NORTH Dakota Be Legendary. | Teachers' Fund For Retirement
RETIREMENT & INVESTMENT

ND TFFR BOARD MEETING
Thursday, November 17, 2022, 1:00 p.m.
WSI Board Room (In Person)
1600 E Century Ave, Bismarck, ND
Click here to join the meeting

AGENDA

I. CALL TO ORDER AND ACCEPTANCE OF AGENDA

A. Executive Summary
B. Welcome New Communications and Outreach Director Jecca Geffre

II. ACCEPTANCE OF MINUTES (September 22, 2022)

III. EDUCATION (20 minutes)

A. Elements of an Actuarial Funding Policy – Mr. Strom

IV. GOVERNANCE (120 minutes)

A. Segal Actuarial Valuation Report – Mr. Strom
B. Governance & Policy Review Committee Update – Mr. Mickelson
    1. 2nd Reading and Final Adoption – GPR Committee Policy and Charter
C. Legislative Session Planning – Ms. Murtha

(Break)

D. "Pioneer" Project Update – Mr. Roberts
E. Member/Outreach Update – Ms. Weeks

V. REPORTS (60 minutes) *Board Action*

A. Annual Reemployed Retiree Report – Mr. Roberts
B. Annual Budget & Expense Report – Mr. Skor
C. Quarterly TFFR Ends Report – Mr. Roberts
D. Quarterly Investment Report – Mr. Chin
E. Quarterly Internal Audit Report – Ms. Sauter
F. Executive Limitations/Staff Relations Report – Ms. Murtha

VI. OTHER BUSINESS

A. Board Reading Materials – Material References Included
B. Next Meeting:
    1. TFFR Regular Board Meeting – January 26, 2023, at 1:00 p.m.

VII. ADJOURNMENT

Any individual requiring an auxiliary aid or service, please contact the Retirement and Investment Office (701) 328-9885 at least three (3) days prior to the scheduled meeting.

EXECUTIVE SUMMARY

TFFR Regular Meeting

November 17, 2022 – 1:00pm CT

I. **Agenda: The November Board Meeting will be held at the Conference Room at the WSI Building to accommodate in person attendance, however, a link will also be provided so that Board members and other attendees may join via video conference.** The board member video link is included in the email with the Board materials.

- We will begin the meeting by welcoming our New Communications & Outreach Director Jecca Geffre.

II. **Minutes (Board Action):** The September 22, 2022, Board meeting minutes are included for review and approval.

III. **Board Education (Information):** Representatives from our fund actuary Segal will provide the Board with education on the components of a successful funding policy.

IV. **A. Actuarial Valuation Report (Board Action):** Representatives from our fund actuary Segal will present the prior fiscal year valuation report. Board members have been provided the full report, and Segal has already presented this report to the Employee Benefits Programs Committee on October 26, 2022.

B. GPR Committee Update & 2nd Reading on GPR Committee Policy & Charter (Board Action): This item will be added to the Board book subsequent to the TFFR GPR meeting on 11-10-22. The Board will have a 2nd Reading and opportunity for final adoption of the policy amendment and proposed charter for the GPR committee.

C. 2023 Legislative Session Planning (Board Action): Ms. Murtha will present to the Board on the anticipated public policy issues that may arise and be impactful to the TFFR program during the 2023 session and ask the Board for staff guidance on testimony preparation. This item will also be presented for input to the TFFR GPR committee and therefore will also be added to the Board book subsequent to the TFFR GPR committee meeting.

D. Pioneer Project Update (Information): Mr. Roberts will provide an update on staff efforts related to implementation of the Pioneer Project.

E. Member/Outreach Update (Information): Ms. Weeks will provide an update on scheduled outreach efforts presented by the Retirement Services Division.

V. **Reports (Board Action):** Staff will provide reports on annual re-employed retiree report, annual budget and expense report, quarterly audit activities, TFFR Ends, investment performance and executive limitations/staff relations.

Adjournment.

NORTH DAKOTA TEACHERS' FUND FOR RETIREMENT
MINUTES OF THE
SEPTEMBER 22, 2022, BOARD MEETING

BOARD MEMBERS PRESENT:	Dr. Rob Lech, President Mike Burton, Vice President Thomas Beadle, State Treasurer Cody Mickelson, Trustee Mel Olson, Trustee Jordan Willgohs, Trustee
BOARD MEMBERS ABSENT:	Kirsten Baesler, State Supt. DPI
STAFF PRESENT:	Jayme Heick, Retirement Programs Spec Rachel Kmetz, Accounting Mgr Missy Kopp, Exec Assistant Jan Murtha, Exec Dir Emmalee Riegler, Contracts/Records Admin Chad Roberts, DED/CRO Sara Sauter, Supvr of Internal Audit Ryan Skor, CFO/COO Rachelle Smith, Retirement Assistant Stephanie Starr, Retirement Programs Spec Dottie Thorsen, Internal Auditor Tami Volkert, Employer Svs Coor Denise Weeks, Retirement Program Mgr Susan Walcker, Sr. Financial Accountant
OTHERS PRESENT:	Rohan Adgaonkar, Sagitec Dean DePountis, Atty. General's Office Gabe Hoggarth, State Procurement Aaron Kielhack, NDIT Santosh Rao, Sagitec Sriram Ramanujam, Sagitec Vasudevan Sridharan, Sagitec LuAnn Thiel, NDIT

CALL TO ORDER:

Dr. Lech, President of the Teachers' Fund for Retirement (TFFR) Board of Trustees, called the meeting to order at 1:00 p.m. on Thursday, September 22, 2022. The meeting was held in the WSI Board Room, 1600 E Century Ave., Bismarck, ND.

THE FOLLOWING MEMBERS WERE PRESENT REPRESENTING A QUORUM: TREASURER BEADLE, MR. BURTON, DR. LECH, MR. MICKELSON, MR. OLSON, AND MR. WILLGOHS.

ACCEPTANCE OF AGENDA:

The Board considered the agenda for the September 22, 2022, meeting.

IT WAS MOVED BY MR. WILLGOHS AND SECONDED BY TREASURER BEADLE AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA AS DISTRIBUTED.

AYES: TREASURER BEADLE, MR. BURTON, MR. MICKELSON, MR. WILLGOHS, MR. OLSON, AND DR. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

Dr. Lech welcomed Ryan Skor, RIO's new Chief Financial Officer/Chief Operating Officer.

MINUTES:

The Board considered the minutes of the July 21, 2022, TFFR Board meeting.

IT WAS MOVED BY MR. BURTON AND SECONDED BY MR. OLSON AND CARRIED BY A VOICE VOTE TO APPROVE THE JULY 21, 2022, MINUTES AS DISTRIBUTED.

AYES: MR. MICKELSON, MR. OLSON, TREASURER BEADLE, MR. BURTON, MR. WILLGOHS, AND DR. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

TFFR PIONEER PROJECT PRESENTATION:

Mr. Roberts shared an update on the Pioneer project. The project is currently at the beginning of the elaboration phase which will run through the middle of December. Mr. Nagel, one of our dedicated NDIT staff, resigned, so that position has been posted. The project also has a new Project Manager from NDIT. RIO has contracted with CPAS for extra support in relation to the Pioneer Project.

Mr. Sridharan, Sagitec, provided an overview of Sagitec and their experience with pension clients. Sagitec's product, which is called Neospin, is built on top of a framework and each layer of the architecture is independent and can evolve independently. Mr. Sridharan presented the key components, features, and hosting security of Neospin. Mr. Ramanujam, Sagitec, shared the project phases, methodology, and schedule. The first three phases of the project are complete. Weekly project planning and status meetings are ongoing. Pilot one will begin this month and includes elaboration and design, data conversion, and development and testing. Mr. Rao, Sagitec, provided a demonstration of some Neospin scenarios. Board discussion followed.

ACTUARIAL AUDIT PRESENTATIONS:

Pres. Lech reviewed the process for the actuarial audit presentations. There will be two executive sessions for the presentations from the vendors, then another executive session to discuss the bids and make a decision.

IT WAS MOVED BY TREASURER BEADLE AND SECONDED BY MR. WILLGOHS AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO EXECUTIVE SESSION PURSUANT TO NDCC 44-04-19.2(6), 44-04-18.4(6), AND 55-44.4-10(2) TO SEQUESTER COMPETITORS DURING A COMPETITIVE BIDDING PROCESS AND TO RECEIVE AND DISCUSS EXEMPT PROPOSAL PROCUREMENT INFORMATION DURING A COMPETITIVE BIDDING PROCESS.

AYES: TREASURER BEADLE, MR. WILLGOHS, MR. OLSON, MR. BURTON, MR. MICKELSON, AND DR. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

The executive session started at 2:29 p.m. and ended at 2:48 p.m. The executive session was attended by Board members, staff, Mr. Hoggarth, Mr. DePountis, and representatives from Cavanaugh Macdonald Consulting, LLC.

IT WAS MOVED BY MR. OLSON AND SECONDED BY TREASURER BEADLE AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO EXECUTIVE SESSION PURSUANT TO NDCC 44-04-19.2(6) 44-04-18.4(6), AND 55-44.4-10(2) TO SEQUESTER COMPETITORS DURING A COMPETITIVE BIDDING PROCESS AND TO RECEIVE AND DISCUSS EXEMPT PROPOSAL PROCUREMENT INFORMATION DURING A COMPETITIVE BIDDING PROCESS.

AYES: MR. WILLGOHS, MR. BURTON, MR. MICKELSON, MR. OLSON, TREASURER BEADLE, AND PRES. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

The executive session started at 2:50 p.m. and ended at 3:12 p.m. The executive session was attended by Board members, staff, Mr. Hoggarth, Mr. DePountis, and representatives from GRS.

IT WAS MOVED BY MR. MICKELSON AND SECONDED BY MR. BURTON AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO EXECUTIVE SESSION PURSUANT TO NDCC 44-04-19.2(6) 44-04-18.4(6), AND 55-44.4-10(2) TO SEQUESTER COMPETITORS DURING A COMPETITIVE BIDDING PROCESS AND TO RECEIVE AND DISCUSS EXEMPT PROPOSAL PROCUREMENT INFORMATION DURING A COMPETITIVE BIDDING PROCESS.

AYES: MR. OLSON, MR. MICKELSON, MR. WILLGOHS, TREASURER BEADLE, MR. BURTON, AND PRES. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

The executive session started at 3:14 p.m. and ended at 3:27 p.m. The executive session was attended by Board members, staff, Mr. Hoggarth, and Mr. DePountis.

The Board recessed at 3:27 p.m. and reconvened at 3:35 p.m.

IT WAS MOVED BY TREASURER BEADLE AND SECONDED BY MR. BURTON AND CARRIED BY A ROLL CALL VOTE TO DIRECT STAFF TO NEGOTIATE A CONTRACT WITH THE FIRM MOST SUSEPTABLE TO AWARD BASED ON THE SCORING METRIC PROVIDED.

AYES: MR. BURTON, MR. WILLGOHS, MR. OLSON, TREASURER BEADLE, MR. MICKELSON, AND PRES. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

GOVERNANCE:

2nd Reading on Policy Changes and 1st Reading on GPR Committee:

Ms. Murtha reviewed the process that has occurred to review the TFFR Policy Manual, and make recommendations to update the manual format, and make amendments to some policies. Mr. DePountis, Board counsel, reviewed the amended policies and had no concerns.

IT WAS MOVED BY MR. MICKELSON AND SECONDED BY MR. WILLGOHS AND CARRIED BY A ROLL CALL VOTE TO APPROVE THE NEW MANUAL FORMAT AND AMENDMENTS TO POLICIES II.D.3, 4, & 5; II.E.2 & 3; II.F.1; AND SECTION II EXHIBITS FOR 2ND READING AND FINAL ADOPTION.

AYES: MR. WILLGOHS, MR. MICKELSON, TREASURER BEADLE, MR. BURTON, MR. OLSON, AND DR. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

IT WAS MOVED BY MR. OLSON AND SECONDED BY TREASURER BEADLE AND CARRIED BY A ROLL CALL VOTE TO APPROVE THE INTRODUCTION AND FIRST READING OF THE POLICY AMENDMENT AND CHARTER FOR THE TFFR GPR COMMITTEE.

AYES: MR. BURTON, MR. WILLGOHS, MR. OLSON, TREASURER BEADLE, MR. MICKELSON, AND PRES. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

2023 Legislative Initiatives and Budget Presentation:

Ms. Murtha presented the 2023 legislative initiatives and budget decision packages. The base budget is approximately $8.8 million. RIO asked for three decision packages which impact the continuing agency reorganization, the additional FTEs granted during the special legislative session and the associated costs, NDIT unification, and strategic planning. Ms. Murtha reviewed the core priorities from RIO's strategic plan. The decision packages impact multiple initiatives from the strategic plan. The first package supports our workforce initiatives and workplace culture including increased salaries after splitting the ED/CIO positions, the reclassification of the CFO/COO position, the need for additional administrative support for the five new FTEs, professional certifications, and the increased cost of travel. There is additional cost for temporary staff who are needed to complete manual processes until the new pension administration system is implemented in the fourth quarter of 2024. The third package supports the talent management and internal investment initiatives. Board discussion followed.

Outreach Program Update:

Ms. Weeks provided an update on TFFR outreach activities. Staff presented at the TFFR Retirement Education Workshop in July along with outside presentations on estate planning and Social Security. There were 64 members and beneficiaries in attendance. The Retirement Program Specialists staffed the TFFR information booth at the Career and Technical Education (CTE) conference. Mr. Roberts and

Ms. Weeks provided a presentation for the Retired Teachers Association conference in September. Upcoming outreach events include individual and group benefit counseling sessions, Business Manager outreach, and the ND Council of Educational Leaders and ND School Board Association conferences. Board discussion followed.

REPORTS:

Annual Audit Committee Report:

Ms. Sauter provided the Annual Internal Audit (IA) report which covers July 1, 2021, to June 30, 2022. The Audit Committee had four regular meetings and one special meeting. IA and the Audit Committee worked on some special projects that were not in the workplan including a review of SIB governance, the Executive Search process, succession planning, and strategic planning. The external auditors, CliftonLarsonAllen, issued an unmodified "clean" opinion for the RIO financial audit for the fiscal year ended June 30, 2021. The financial audit for the fiscal year ended June 30, 2022, is underway. The Committee adopted the audit work plan and budgeted hours for the fiscal year starting July 1, 2022.

Annual Technology Report:

Ms. Thiel, Customer Success Manager from NDIT, provided the Annual Technology Report. Ms. Thiel discussed the tools and technologies that RIO has access to through IT unification. RIO has been assigned an Information Security Officer who is responsible for reporting quarterly security reports to RIO's executive staff and is the main point-of-contact for security resources. NDIT is building a strong business resilience program to assist RIO with ensuring disaster recovery plans are in place. RIO has two dedicated IT positions who transitioned to NDIT but continue to support RIO. Additional NDIT staff are participating in the TFFR Pioneer project to provide assistance. Board discussion followed.

Quarterly TFFR Ends Report:

Mr. Roberts reviewed the TFFR Ends report for the quarter ending June 30, 2022. During the quarter the DED/CRO position was filled. The Pioneer project kick-off meeting was held in May 2022. Technical requirements meetings began in June 2022. TFFR staff held "Crucial Conversations" book discussions to continue growth in this area. Ms. Weeks attended the Public Retirement Information Systems Management (PRISM) conference. Staff hosted new outreach sessions for Business Managers to provide continued education. Board discussion followed.

Executive Limitations/Staff Relations Report:

Ms. Murtha provided the Executive Limitations/Staff Relations report. Interviews are in progress for the four investment positions. There was a good group of candidates and staff have conducted many interviews. The Communications & Outreach Director initial interviews have been completed. Staff plan to schedule second interviews in October. State email accounts have been created for Board and Committee members who are not state employees. This allows those members to access PeopleSoft to view their payroll information and W-2s. Fiscal staff will be contacting affected Board and Committee members to schedule a demonstration of PeopleSoft. Board members with k12 accounts will still receive calendar invites through that email, but all confidential items will be sent only to the new nd.gov accounts.

The Request for Proposals (RFP) for an IA consultant will be issued next week. The consultant will evaluate current business practices and the future business state to assess IA needs to support the changing programs.

Ms. Murtha was invited to attend a Retirement Committee Stakeholder Meeting. The Committee presented then asked stakeholders for feedback. Jan shared what the impact of the Committee's bill will be on TFFR and the investment program. Board discussion followed.

IT WAS MOVED BY MR. BURTON AND SECONDED BY TREASURER BEADLE AND CARRIED BY A VOICE VOTE TO ACCEPT THE ANNUAL AUDIT, ANNUAL TECHNOLOGY, QUARTERLY TFFR ENDS, AND EXECUTIVE LIMITATIONS/STAFF RELATIONS REPORTS

AYES: TREASURER BEADLE, MR. OLSON, MR. BURTON, MR. MICKELSON, MR. WILLGOHS, AND PRES. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

CONSENT AGENDA:

IT WAS MOVED BY MR. WILLGOHS AND SECONDED BY MR. MICKELSON AND CARRIED BY A VOICE VOTE TO APPROVE THE CONSENT AGENDA – DISABILITIES 2022-5D, 2022-6D, 2022-7D, AND 2022-8D.

AYES: MR. BURTON, MR. MICKELSON, MR. WILLGOHS, MR. OLSON, TREASURER BEADLE, AND PRES. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER
MOTION CARRIED

ADJOURNMENT:

With no further business to come before the Board, Vice Pres. Burton adjourned the meeting at 4:42 p.m.

