: 1-year

Fees

Management: 0.95%
Performance: None