Prepared by,

Missy Kopp
Assistant to the Board

North Dakota Teachers' Fund for Retirement

2022 Board Education Session

Elements of an Actuarial Funding Policy

Impact of Revisions to ASOP 4

November 17, 2022 / Matt Strom

Segal

Agenda

Elements of an Actuarial Funding Policy

- **Model Unfunded Liability Amortization Approaches**

Impact of Revisions to ASOP 4

- **“Low Default Risk Obligation Measure”**

Funding Policy in Perspective

Actuarial Valuation – the Actuarial GPS

Ultimately, the valuation acts as a roadmap and guide

Establishes how far along the plan is:

- Funded status
- Assets, liabilities and unfunded liability

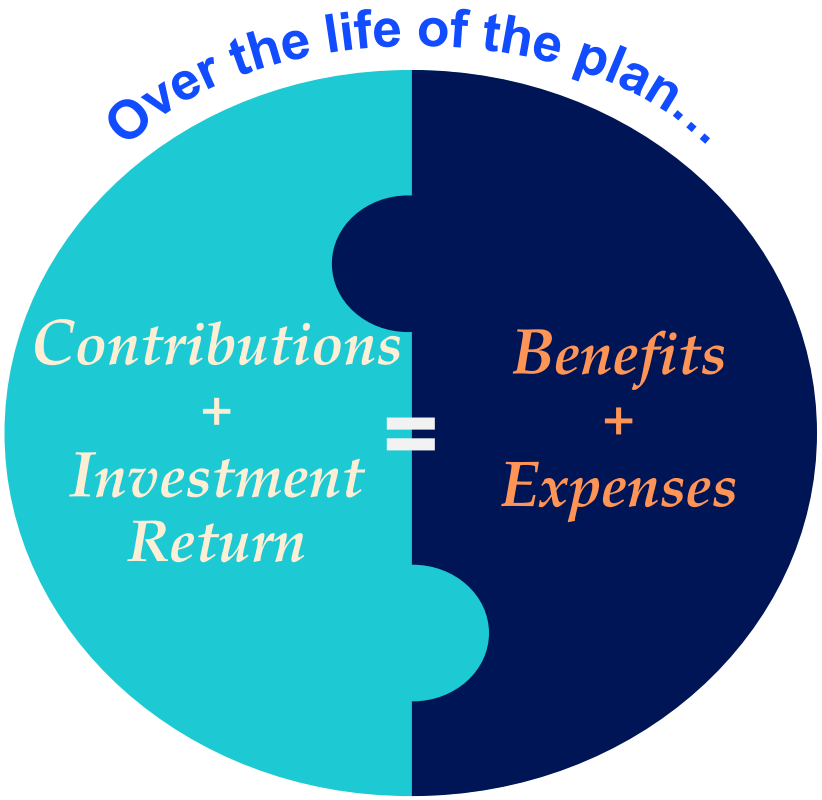
Determines the next steps towards the ultimate goal:

- Employer and employee contribution rates

Occasionally, the unexpected can cause “rerouting”:

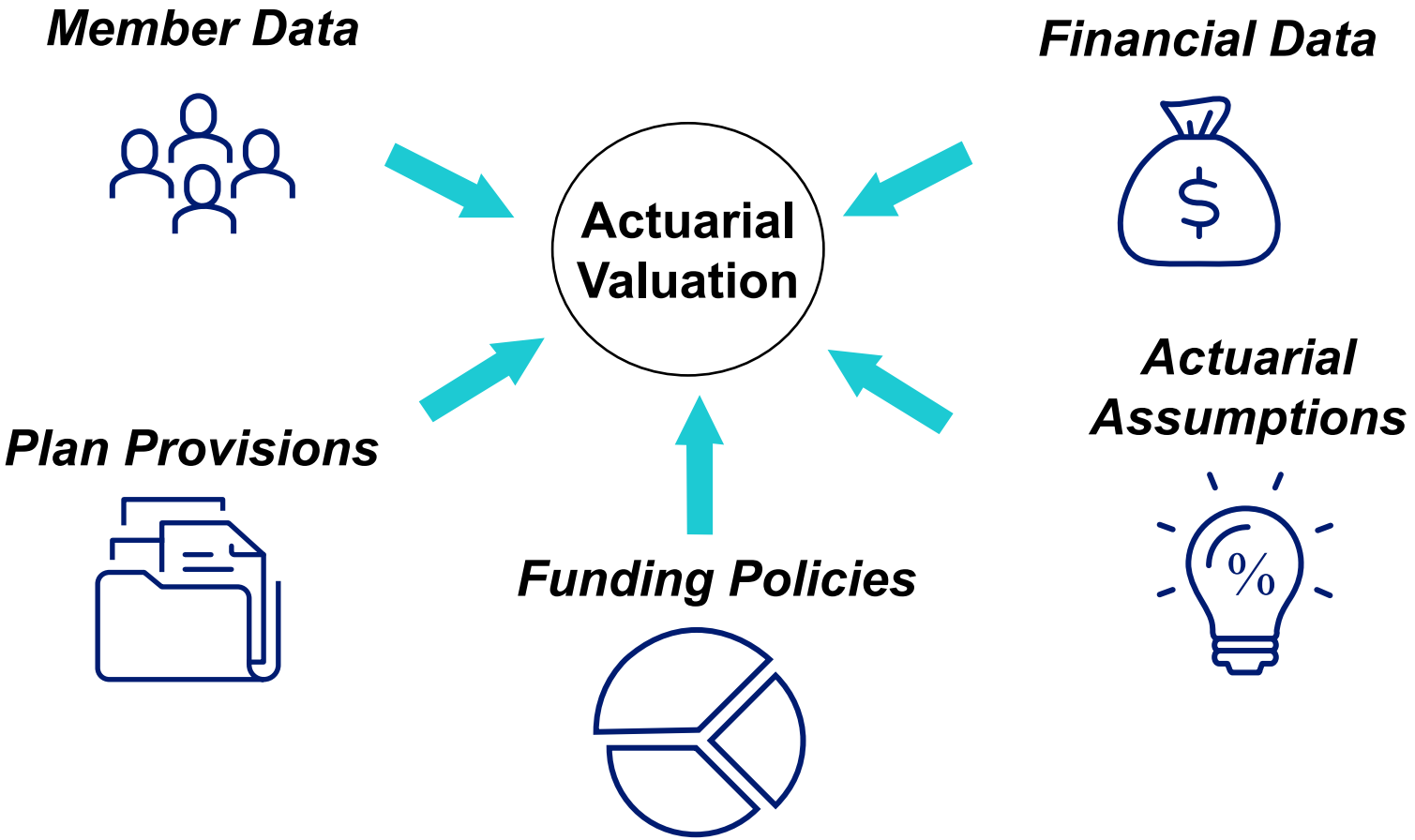
- Experience studies with potential assumption changes

Actuarial Balance



Or: *Contributions* = *Benefits* + *Expenses* – *Investment Return*

What Goes Into an Actuarial Valuation



Valuation Inputs

Two Actuarial Policy/Decision Areas

Actuarial Assumptions

- Assign a value to the benefits promised
- Economic assumptions
- Demographic assumptions

Actuarial Funding Policy

- Determines current year employer contributions
  - Or **"recommended level"** of employer contributions, when set by statute
- Actuarial Cost Method (almost never changes)
- Asset Smoothing Method (rarely changes)
- UAAL* Amortization Policy (reviewed occasionally)

* UAAL = Unfunded Actuarial Accrued Liability

Funding Policy Components

1) **Actuarial Cost (Funding) Method –** allocates costs to time periods, past, current and future

2) **Asset Smoothing Method –** assigns a value to assets for determining contribution requirements; defines UAAL

3) **UAAL Amortization Policy –** sets contributions to systematically pay off any UAAL including structure, periods and pattern of payments

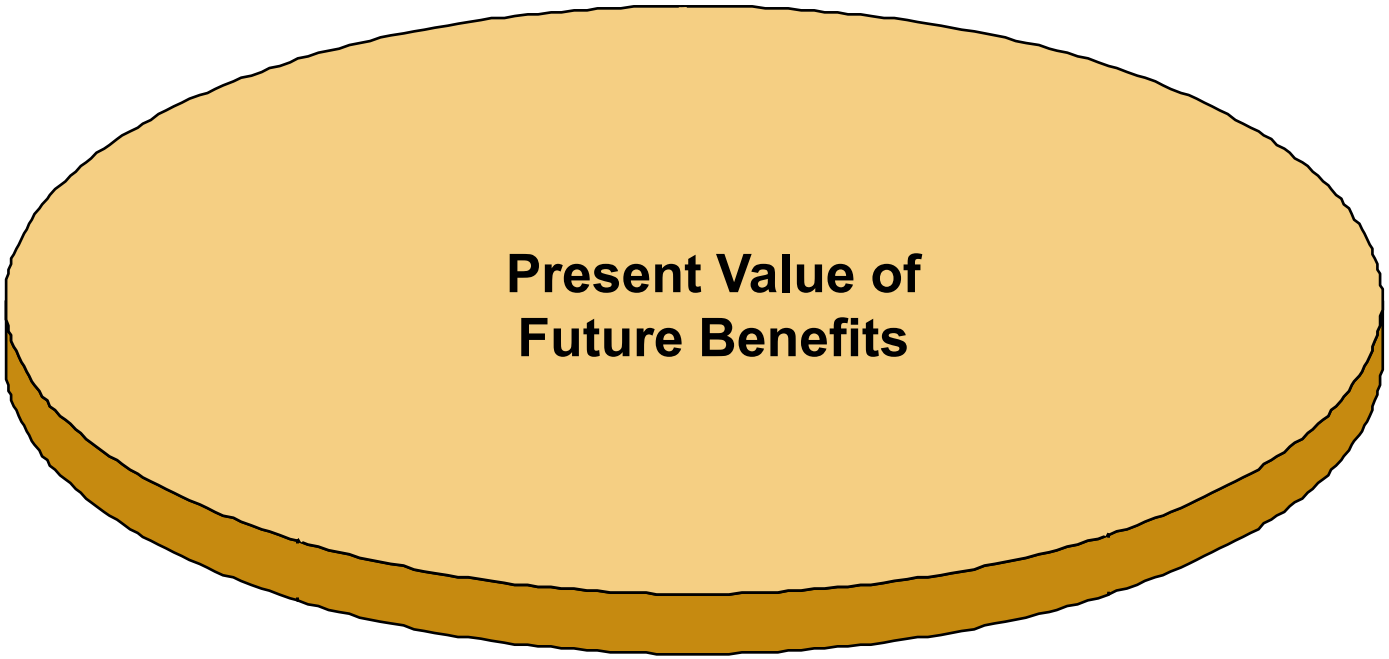
Actuarial Guidance on Funding Policies

Conference of Consulting Actuaries Public Plans Community (CCA PPC) "White Paper"

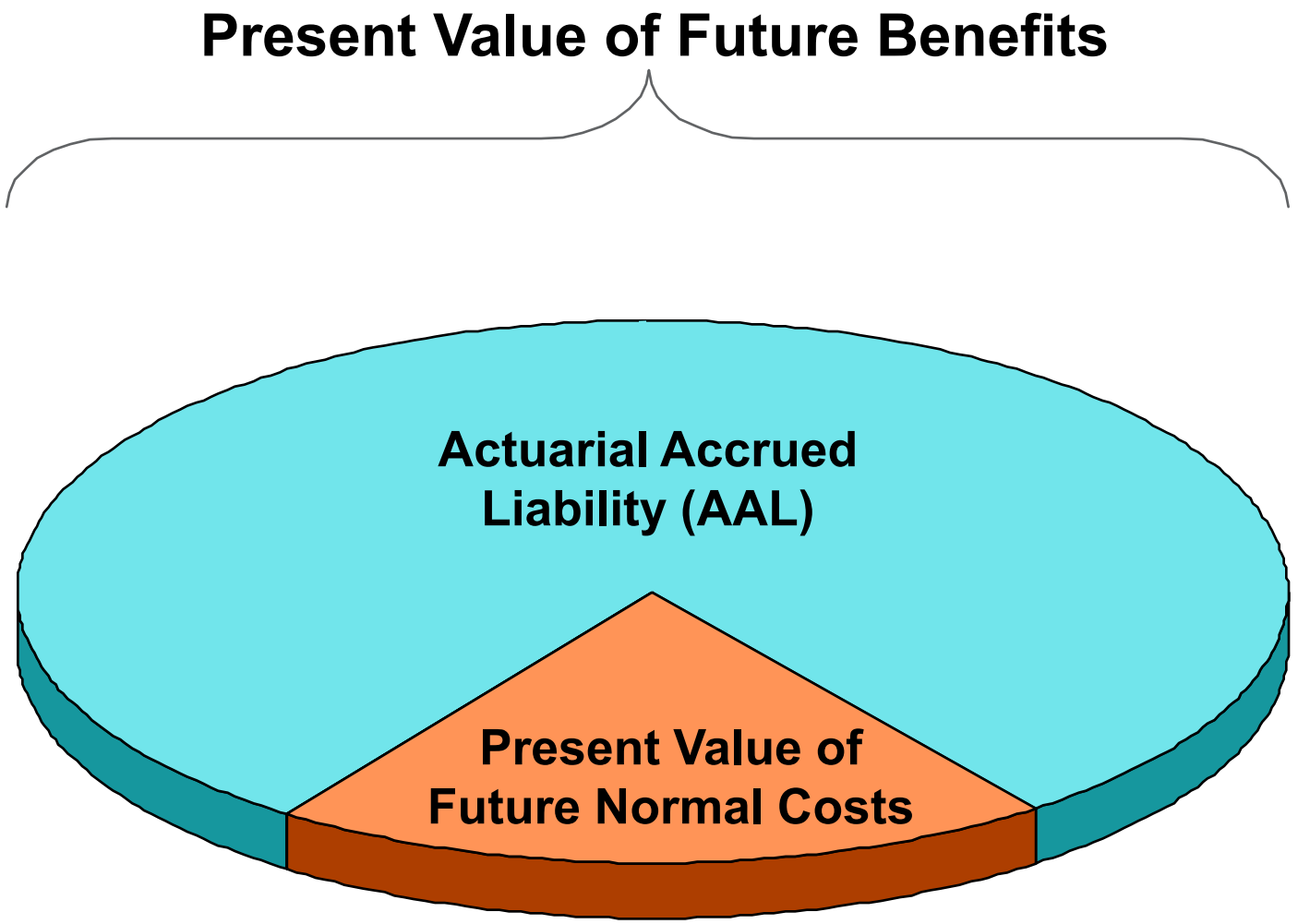
- Actuarial Funding Policies and Practices for Public Pension Plans
- Issued October 2014; update in progress
- Not binding, but provides detailed discussion of all policy components
- Ranks policy alternatives, including **"model policies"**

https://www.ccactuaries.org/Portals/0/pdf/CCA_PPC_White_Paper_on_Public_Pension_Funding_Policy.pdf

Funding Policy Basics:
Present Value of Future Benefits

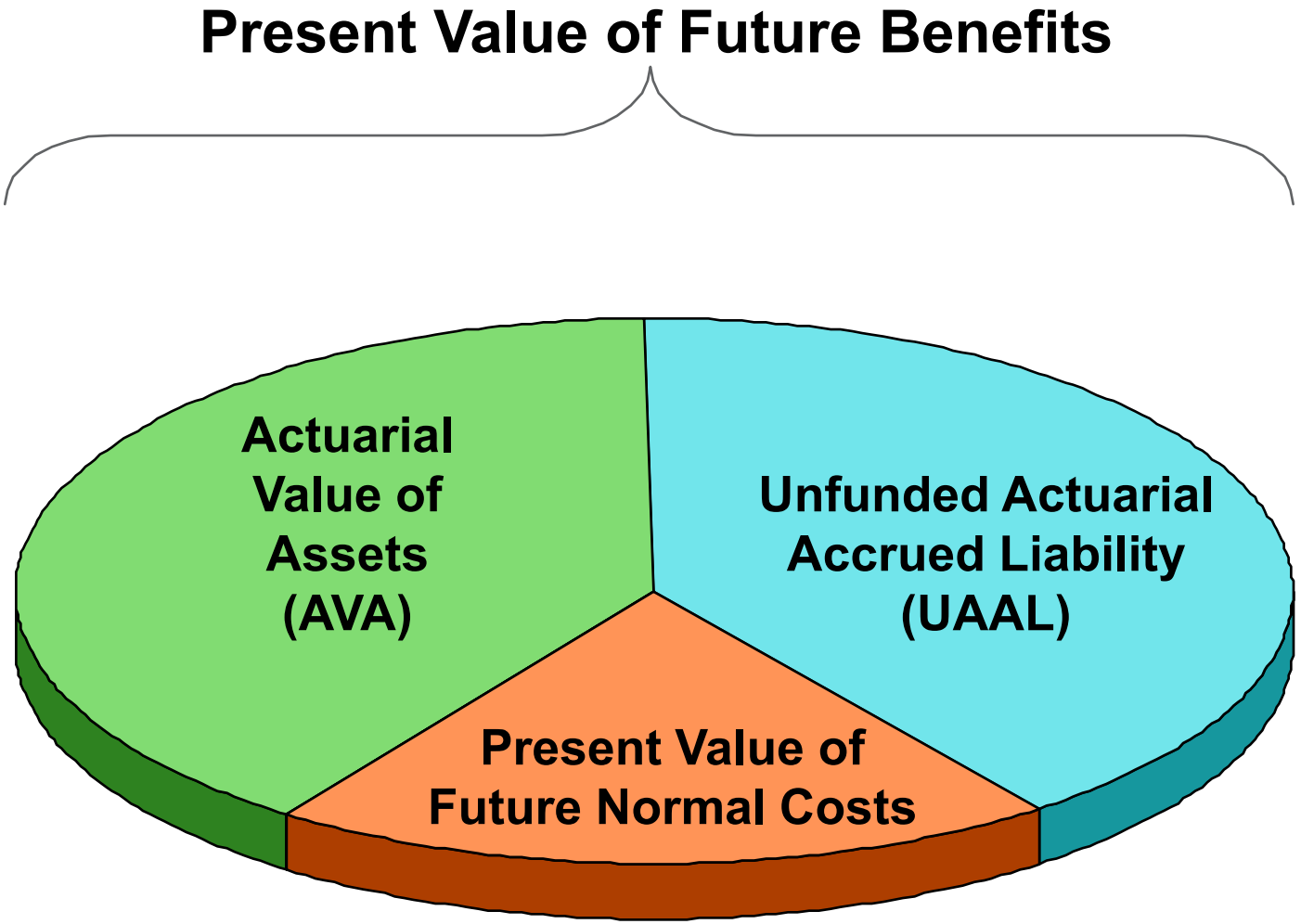


Funding Policy Basics: Actuarial Accrued Liability and Normal Cost

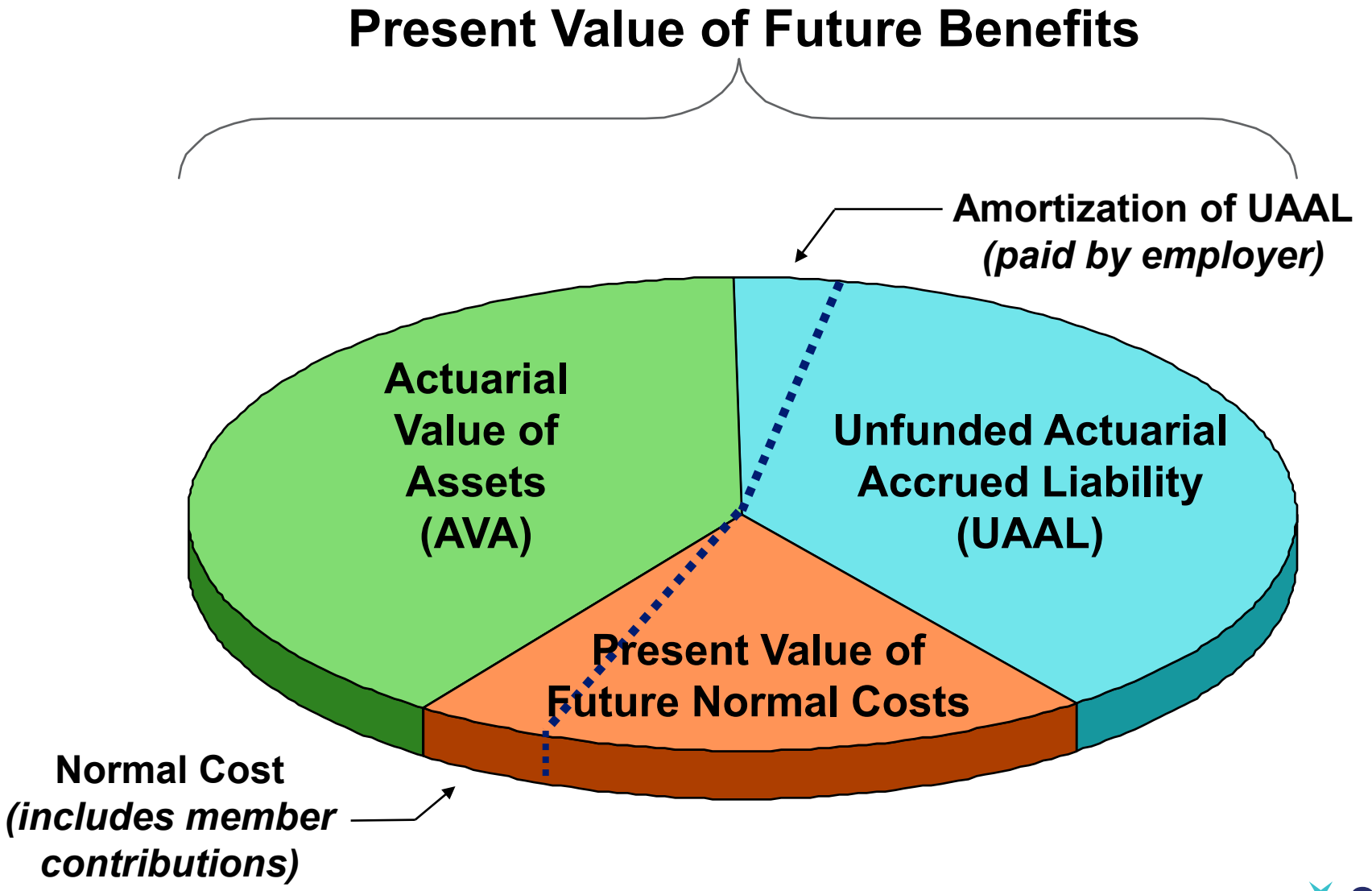


TFFR's allocation to past and future service based on Entry Age Normal cost method.

Funding Policy Basics: Unfunded Actuarially Accrued Liability



Funding Policy: "Actuarially Determined Contribution"



Amortization Policy

Components of Actuarially Determined Contribution (ADC)

- Normal cost, plus
- Amortization of unfunded liability

Sources of Unfunded Liability

- Plan changes
- Assumption or method changes
- Gains / losses

Amortization policy includes:

- Structure: Single UAAL or in layers
  - Also: fixed or rolling amortization
- Payment pattern: level dollar or level percent of pay
- Periods: how long to fund the UAAL

Amortization Structure for UAAL

Closed versus Open ("Rolling") Amortization Period

- Closed means the period decreases each year
  - UAAL will be fully amortized over initial amortization period
- Open means the UAAL is re-amortized over the same new period every year

Amortization based on one layer or multiple layers

- One layer means the entire UAAL is amortized as a single amount regardless of the source of the UAAL
- Multiple layers amortize each new change in UAAL over separate periods
  - Gains / losses, assumption or method changes, plan changes
  - Can use same or different periods for different sources of UAAL

Current vs. Model UAAL Amortization Periods

Current UAAL amortization is calculated on the entire UAAL

- Level percentage of payroll basis
  - Payroll growth assumption of 3.25%
- Based on a closed 30-year period, which ends June 30, 2043
  - As of June 30, 2022, there were 21 years remaining on the amortization period

Model UAAL amortization periods vary by source:

Source of UAAL	Model Amortization Period
Experience Gain/Loss	15 to 20 years
Assumption Changes	15 to 25 years
Active Plan Changes	Demographic, ≤ 15
Inactive Plan Changes	Demographic, ≤ 10
Early Retirement Incentives	5 years or less
Surplus	30 years

Benefits of Layered UAAL Amortization

Layered UAAL Amortization Provides Several Benefits

Increased flexibility in how sources of UAAL are reflected in the ADC

Not tied to an explicit full funding date

For each amortization layer, the amortization schedule shows:

- Date, source (cause) and amount of each change in UAAL
- Outstanding balance remaining at valuation date
- Years remaining before that layer is fully amortized
- Current year amortization payment (or credit for experience gains)
- Sum of outstanding balances by layer equals total UAAL

Layered UAAL Amortization Illustration

Sample Schedule

Unfunded Actuarial Accrued Liability Amortization Schedule

Description	Original Balance	Outstanding Balance as of 12/31/2020	1/1/2021 Amortization Payment	Outstanding Balance as of 12/31/2021	1/1/2022 Amortization Payment	Amortization Period as of 12/31/2021
December 31, 2017 legacy UAAL (revised funding policy effective December 31, 2018)	$830,756,647	$866,700,272	$51,696,272	$874,091,790	$53,247,160	26 years
December 31, 2018 contribution deficiency	48,781,251	50,122,261	2,989,654	50,549,721	3,079,344	26 years
December 31, 2018 UAAL base	94,971,312	97,803,414	5,719,203	98,760,316	5,890,779	27 years
December 31, 2019 contribution deficiency	24,046,028	24,359,978	1,453,005	24,567,729	1,496,595	26 years
December 31, 2019 plan change	(76,021,953)	(76,695,501)	(4,893,510)	(77,007,635)	(5,040,315)	23 years
December 31, 2019 UAAL base	(96,339,884)	(97,819,066)	(5,614,292)	(98,889,620)	(5,782,721)	28 years
December 31, 2020 contribution deficiency	26,912,759	26,912,759	1,605,272	27,142,280	1,653,430	26 years
December 31, 2020 assumption change	117,503,086	117,503,086	6,626,316	118,915,336	6,825,105	29 years
December 31, 2020 UAAL base	(158,413,687)	(158,413,687)	(8,933,375)	(160,317,635)	(9,201,376)	29 years
December 31, 2021 contribution surplus	(13,021,037)	N/A	N/A	(13,021,037)	(793,204)	26 years
December 31, 2021 plan change	(77,033,015)	N/A	N/A	(77,033,015)	(4,799,017)	25 years
December 31, 2021 UAAL Base	(158,978,964)	N/A	N/A	(158,978,964)	(8,965,252)	30 years
Total		**$850,473,516**	**$50,648,545**	**$608,779,266**	**$37,610,528**	
Total with interest to middle of the year			**$52,452,431**		**$38,950,055**	
Projected payroll			**$816,451,931**		**$875,686,633**	
Total as a percentage of projected payroll			**6.42%**		**4.45%**	
Equivalent single amortization period						**25 years**

UAAL Amortization Policy – Model Practice

What might TFFR's funding policy look like under the CCA PPC "model practice"?

Outstanding balance of UAAL as of June 30, 2023, is a "legacy" unfunded liability and is amortized over 20 years

- Consistent with the current funding policy target date of June 30, 2043

Experience gains/losses subsequent to 2023 are amortized over 20 years

- Consistent with model funding policy

Changes in UAAL due to other sources:

- From changes in actuarial assumptions are amortized over **25 years**
- From changes in plan provisions are amortized over **15 years**

Should an overfunded position arise, all existing bases are cleared and the surplus is amortized as a "credit" over 30 years (rolling)

ASOP No. 4 Exposure Drafts

History on ASOP 4 comingled with other ASOPs

ASOP Nos. 4 and 27 last revised in 2013 after extensive review process

Controversy at the time was on whether the ASB should define a specific market-based measure

- Pressure from Financial Economics crowd for inclusion

New ASOPs 4 and 27 did not do so, instead focusing on "purpose of the measurement"

- For both discount rate (ASOP 27) and obligation measure (ASOP 4)

Evolution of the "market-based" measure

First exposure draft (2018) required disclosure of a market-based measure

- "Solvency value" called Investment Risk Defeasement Measure (IRDM)
  - Must use present value of accrued benefit (Unit Credit cost method)
  - Discount rate would be yields on US Treasuries or highly rated fixed incomes
- 67 comment letters received!

ASOP No. 4 Exposure Drafts

Evolution of the "market-based" measure (*continued*)

Second exposure draft (2020) softened the solvency value measure

- IRDM renamed Low-Default-Risk Obligation Measure (LDROM)
  - Can now use any immediate gain actuarial cost method
    - **Allows interpretation as to what the ongoing funding liability would be if a plan actually invested in low default risk securities**
  - Discount rate now has non-prescriptive list of examples
    - Including highly rated municipal bonds (like GASB crossover rate)

Third exposure draft (2021) essentially became the final iteration

- Do no need to calculate and disclose more than once per year
- Do not consider benefit payment default risk or the financial health of the plan sponsor when calculating LDROM
- Include commentary to help the intended user understand the significance of the LDROM with respect to plan funded status, contributions and benefit security

How do we live with the LDROM?

Recall interpretation of LDROM as what the ongoing funding liability would be if plan invested in low default risk securities

- So, difference between LDROM and AAL measures reduction in taxpayer liability due to taking reasonable investment risk
- Could even calculate "LDRADC" to show current year savings

Demonstrates economic efficiency of long-term investments by a durably sustainable pension plan

- C + I = B + E

Potential risk: Financial Economics crowd will say LDROM/LDRADC (finally!) shows the true cost of the pension promise by no longer taking advance credit for future investment risk

How do we live with the LDROM?

Where do we present the LDROM disclosure?

- Suggestion – in ASOP 51 “risk” section of the valuation report
- See ASOP 51 Sec. 3.4 Methods for Assessment of Risk:

  “… comparison of an actuarial present value using a discount rate derived from minimal-risk investments to a corresponding actuarial present value from the funding valuation or pricing valuation.

NORTH DAKOTA
RETIREMENT AND
INVESTMENT OFFICE
Teachers' Fund for Retirement
State Investment Board

North Dakota Teachers'
Fund for Retirement

Actuarial Valuation as of July 1, 2022

November 17, 2022

Matt Strom, FSA, MAAA, EA, Senior Vice President and Actuary

This document has been prepared by Segal for the benefit of the Board of Trustees of the North Dakota Teachers' Fund for Retirement and is not complete without the presentation provided at the November 17, 2022, meeting of the Board of Trustees.

Segal

Agenda

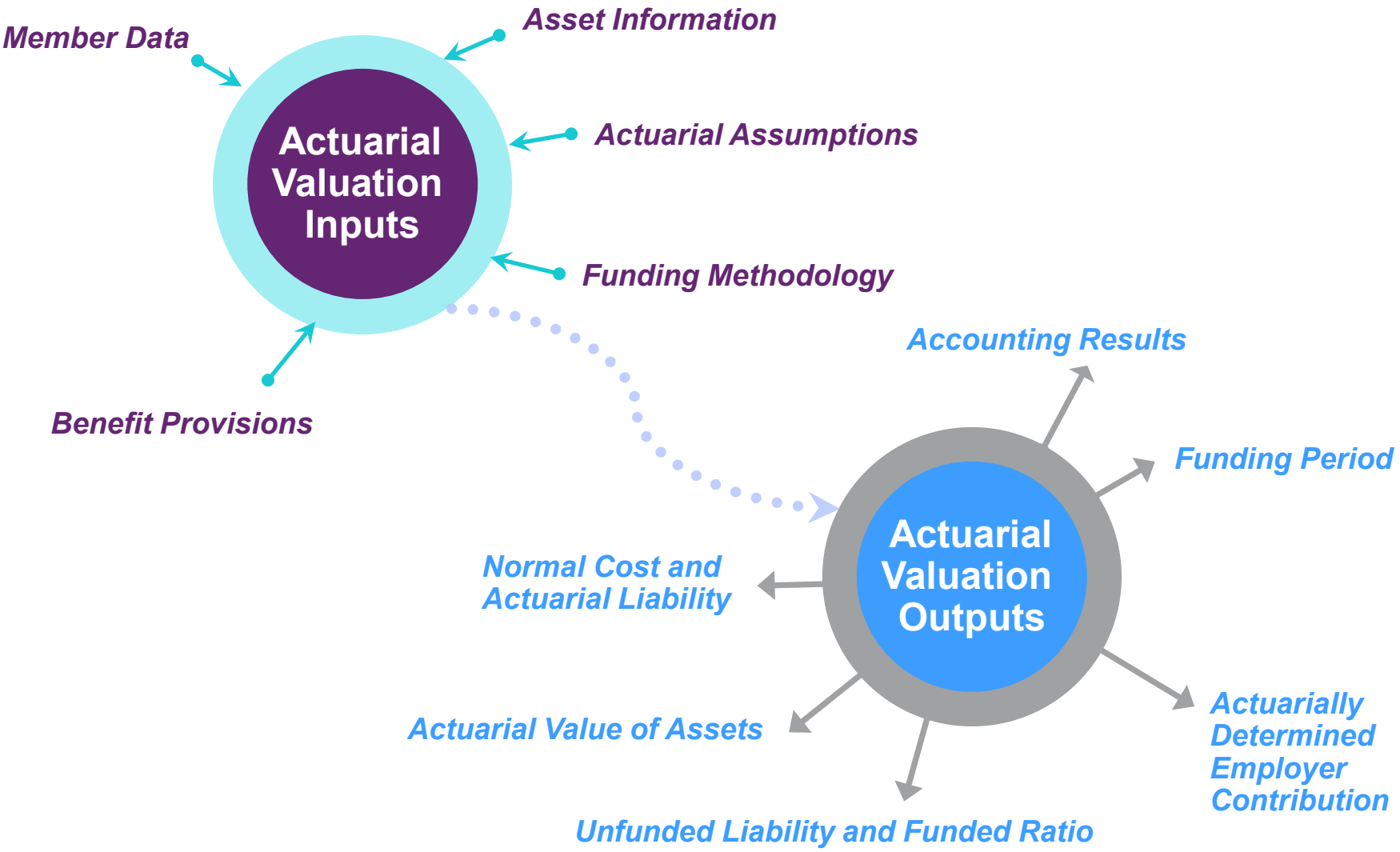
Overview of Valuation Process

Valuation Results

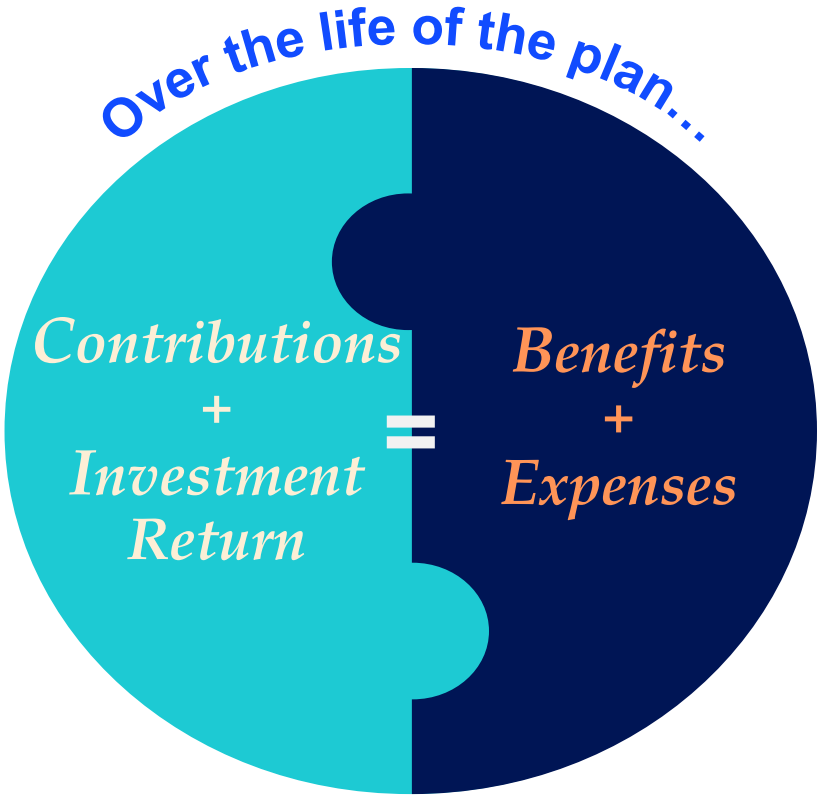
Projections

Next Steps

The Valuation Process



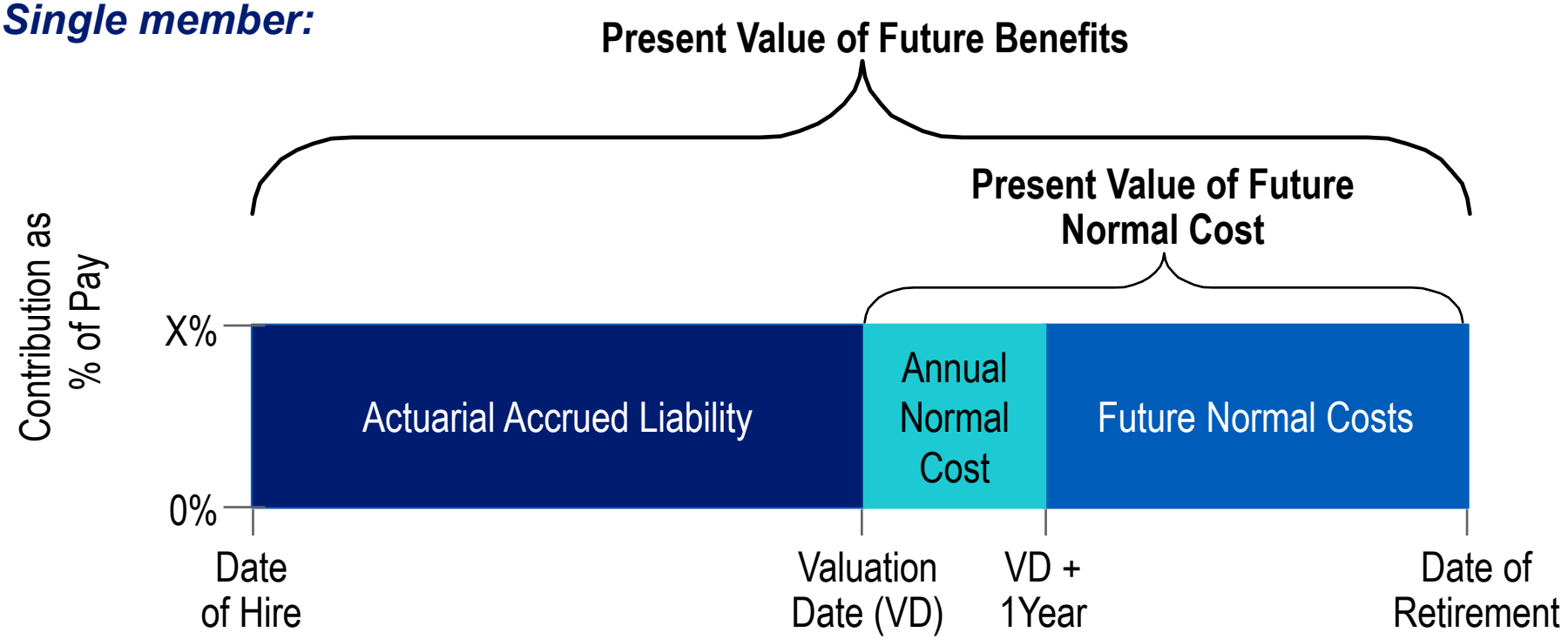
Actuarial Balance



Or: *Contributions* = *Benefits* + *Expenses* – *Investment Return*

Funding Process

Single member:

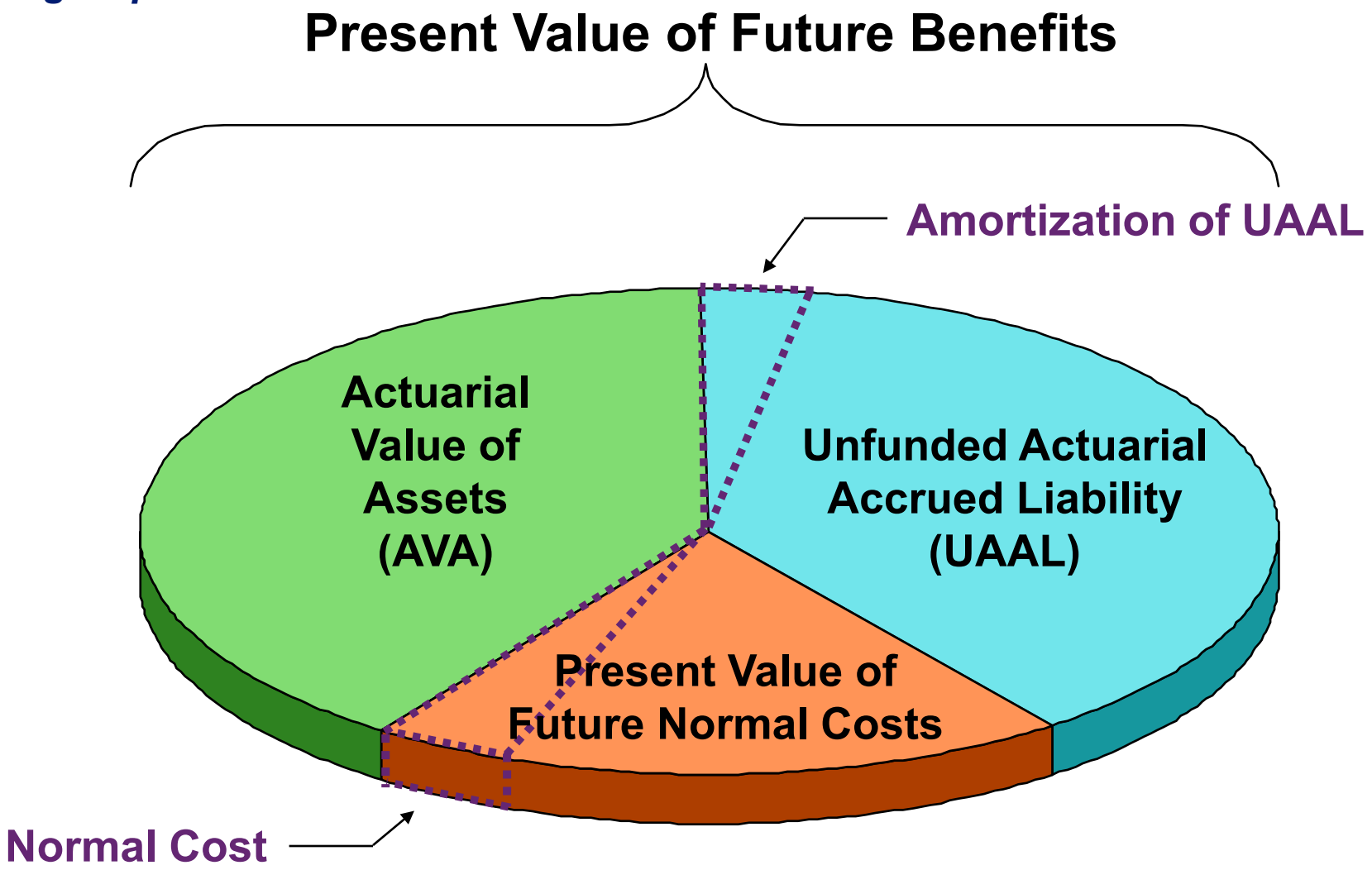


Entry Age cost method: Allocates cost between past and future service

- **Normal Cost:** Cost of annual benefit accrual as a level percent of salary
- **Actuarial Accrued Liability:** Represents accumulated value of past normal costs (or difference between total cost and present value of future normal costs)
- **Unfunded Actuarial Accrued Liability:** Actuarial accrued liability minus actuarial value of assets

Actuarially Determined Contribution

Entire group:



Actuarially Determined Contribution vs. Funding Period

Actuarially Determined Contribution (ADC)

- Equal to the normal cost plus amortization of the unfunded actuarial accrued liability (UAAL)
- Funding policy components:
  - Asset valuation method
  - Actuarial cost method
  - Amortization method

Funding Period or Effective Amortization Period

- Number of years that the UAAL is expected to be amortized based upon the fixed member and employer contribution rates
- Funding period is compared to the ADC's amortization period to assess the progress toward amortizing the unfunded accrued liability

The employer contribution rate is compared to the ADC as a measure of the adequacy of the employer (and member) rates.

Actuarial Assumptions

Demographic

- Retirement
- Disability
- Death in active service
- Withdrawal
- Death after retirement

Economic

- Inflation: 2.30%
- Investment return: 7.25%
- Salary increases: 14.80% for new members to 3.80% for members over 30 years from hire
- Payroll growth: 3.25%

Actuaries make assumptions as to when and why a member will leave active service and estimate the amount and duration of the pension benefits paid.

Actuarial Methods

Asset Valuation Method

- Investment gains and losses recognized over a number of years
- TFFR recognizes 20% of the difference between expected and actual returns in the current year
- A 20% fair value corridor is applied – actuarial value of assets must fall within 80% to 120% of fair value

Actuarial Cost Method

- Allocation of liability to past and future service
- TFFR uses the entry age cost method
  - Allocates cost of member's retirement benefit over expected career as a level % of salary
  - Most common cost method among public retirement systems
  - Required by GASB for financial statement reporting purposes

Amortization Method

- Relies on two inputs:
  - Number of years to amortize the UAL
  - Level dollar or level percentage of payroll approach
- TFFR' amortization method:
  - Closed period ending on June 30, 2043
  - 21 years remaining
  - Payroll calculated to increase by 3.25% per year

Summary of Valuation Highlights

July 1, 2022, Actuarial Valuation

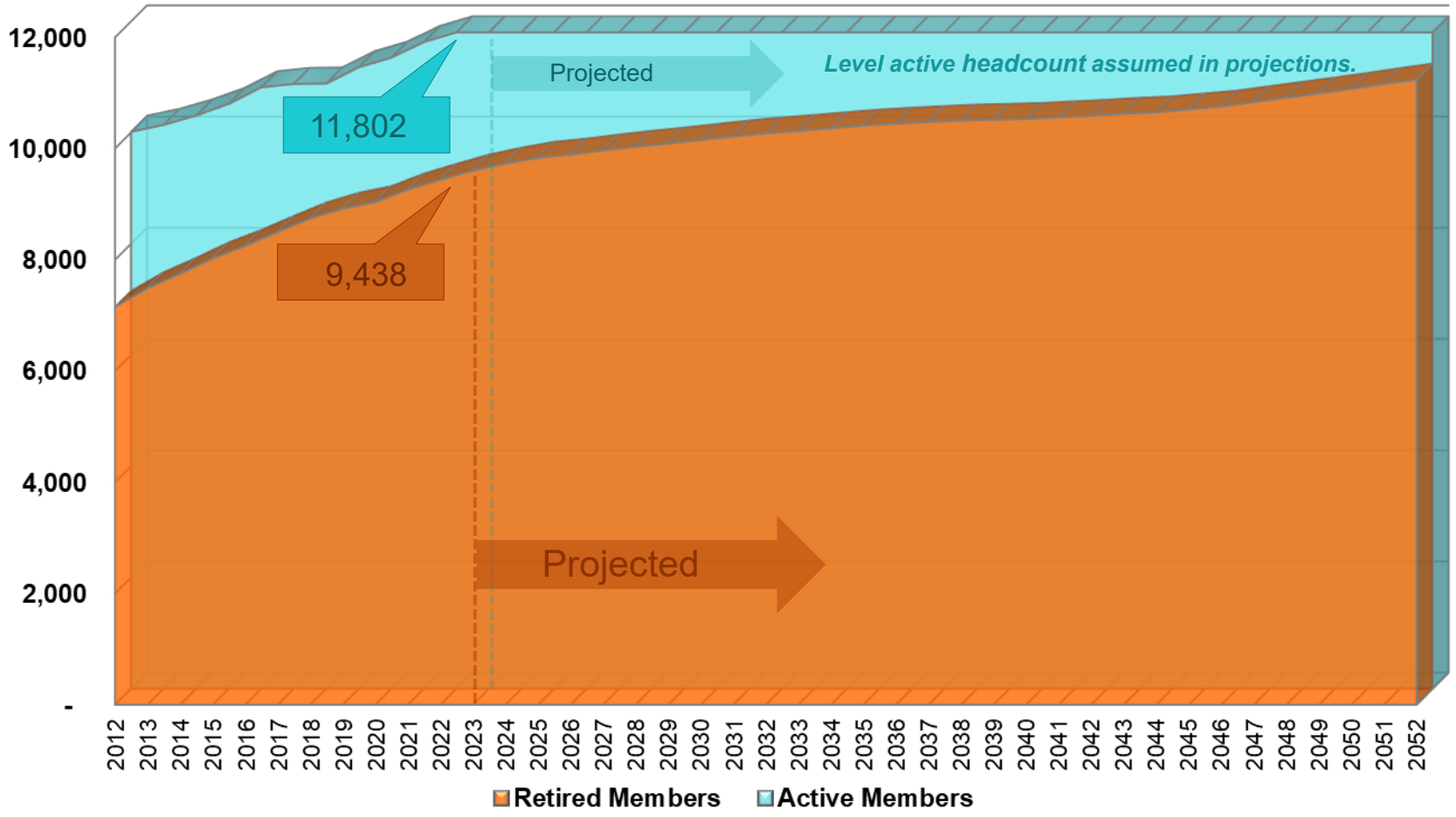
- The return on the fair value of assets for the year ending June 30, 2022, was **−6.1%***
  - Gradual recognition of deferred losses resulted in **7.4%** return on actuarial value of assets
- Funded ratio increased from 68.6% (as of 7/1/2021) to **69.9%** (as of 7/1/2022)
- Effective amortization period decreased from 21 years to 19 years
- Net impact on actuarially determined contribution (ADC) was a decrease from 12.37% of payroll to **12.12%** of payroll
  - Based on the employer contribution rate of 12.75%, the contribution margin has increased from 0.38% of payroll to 0.63% of payroll
- GASB Net Pension Liability increased from $1.05 billion as of 6/30/2021, to $1.46 billion as of 6/30/2022

* Based on Segal's calculation

Membership

	2021	2022	Change
Active			
• Number	11,627	11,802	+1.5%
• Payroll (annualized)	$749.4 mil	$766.1 mil	+2.2%
• Average Age	41.4 years	41.3 years	−0.1 years
• Average Service	11.4 years	11.3 years	−0.1 years
Retirees and Beneficiaries			
• Number	9,262	9,438	+1.9%
• Total Annual Benefits	$241.4 mil	$251.9 mil	+4.3%
• Average Monthly Benefit	$2,172	$2,224	+2.4%

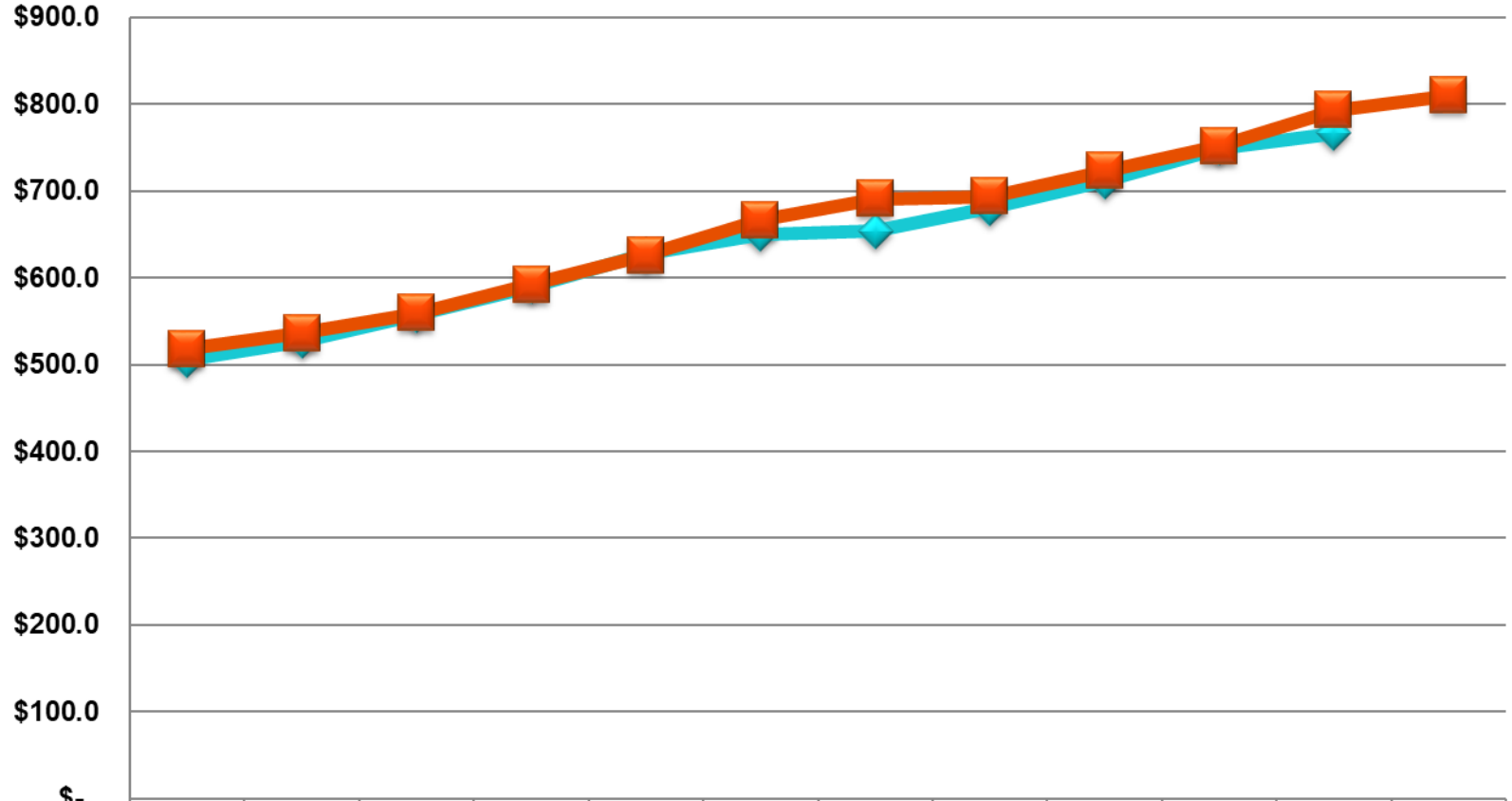
Active and Retired Membership



Since 2012, number of retirees and beneficiaries has increased 2.8% per year on average while the number of active members has increased 1.7% per year on average.

Active Payroll

$ Millions



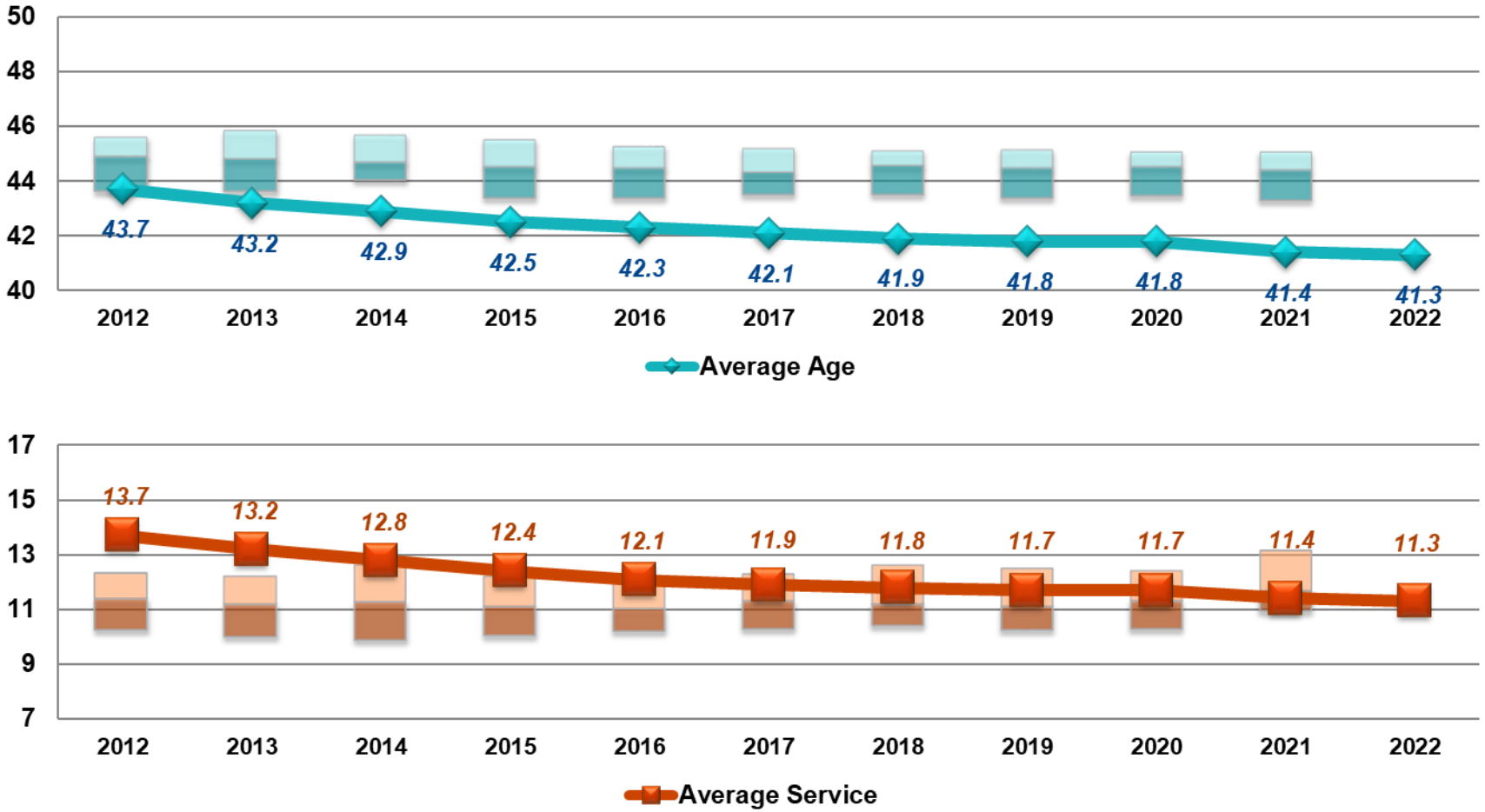
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Actual*	$505.3	$526.7	$557.2	$589.8	$627.0	$650.1	$653.5	$680.5	$711.0	$749.4	$766.1	
Projected**	$518.2	$535.9	$559.4	$592.3	$625.8	$666.4	$690.4	$693.7	$723.2	$751.7	$792.7	$810.0

Annualized Total Payroll Supplied by System

****Projected Payroll***

Since 2012, active payroll has increased, on average, 4.2% per year.

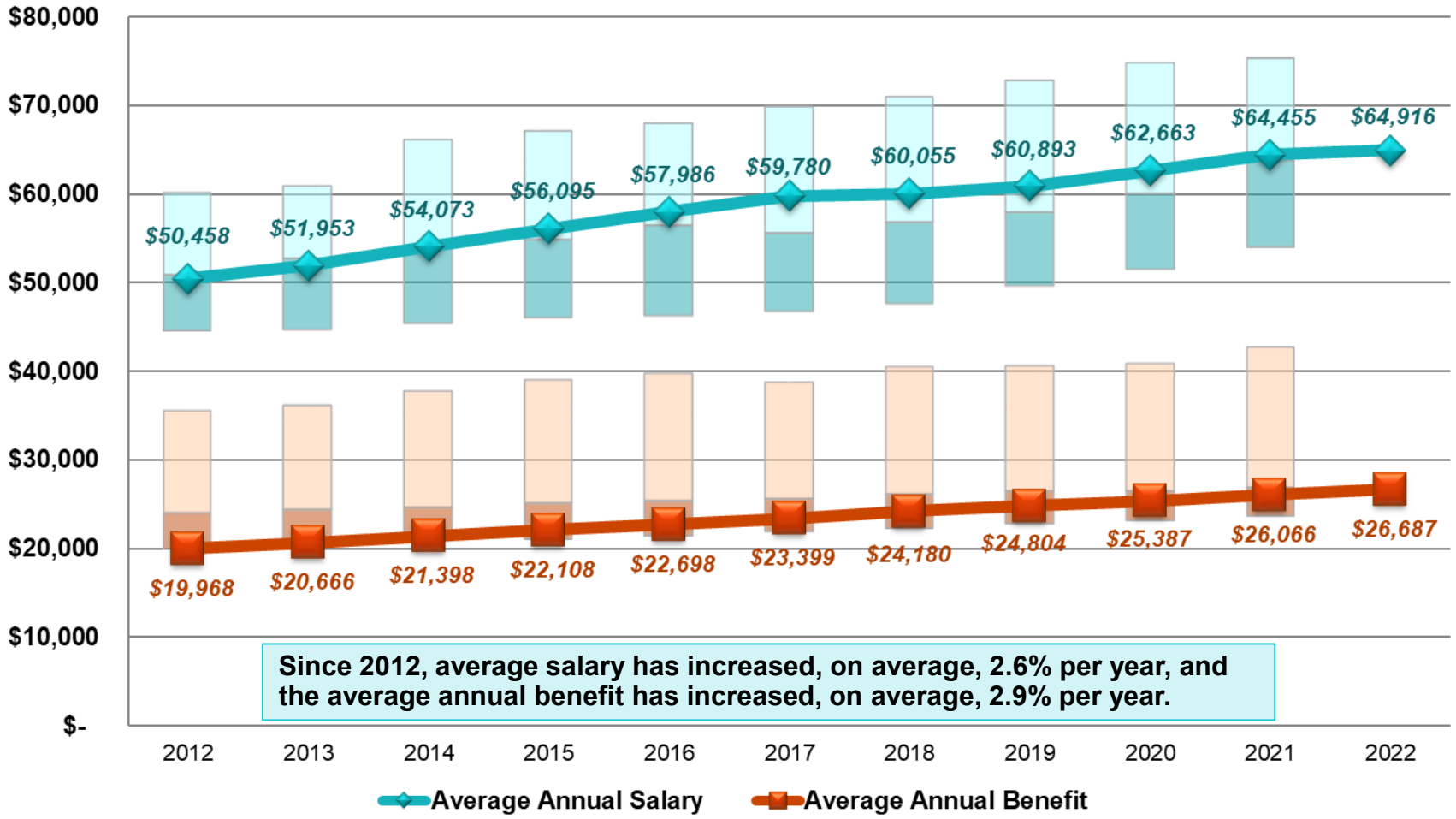
Average Age and Service of Active Members



For context, historical data is compared to 38 systems in the Public Plans Data* that primarily cover teachers. The top marker represents the 2nd quartile (50th to 75th percentile) and the lower marker represents the 3rd quartile (25th to 50th percentile), where the middle line indicates the median.

* Public Plans Data. 2001-2021. Center for Retirement Research at Boston College, Mission Square Research Institute, and National Association of State Retirement Administrators.

Average Salary and Average Benefit



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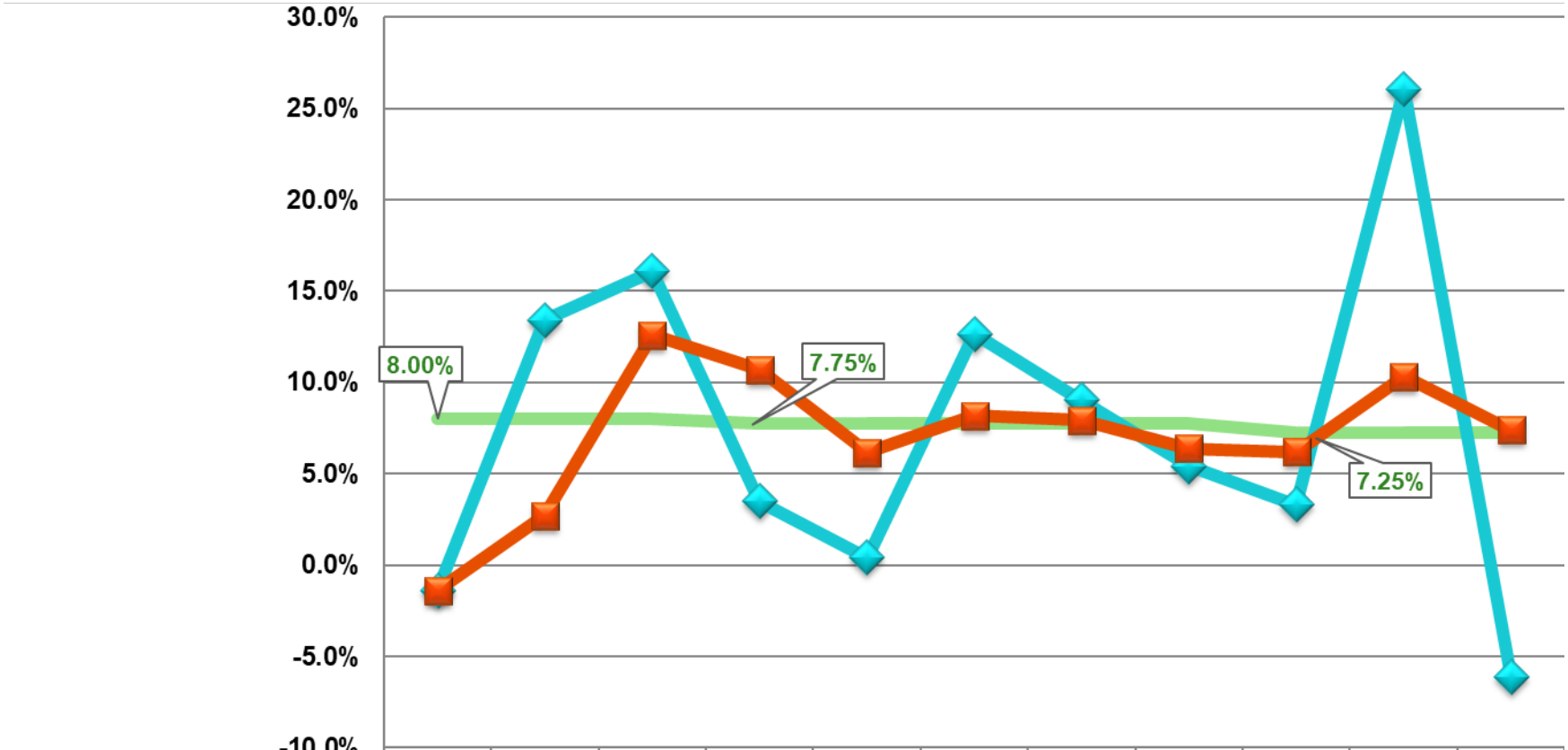
Assets

- The fair value of assets decreased from $3.28 billion (as of 6/30/2021) to $3.02 billion (as of 6/30/2022)
  - Segal estimated the investment return at −6.1%, net of investment expenses
- The actuarial value of assets increased from $2.97 billion (as of 6/30/2021) to $3.13 billion (as of 6/30/2022)
  - Investment return of 7.4%, net of investment expenses
  - Compared to the return assumption of 7.25%
  - Actuarial value is 103.6% of fair value
  - There is a total of $109 million of deferred net investment losses that will be recognized in future years
- Average annual returns are:

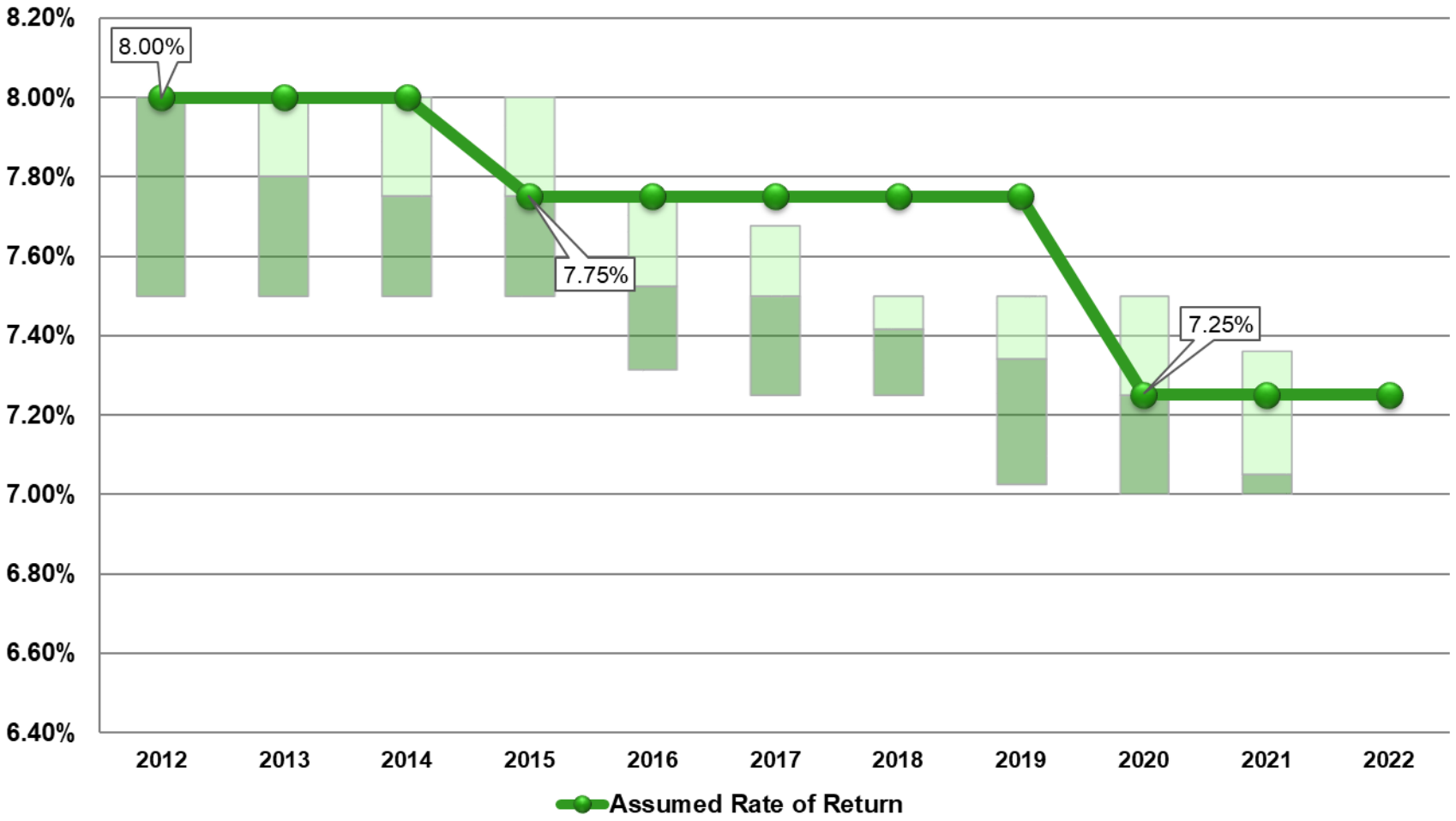
	Fair Value	Actuarial Value
10-year average	8.0%	7.8%
20-year average	7.0%	5.9%
30-year average	7.3%	7.2%

Asset Returns



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Assumed Rate of Return	8.00%	8.00%	8.00%	7.75%	7.75%	7.75%	7.75%	7.75%	7.25%	7.25%	7.25%
Fair Value of Assets	-1.4%	13.4%	16.1%	3.5%	0.4%	12.6%	9.0%	5.4%	3.3%	26.1%	-6.1%
Actuarial Value of Assets	-1.4%	2.7%	12.6%	10.7%	6.2%	8.2%	7.9%	6.4%	6.2%	10.3%	7.4%

Investment Return Assumption



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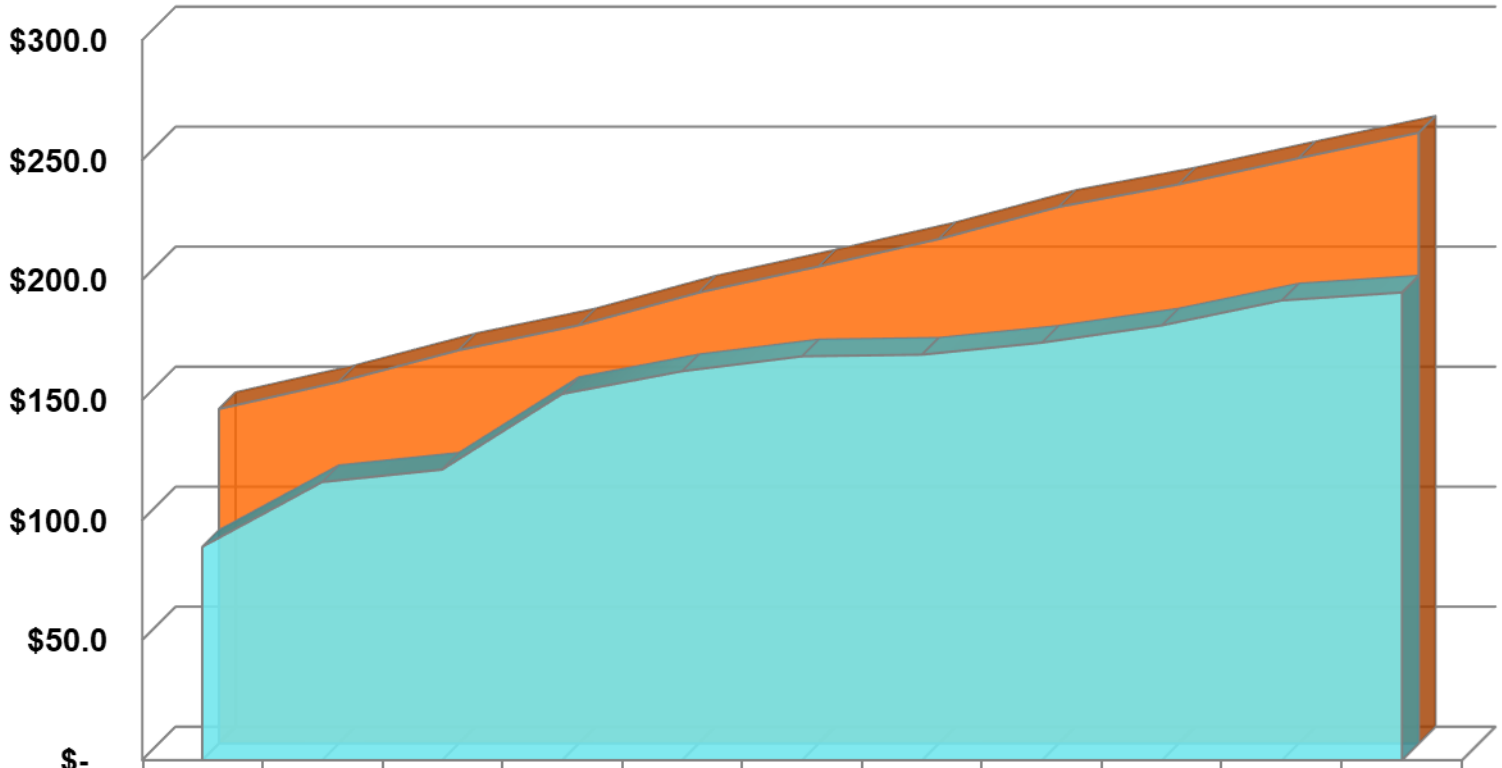
Contributions vs. Benefits and Refunds

$ Millions

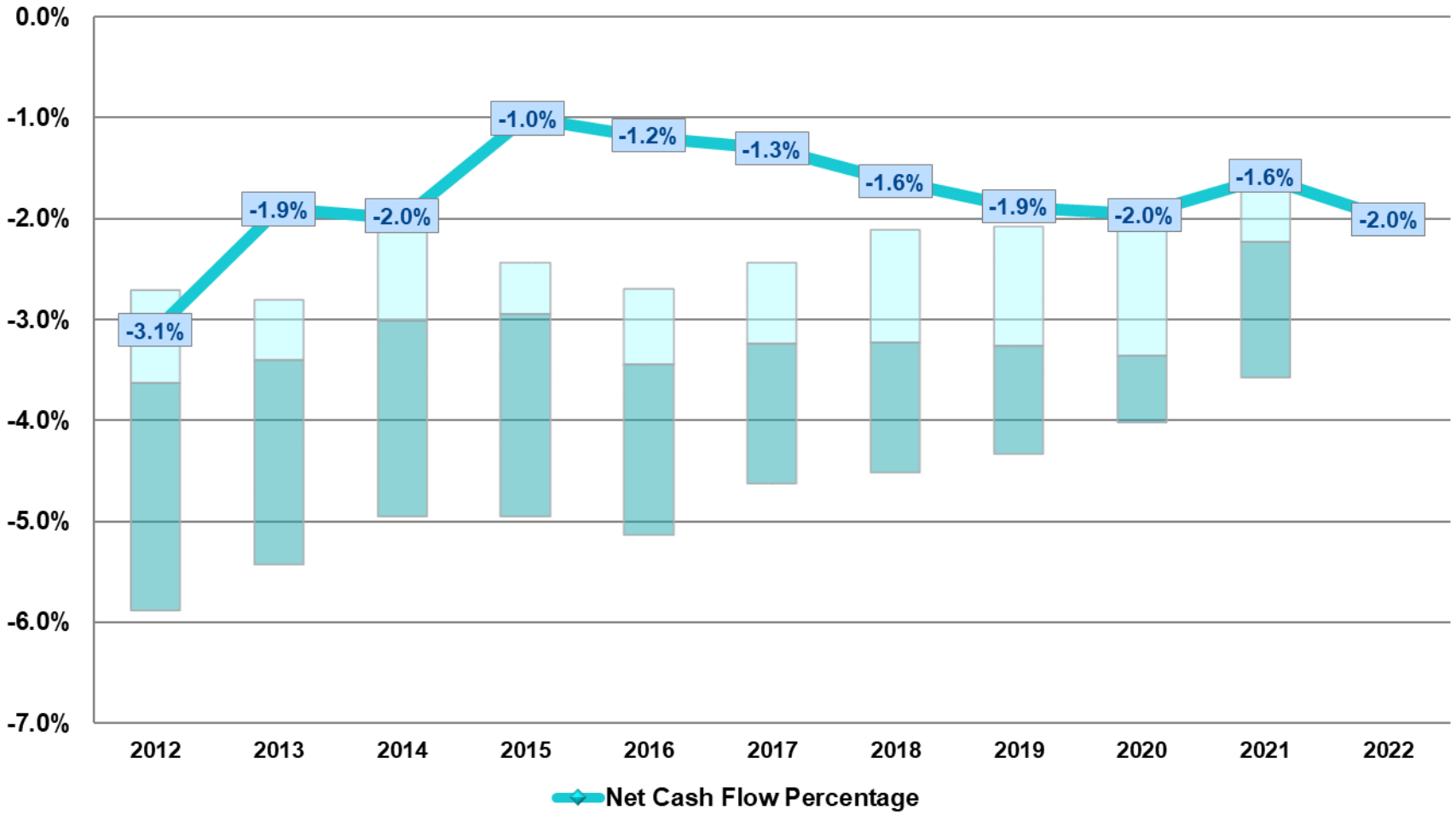


	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Contributions*	$88.8	$115.8	$121.0	$152.5	$162.0	$168.2	$168.9	$173.9	$181.1	$191.5	$194.8
Benefits & Refunds**	$139.3	$150.6	$163.8	$174.2	$187.8	$198.7	$210.1	$223.5	$232.9	$243.8	$254.4

**** Includes member and employer contributions, and service purchases***

***** Includes administrative expenses***

Net Cash Flow as a % of Fair Value



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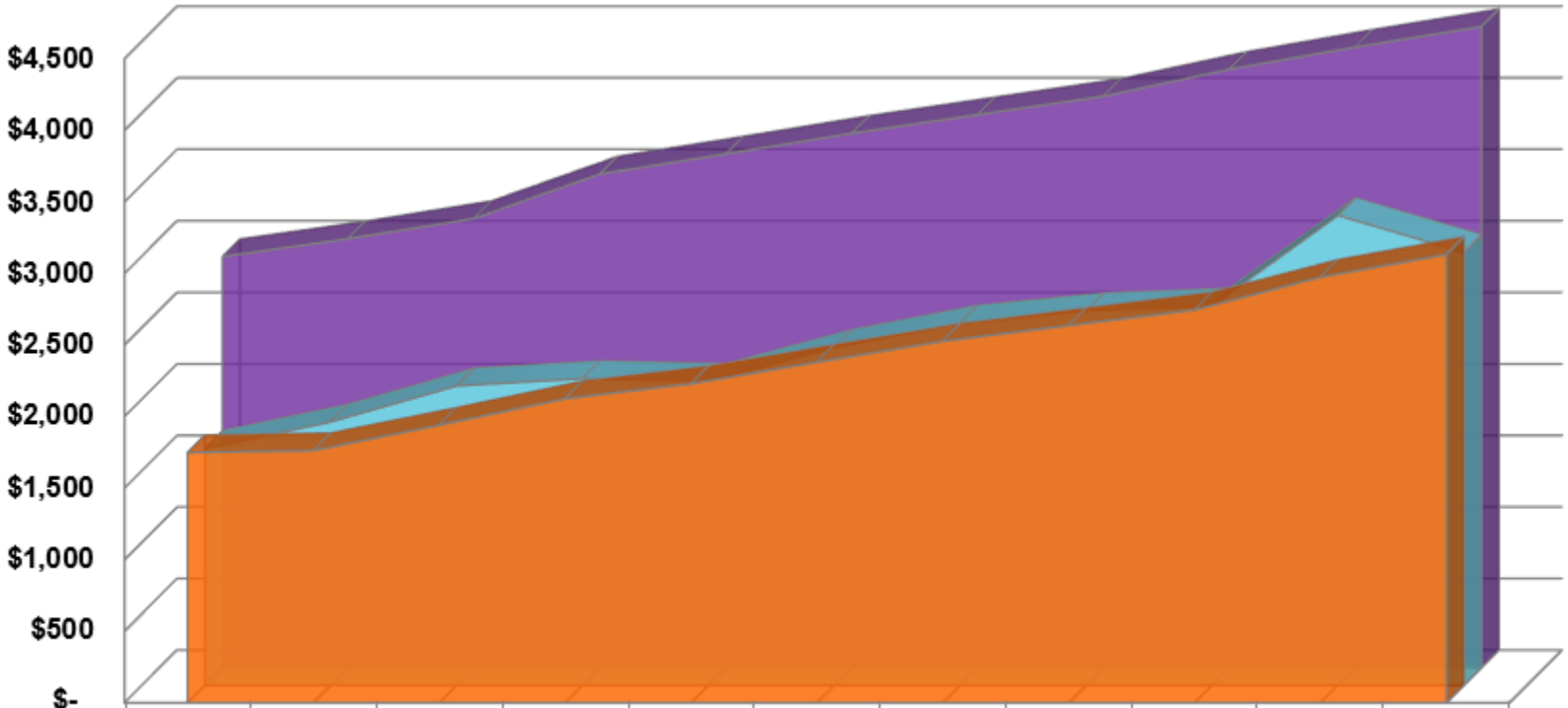
Valuation Results ($ in millions)

	July 1, 2021	July 1, 2022
Actuarial Accrued Liability:		
• Active Members	$1,690	$1,722
• Inactive Members	131	151
• Retirees and Beneficiaries	2,515	2,607
Total	$4,336	$4,480
Actuarial Value of Assets	2,974	3,133
Unfunded Accrued Liability	$1,362	$1,347
Funded Ratio	68.6%	69.9%
Fair Value of Assets (FVA)	3,282	3,024
Unfunded Accrued Liability, FVA Basis	$1,054	$1,456
Funded Ratio, FVA Basis	75.7%	67.5%

Note: numbers may not add due to rounding

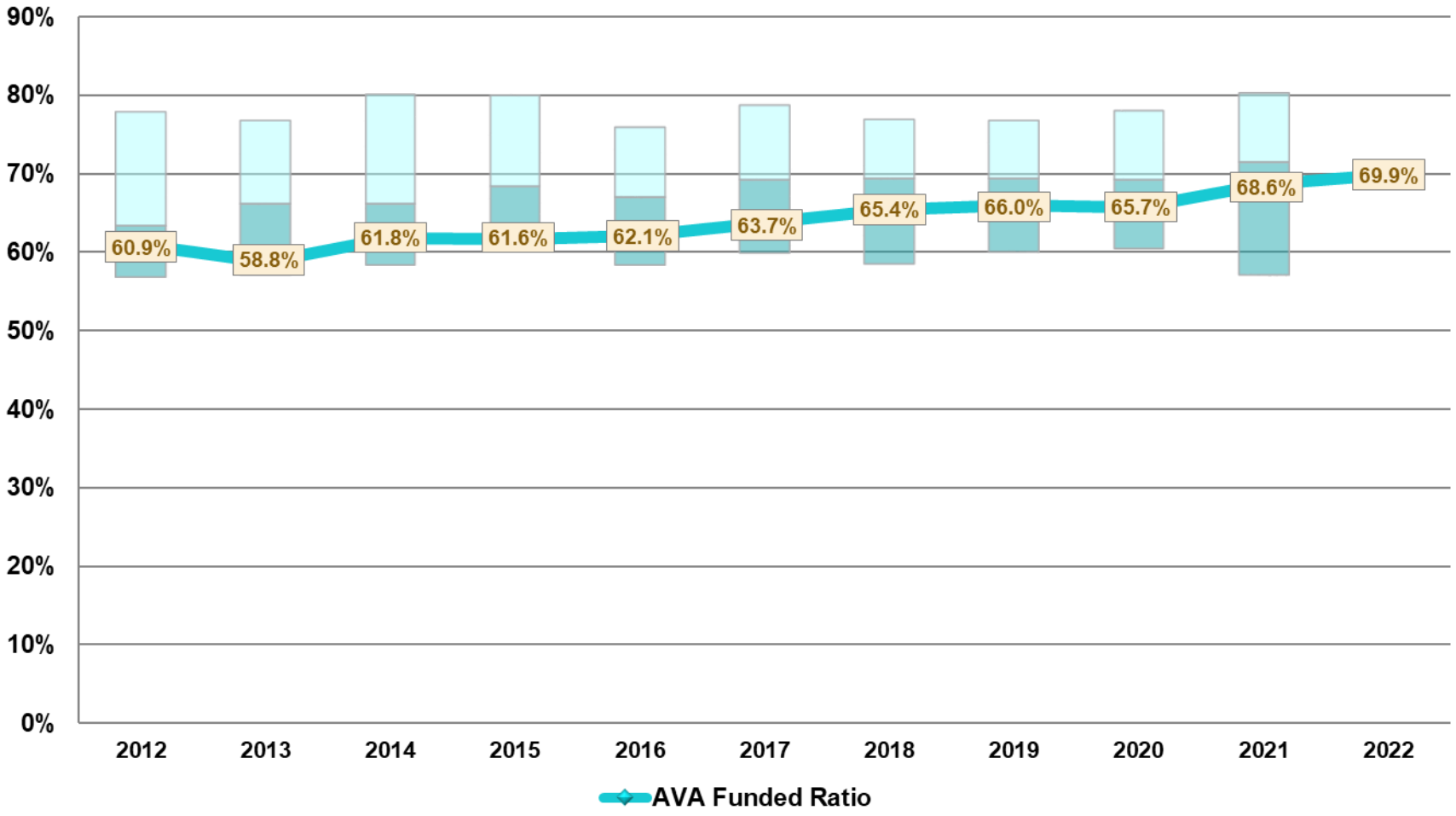
Fair and Actuarial Values of Assets Compared to Actuarial Accrued Liability

$ Millions



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AVA	$1,748	$1,762	$1,940	$2,125	$2,229	$2,380	$2,526	$2,636	$2,745	$2,974	$3,133
FVA	$1,654	$1,839	$2,091	$2,142	$2,124	$2,360	$2,531	$2,616	$2,651	$3,282	$3,024
AAL	$2,872	$2,997	$3,139	$3,450	$3,589	$3,734	$3,864	$3,993	$4,181	$4,336	$4,480

Funded Ratio, AVA Basis



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Five-Year History of Gain/(Loss)

$ in thousands	July 1, 2022	July 1, 2021	July 1, 2020	July 1, 2019	July 1, 2018
Investments	$5,486	$83,839	($40,947)	($34,821)	$4,586
Admin expenses	161	(547)	233	(59)	116
Demographics					
• Turnover	($1,859)	($1,844)	($3,380)	($3,820)	($1,696)
• Retirement	(4,117)	(6,175)	(606)	(1,286)	(3,038)
• Mortality	5,490	5,879	9,680	9,738	6,945
• Salary/service	26,224	1,067	18,179	21,896	29,231
• New entrants	(6,137)	(6,123)	(6,932)	(7,394)	(4,463)
• Miscellaneous	(10,426)	(513)	4,463	5,006	1,584
• Subtotal	$9,174	($7,709)	$21,403	$24,139	$28,564
Total	**$14,821**	**$75,583**	**($19,311)**	**($10,742)**	**$33,266**

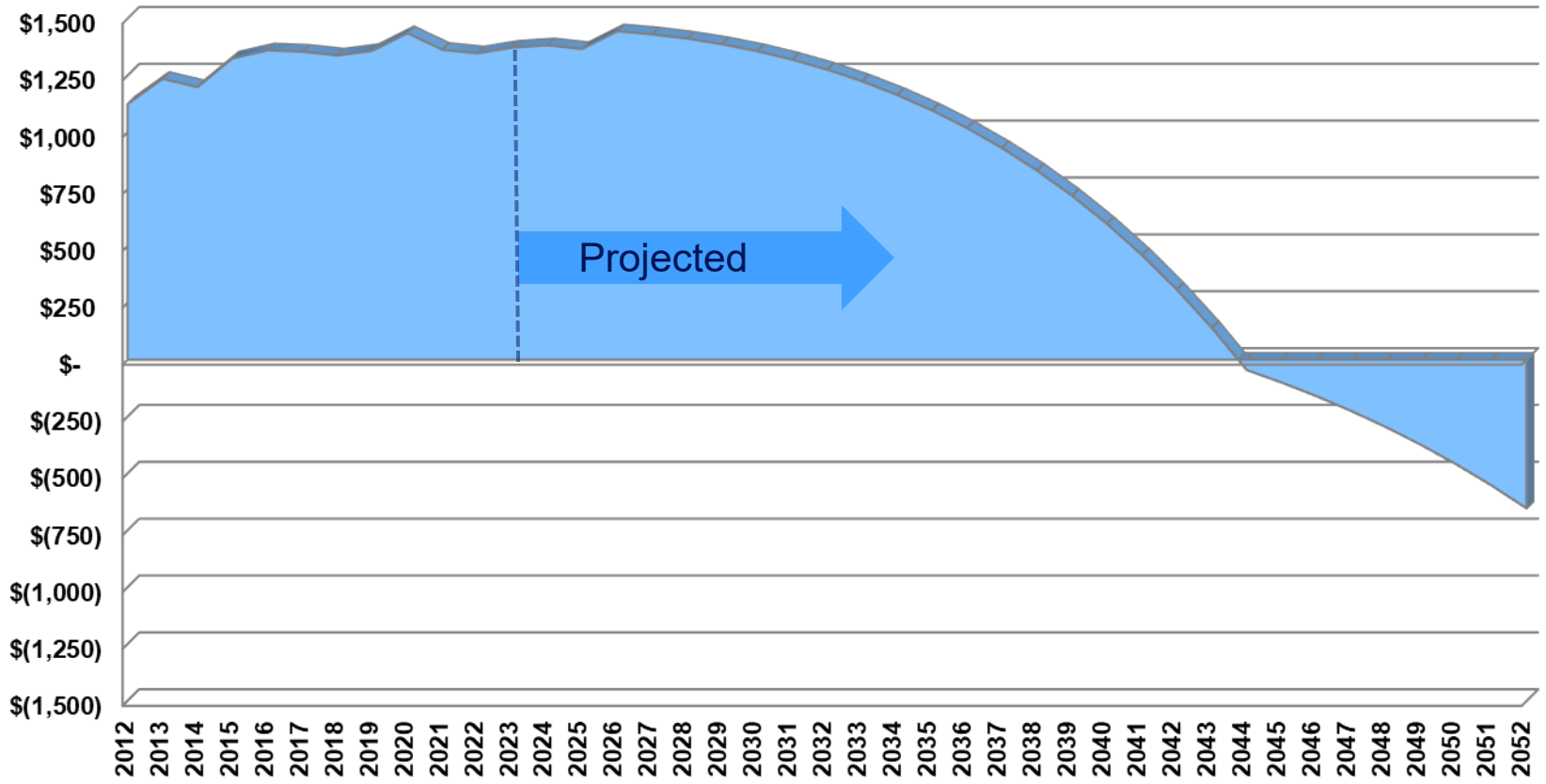
Note: numbers may not add due to rounding

Actuarially Determined Contribution

	For the Year Beginning	
	July 1, 2021	**July 1, 2022**
Normal Cost Rate	12.41%	12.19%
Member Rate	(11.75%)	(11.75%)
Employer Normal Cost Rate	0.66%	0.44%
Amortization of UAAL	11.71%	11.68%
Actuarially Determined Contribution	12.37%	12.12%
Statutory Employer Rate	12.75%	12.75%
Contribution Sufficiency/(Deficiency)	0.38%	0.63%

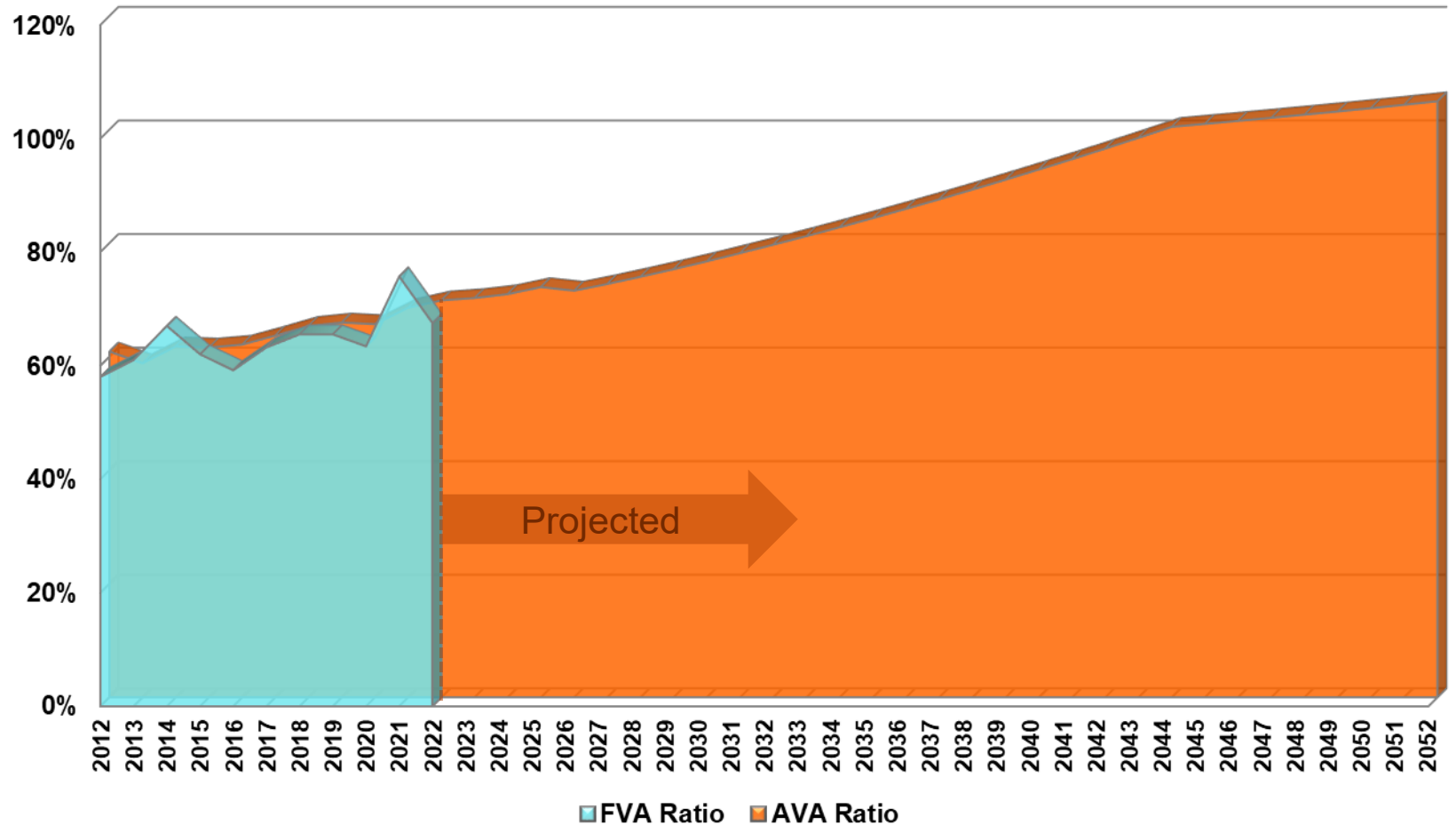
Unfunded Actuarial Accrued Liability

$ Millions



Projection based on all assumptions, including 7.25% investment return, realized as expected, and a level active headcount.

Funded Ratio

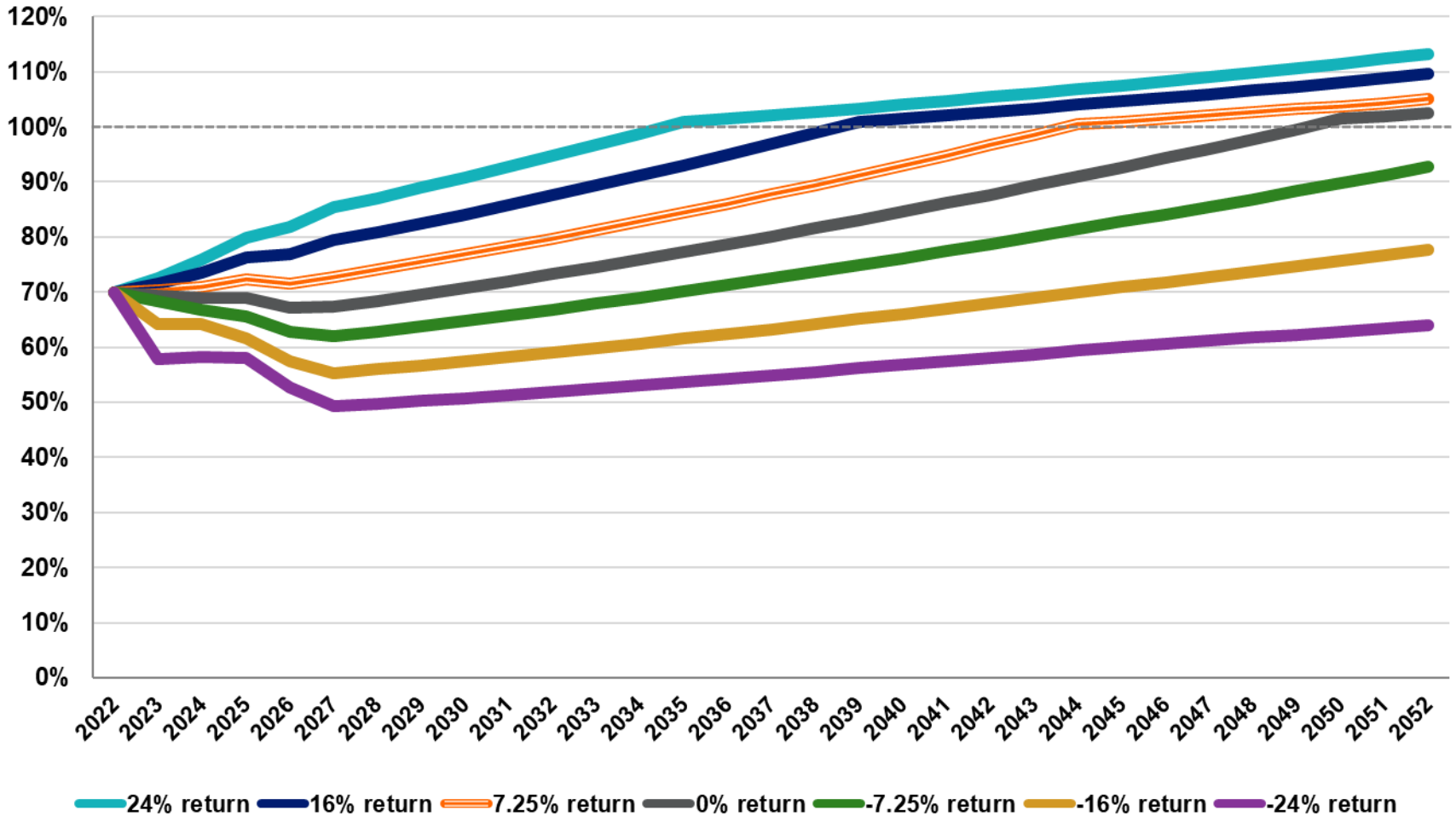


Projection based on all assumptions, including 7.25% investment return, realized as expected, and a level active headcount.

Sensitivity Projection

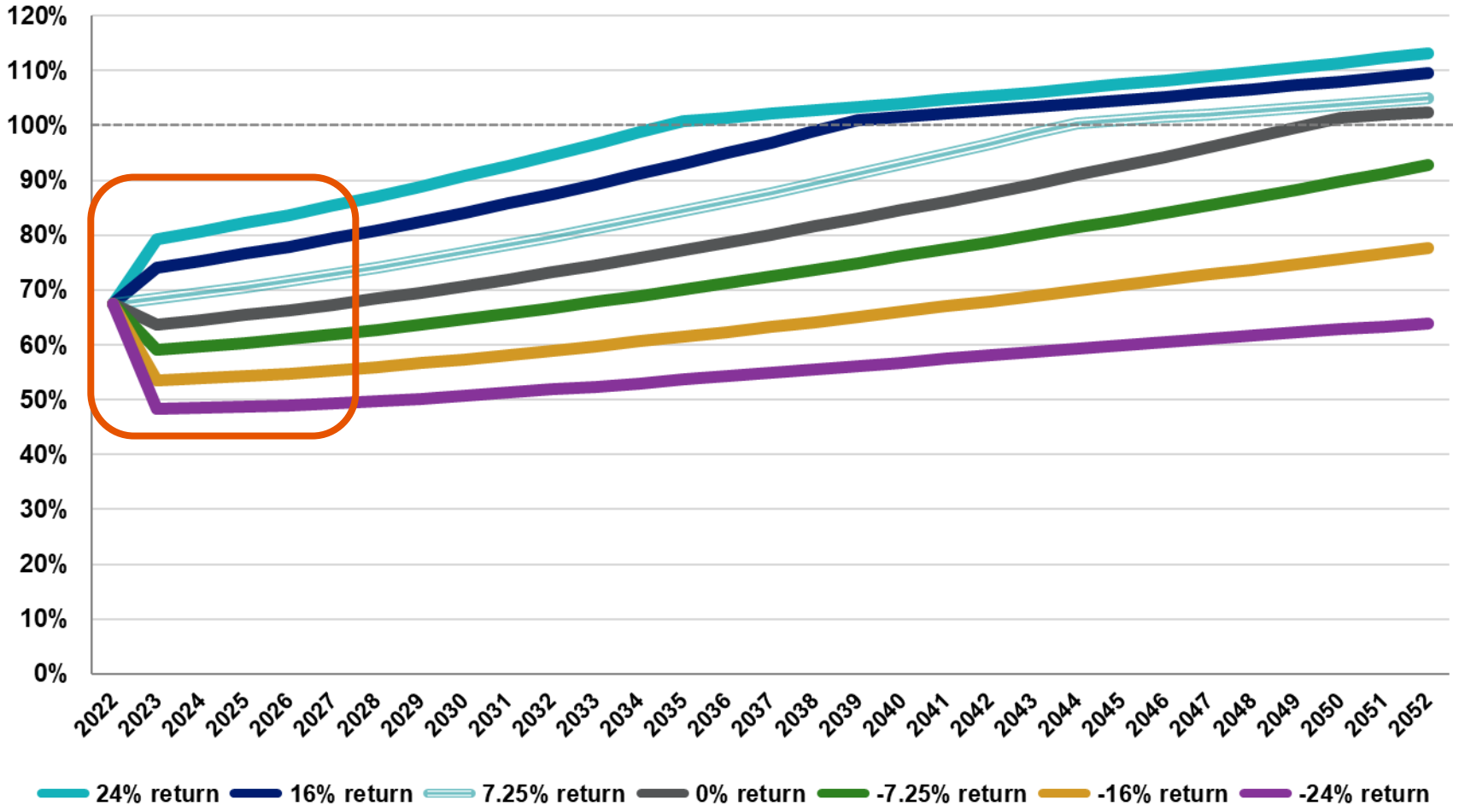
- Projections of estimated funded ratios for 30 years
  - Based on FY23 investment return scenarios ranging from −24% to +24%
  - Assumes Fund earns 7.25% per year in FY24 and each year thereafter
  - Additional projections assuming Fund earns 6.25% or 8.25% per year every year
  - Administrative expenses increase by 2.30% each year
  - All other experience is assumed to emerge as expected
- Includes contribution rates from HB 1134
  - Member rate is 11.75%
  - Employer rate is 12.75%
  - Member and Employer Contribution rates “sunset” back to 7.75% once the funded ratio reaches 100% (based on actuarial assets)

Projected Funded Ratios (AVA Basis)



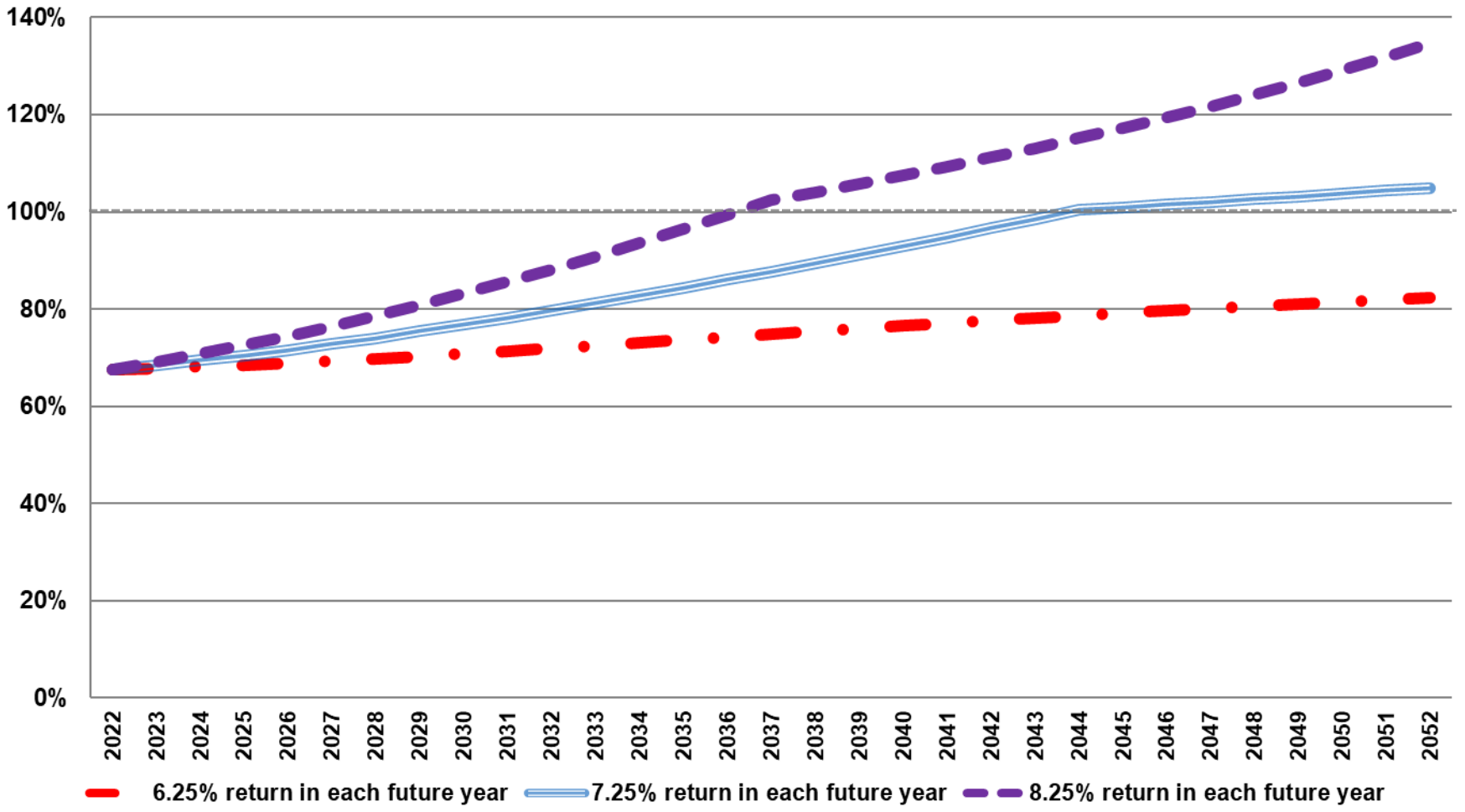
This sensitivity projection assumes one year (i.e., FY23) at each of the above returns, followed by assumed returns of 7.25% in each year thereafter, all other assumptions are met, and a level active headcount in all future years.

Projected Funded Ratios (FVA Basis)



This sensitivity projection assumes one year (i.e., FY23) at each of the above returns, followed by assumed returns of 7.25% in each year thereafter, all other assumptions are met, and a level active headcount in all future years.

Projected Funded Ratios (FVA Basis)
Actual Returns +1% or -1% of Assumed



This sensitivity projection assumes that the Fund will earn either 6.25%, 7.25%, or 8.25% per year, each year in the future, beginning with FY23 , all other assumptions are met, and a level active headcount in all future years.

Next Steps

- Policy score based on 2021 valuation is +9
  - From April 21, 2022, presentation
- Update Policy score based on 2022 valuation and updated capital market assumption basis
  - Present in Q1 2023

Appendix

Items

- Additional Asset Information
- Projection Results in Tabular Format
- GASB Accounting Information
- Glossary

Fair Value of Assets ($ in millions)

	Fiscal Year Ending June 30, 2021	Fiscal Year Ending June 30, 2022
Beginning of Year	$2,651	$3,282
Contributions:		
• Employer	98	100
• Member	91	92
• Service Purchases	3	2
• Total	192	195
Benefits, Refunds and Expenses	(244)	(254)
Investment Income (net)	684	(199)
End of Year	$3,282	$3,024
Rate of Return	26.07%	−6.11%

Note: numbers may not add due to rounding

Actuarial Value of Assets ($ in millions)

1. Fair Value of Assets as of June 30, 2021	$3,282
2. Cash Flow Items for FYE June 30, 2022	(60)
3. Expected Return	236
4. Expected Fair Value of Assets (1) + (2) + (3)	$3,458
5. Actual Fair Value of Assets on June 30, 2022	3,024
6. Excess/(Shortfall) for FYE June 30, 2022 (5) – (4)	(435)

Excess/(Shortfall) Returns:

Year	Initial Amount	Deferral %	Unrecognized Amount
2022	($435)	80%	($348)
2021	494	60%	296
2020	(115)	40%	(46)
2019	(59)	20%	(12)
2018	30	0%	0
7. Total			($109)

8. Actuarial Value of Assets as of June 30, 2022 (5) – (7)	$3,133
Actuarial Value of Assets as a % of Fair Value of Assets	103.6%

Note: numbers may not add due to rounding

Projected Funded Ratios (AVA Basis)

Valuation Year	24% for FY2023	16% for FY2023	7.25% for FY2023	0% for FY2023	−7.25% for FY2023	−16% for FY2023	−24% for FY2023
2022	70%	70%	70%	70%	70%	70%	70%
2023	72%	71%	70%	69%	68%	64%	58%
2024	76%	74%	71%	69%	67%	64%	58%
2025	80%	76%	72%	69%	66%	62%	58%
2026	82%	77%	72%	67%	63%	57%	53%
2027	85%	79%	73%	67%	62%	55%	49%
2032	95%	88%	80%	73%	67%	59%	52%
2037	102%	97%	88%	80%	72%	63%	55%
2042	105%	103%	97%	88%	79%	68%	58%
2047	109%	106%	102%	96%	85%	73%	61%
2052	113%	110%	105%	102%	93%	78%	64%

This sensitivity projection assumes one year (i.e., FY23) at each of the above returns, followed by assumed returns of 7.25% in each year thereafter, all other assumptions are met, and a level active headcount in all future years.

Projected Funded Ratios (FVA Basis)

Valuation Year	24% for FY2023	16% for FY2023	7.25% for FY2023	0% for FY2023	−7.25% for FY2023	−16% for FY2023	−24% for FY2023
2022	68%	68%	68%	68%	68%	68%	68%
2023	79%	74%	68%	64%	59%	53%	48%
2024	81%	75%	69%	65%	60%	54%	48%
2025	82%	77%	70%	65%	60%	54%	49%
2026	84%	78%	72%	66%	61%	55%	49%
2027	85%	79%	73%	67%	62%	55%	49%
2032	95%	88%	80%	73%	67%	59%	52%
2037	102%	97%	88%	80%	72%	63%	55%
2042	105%	103%	97%	88%	79%	68%	58%
2047	109%	106%	102%	96%	85%	73%	61%
2052	113%	110%	105%	102%	93%	78%	64%

This sensitivity projection assumes one year (i.e., FY23) at each of the above returns, followed by assumed returns of 7.25% in each year thereafter, all other assumptions are met, and a level active headcount in all future years.

Projected Funded Ratios (FVA Basis)
Actual Returns +1% or -1% of Assumed

Valuation Year	6.25% Return in Each Future Year	7.25% Return in Each Future Year	8.25% Return in Each Future Year
2022	68%	68%	68%
2023	68%	68%	69%
2024	68%	69%	71%
2025	68%	70%	73%
2026	69%	72%	74%
2027	69%	73%	76%
2032	72%	80%	88%
2037	75%	88%	102%
2042	78%	97%	111%
2047	80%	102%	122%
2052	82%	105%	135%

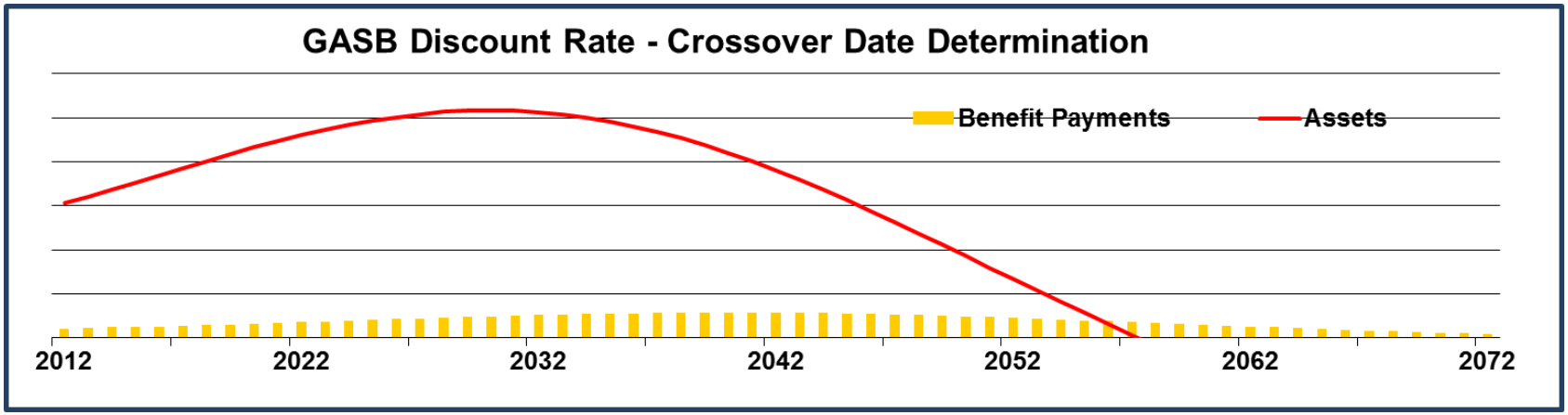
This sensitivity projection assumes that the Fund will earn either 6.25%, 7.25%, or 8.25% per year, each year in the future, beginning with FY23, all other assumptions are met, and a level active headcount in all future years.

GASB Discount Rate

- Determined annually based on a projection of benefit payments and assets
  - Benefit payment projection is for current members
  - Asset projection is based on expected investment return assumption (7.25%) and contributions on behalf of current members
- If projected assets are always sufficient to pay projected benefit payments, the GASB discount rate is equal to the expected investment return assumption
- If not, a blended discount rate must be used
  - For projected benefit payments that are covered by projected assets, the expected return assumption is used
  - For projected benefit payments that are not covered by projected assets, the 2-year AA/Aa tax-exempt municipal bond index is used (3.54%).
    - The date at which projected assets are not sufficient to cover projected benefit payments is called the “crossover date”

GASB Discount Rate

- As an example, the graph below shows the crossover occurring in 2058 for a hypothetical plan.



- Determination if a plan has a crossover date depends on
  - The Fund's current funded ratio
  - Projected future contributions and benefit payments
  - Expected investment return
- As of July 1, 2022, TFFR does not have a crossover date

Net Pension Liability ($ in millions)

Collective TFFR	June 30, 2021	June 30, 2022
Total Pension Liability at 7.25%	$4,336	$4,480
Fiduciary Net Plan Position (i.e., FVA)	3,282	3,024
Net Pension Liability (NPL)	1,054	1,456
Sensitivity to changes in discount rate		
• 1% decrease at 6.25%	$1,582	$2,000
• Current discount rate at 7.25%	1,054	1,456
• 1% increase at 8.25%	615	1,005

Reconciliation of Collective Net Pension Liability

($ in millions)	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
Balance as of June 30, 2021	$4,336	$3,282	$1,054
Changes for the year			
Service cost	92		92
Interest	312		312
Difference between expected and actual experience	(9)		(9)
Contributions – employer		100	(100)
Contributions – member		92	(92)
Contributions – purchased service credit and other		2	(2)
Net investment income		(199)	199
Benefit payments and refunds of contributions	(252)	(252)	-
Administrative expense		(3)	3
Changes of assumptions	-		-
Change of benefit terms	-		-
Net changes	144	(258)	402
Balance as of June 30, 2022	$4,480	$3,024	$1,456

Note: numbers may not add due to rounding

Collective Pension Expense ($ in millions)

	Year ending June 30, 2021	Year ending June 30, 2022
Service cost	$87	$92
Interest on the total pension liability	301	312
Projected earning on plan investments	(190)	(236)
Contributions – member	(91)	(92)
Contributions – purchased service credit and other	(3)	(2)
Administrative expense	3	3
Current year of recognition of:		
• Change of assumptions	32	7
• Difference between expected and actual experience	(12)	(13)
• Difference between projected and actual earning on pension plan investments	(91)	17
• Change of benefit terms	0	0
Total pension expense	$37	$89

Note: numbers may not add due to rounding

Glossary

Actuarial Accrued Liability For Actives: The equivalent of the accumulated Normal Costs allocated to the years before the valuation date.

Actuarial Accrued Liability For Pensioners: The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Actuarial Cost Method: A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the Actuarially Determined Contribution.

Actuarial Gain or Actuarial Loss: A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuation dates. Through the Actuarial Assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the plan's assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the Actuarial Assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.), multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Glossary

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the ADC and the NPL.

Actuarial Value of Assets (AVA): The value of the plan's assets as of a given date, used by the actuary for valuation purposes. This may be the fair or market value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Actuarially Determined Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and the Amortization Payment.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Glossary

Amortization Payment: The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Assumptions or Actuarial Assumptions: The estimates on which the cost of a plan is calculated including:

(a) Investment return - the rate of investment yield that the plan will earn over the long-term future;

(b) Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates;

(c) Retirement rates - the rate or probability of retirement at a given age;

(d) Turnover rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;

(e) Salary increase rates - the rates of salary increase due to inflation and productivity growth

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Glossary

Experience Study: A periodic review and analysis of the actual experience of a plan that may lead to a revision of one or more Actuarial Assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a fair value funded ratio, using the fair value of assets (FVA), rather than the AVA.

Funding Period or Amortization Period: The term "Funding Period" is used in two ways. First, it is the period used in calculating the Amortization Payment as a component of the ADC. Second, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and GASB 68: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Investment Return: The rate of earnings of a plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the plan's assets. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

Margin: The difference, whether positive or negative, between the statutory employer contribution rate and the Actuarially Determined Contribution.

Net Pension Liability (NPL): The Net Pension Liability is equal to Total Pension Liability minus Plan Fiduciary Net Position.

Glossary

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability, or retirement.

Open Amortization Period: An Open Amortization Period is one that is used to determine the Amortization Payment, but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the Actuarial Assumptions are realized.

Plan Fiduciary Net Position: GASB term for the fair value of assets.

Total Pension Liability (TPL): The actuarial accrued liability based on the blended discount rate as described in GASB 67/68.

Unfunded Actuarial Accrued Liability (UAAL): The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Caveats

This presentation is based on the results of the July 1, 2022, actuarial valuation performed for the Board of Trustees of the North Dakota Teachers' Fund for Retirement. The actuarial valuation report has information on the plan provisions, data, methods and assumptions used in the valuation. Use of the information in this presentation is subject to the caveats described in that document. The measurements in this presentation may not be appropriate for purposes other than those described in the actuarial valuation report.

Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Deterministic cost projections are based on our proprietary forecasting model. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models and reviews test lives and results, under the supervision of the responsible actuary.

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MEMORANDUM

TO: **TFFR Board**
FROM: **Jan Murtha, Executive Director**
DATE: **November 16, 2022**
RE: **GPR Committee Update**

I. Introduction

At the September 22, 2022 Board meeting the TFFR Board approved the following changes to the TFFR Governance Manual:

1. Convert the TFFR GPR Committee into a standing committee of the TFFR Board for Introduction and First Reading and approve a charter for the standing committee.

At the November 10, 2022 TFFR GPR committee meeting, the committee met and reviewed the following:

1. Proposed Legislation to provide recommendations to the TFFR Board and staff on Board of Trustee positions during session.
2. Changes to the SIB Governance Manual for comment to the SIB.
3. Changes to the TFFR Governance Manual

At the November TFFR Board meeting staff will present:

1. Changes to the Policy Manual and a proposed Charter for the TFFR-GPR committee for 2nd reading and final adoption.
2. A Legislative Planning Presentation for Board comment and guidance.
3. Changes to the SIB Governance Manual for comment to the SIB.

Staff will not present additional changes to the TFFR Governance manual for consideration by the full Board at the November meeting. It is the intention of the TFFR-GPR committee to present all additional proposed changes to the Governance Manual to the full Board at the July Board meeting.

II. TFFR GPR Committee 2nd Reading & Final Adoption

At the September 2022 meeting of the TFFR Board, the Board approved proceeding with changes to convert the TFFR GPR committee into a standing committee of the Board. Language reflecting this change has been added to the TFFR Policy Manual (p. 25) and a proposed charter is included for your review. The policy amendment and proposed charter are modeled after the SIB GPR committee.

ACTION REQUESTED: Motion to approve 2nd Reading & Final Adoption of policy amendment and proposed charter for TFFR GPR committee as a standing committee.

III. Changes to the SIB Governance Manual for Comment

The SIB Investment Committee and Governance and Policy Review Committee have reviewed and recommend changes to the SIB Governance Manual to facilitate Investment Committee operations. Mr. Anderson reviewed these changes with the SIB for First Reading at its October meeting. Additional amendments may be accepted up to and at the time of Second Reading and Final Adoption tentatively scheduled for the November SIB meeting.

Prior to a second reading before the SIB, comment was sought from the TFFR-GPR committee and will be presented to the full TFFR Board during their regular scheduled meetings in November.

The proposed changes and any amendments will also be submitted to AAG DePountis for legal review prior to second reading and final adoption.

ACTION REQUESTED: TFFR Board comments if any.

IV. 2023 Legislative Planning

Staff will provide a Legislative Planning presentation to the Board incorporating the TFFR-GPR committee recommendations for Board discussion and guidance.

ACTION REQUESTED: Provide staff guidance on Board of Trustee position for testimony.

N. Committees

1. Standing Committees

The TFFR Board may establish permanent standing committees. ~~The Board currently has no standing committees.~~ The TFFR Board has created a permanent standing Governance and Policy Review Committee.

a. POLICY OF THE TFFR BOARD – Governance & Policy Review Committee

The Governance & Policy Review Committee is authorized to:

- Review and recommend policies for the governance manual.
- Ensure the governance manual reflects best practices and governance.
- As directed by the board, review specific governance concerns, and make recommendations for improvement.
- Request RIO staff for specific topic training or education

2. Special Committees

The Board may establish special ad hoc committees as needed to carry out duties specified by the Board.

The Board President will appoint the Committee Chair and Committee members for special committees.

Committee Chairs are responsible for organizing the work of the Committee. In fulfilling this function, Committee Chairs:

a. Schedule Committee meetings as often as necessary.
b. Consult with the Chief Retirement Officer in setting the meeting agenda in accordance with the Committee's delegated responsibilities.
c. Conduct Committee meetings in a collegial, fair, and efficient manner following Board policies, procedures, and applicable state law such as the open meetings law.
d. Ensure the Committee operates to assist the Board consistent with its delegation.
e. Provide Committee updates and reports to the Board.

When the Committee's duties are completed, the Committee automatically ceases to exist.

3. Audit Committee

The SIB Audit Committee also functions as the Audit Committee for the TFFR Board since the SIB is the governing body of the RIO agency and RIO administers both the TFFR retirement program and SIB investment program.

The TFFR Board selects one TFFR representative on the SIB to serve on the SIB Audit Committee, subject to official appointment by SIB Chair. This representative will act as the TFFR Board's liaison to the SIB Audit Committee.

Governance & Policy Review Committee Charter

PURPOSE

The Governance & Policy Review Committee ("Committee") will assist the Teachers' Fund for Retirement Board (TFFR) to fulfill its responsibilities regarding matters that relate to governing the TFFR program, policies, and identifying and making recommendations to the TFFR Board.

KEY RESPONSIBILITIES

The Governance & Policy Review Committee shall perform all duties as requested or required by the TFFR Board. The Governance & Policy Review Committee will specifically be responsible for the following duties and responsibilities:

1. Advise the TFFR Board about operational strategies relevant to TFFR's governance manual to strengthen the TFFR program and empower Board members to meet their obligations related to sound governance principles and abide by the agency's mission.
2. Advise the TFFR Board about strategies that strive to increase the individual Board member effectiveness and their abilities to work collaboratively with their peers.
3. Review and make recommendations for policies for the governance manual that reflect best practices for overall good governance.
4. As directed by the board, review specific governance concerns and make recommendations for improvement.
5. Request Retirement and Investment Office staff for specific topic training and education for Board members. Make recommendations regarding an orientation process for newly appointed TFFR Board members.

GOVERNANCE COMMITTEE COMPOSITION AND TERM LIMITS

The Governance Committee shall be composed of three members. They will be nominated and approved by a majority vote of the TFFR Board. This is a standing committee with no term limits. The Executive Director will be responsible for meeting preparation.

MEETINGS

The Governance Committee will meet quarterly and hold additional meetings as needed to fulfill its responsibilities as described in this Committee Charter and as called by the Governance Committee Chair. The Governance Committee will elect a Chair and Vice Chair at the first meeting following the July TFFR Board meeting every year or when a vacancy in either position occurs.

AUTHORIZATION AND LIMITATIONS OF POWER

The Governance Committee is established by the TFFR governance manual and has no power or authority to act on behalf of the full board. The Governance Committee will abide by the provisions in the governance manual that pertain to the meetings and actions of the Board.

POLICY TYPE: GOVERNANCE PROCESS

POLICY TITLE: *BOARD COMMITTEE PRINCIPLES*

Unless specifically provided by governance policy, board committees will be assigned ~~so as~~ to minimally interfere with the wholeness of the board's job and so as never to interfere with delegation from board to executive director. Board committees will be used sparingly.

1. Board committees are to help the board do its job, not to help the staff do its job. Committees ordinarily will assist the board by preparing policy alternatives and implications for board deliberation. Board committees are created to advise the board, not the staff. The Investment Committee is a hybrid committee comprised of Board members, Staff and external investment experts. The investment committee is delegated authority as provided by Board policy.

2. Board committees may not speak or act for the board except when formally given such authority for specific and time-limited purposes. Expectations and authority will be carefully stated in order not to conflict with authority delegated to the executive director.

3. Board committees cannot exercise authority over staff however committees will make requests of staff through the executive director unless staff is assigned to the committee. Because the executive director works for the full board, he or she will not be required to obtain approval of a board committee before an executive action. In keeping with the board's broader focus, board committees will normally not have direct dealings with current staff operations.

4. Board committees are to avoid over-identification with the committee's assignment. Therefore, a board committee which has helped the board create policy will not be used to monitor organizational performance on that policy. The Investment Committee is chartered to monitor certain investment strategy execution and investment performance in a more detailed way than the Board which receives independent performance appraisals and summarized updates on investment activities. The Board is the ultimate governance authority of the investment program.

5. This policy applies only to committees which are formed by board action, whether or not the committees include non-board members. It does not apply to committees formed under the authority of the executive director.

6. The chairperson will appoint board committees authorized by the board. The operational life span of a board committee will be defined at the time of appointment.

Policy Implemented: June 23, 1995.
Amended: November 22, 1996, February 27, 2015

POLICY TYPE: GOVERNANCE PROCESS

POLICY TITLE: *ANNUAL BOARD PLANNING CYCLE*

To accomplish its job outputs with a governance style consistent with board policies, the board will strive to follow a biennial agenda which (a) completes a re-exploration of *Ends* policies annually and (b) continually improves its performance through attention to board education and to enriched input and deliberation.

1. A biennial calendar will be developed.

2. The cycle will conclude each year on the last day of June in order that administrative budgeting can be based on accomplishing a one-year segment of the most recent board long-range vision.

    A. In the first three months of the new cycle, the board will strive to develop its agenda for the ensuing one-year period.

    B. Scheduled monitoring will be used to evaluate and adjust the annual agenda as needed.

3. Education, input, and deliberation will receive paramount attention in structuring the series of meetings and other board activities during the year.

    A. To the extent feasible, the board will strive to identify those areas of education and input needed to increase the level of wisdom and forethought it can give to subsequent choices.

    B. A board education plan will be developed during July and August of each year.

4. The sequence derived from this process for the board planning year ending June 30 is as follows: (Additional comments forthcoming)

    A. July: Election of officers, appoints audit and investment committee, plan annual agenda, begin to develop board education plan, and new board member orientation.

    B. August: Present education plan and continue new board member orientation.

    C. September: Annual Review of Governance Manual.

    D. October: Chief Investment Officer review of investment results. Annual meeting for evaluation of RIO vs. *Ends* policies and annual board evaluation.

    E. November: Chief Investment Officer report on investment work plan.

    F. January: During second year of the biennium, begin to develop *Ends* policies for the coming biennium for budget purposes.

    G. February: Chief Investment Officer present the investment work plan. Evaluation of Executive Director.

    H. March: Chief Investment Officer review of investment results and report on investment work plan. During first year of biennium, set budget guidelines for budget development.

I. June: Chief Investment Officer review of investment results and report on investment work plan

~~4. The sequence derived from this process for the board planning year ending June 30 is as follows:~~

~~A. July: Election of officers, appoints audit committee, plan annual agenda, begin to develop board education plan, and new board member orientation.~~

~~B. August: Investment Director review of investment results, establish investment work plan, add investment education to education plan, and continue new board member orientation.~~

~~C. September: Annual Review of Governance Manual.~~

~~D. October: Annual meeting for evaluation of RIO vs. *Ends* policies and annual board evaluation.~~

~~E. November: Investment Director report on investment work plan.~~

~~F. January: During second year of the biennium, begin to develop *Ends* policies for the coming biennium for budget purposes.~~

~~G. February: Investment Director report on investment work plan.~~
~~Evaluation of Executive Director.~~

~~H. March: During first year of biennium, set budget guidelines for budget development.~~

~~I. May: Investment Director report on investment work plan.~~

Policy Implemented: June 23, 1995; November 19, 1999.
Amended: September 26, 2014, February 27, 2015.

POLICY TYPE: INVESTMENTS

POLICY TITLE: *FIDUCIARY DUTIES*

By virtue of the responsibilities assigned to the SIB by North Dakota Century Code Chapter 21-10, the members of the SIB are fiduciaries for eleven statutory funds. Through contractual obligations, fiduciary responsibility extends to ~~twelve~~ contracted additional funds.

A fiduciary is a person who has discretionary authority or management responsibility for assets held in trust to which another has beneficial title or interest. The fiduciary is responsible for knowing the "prudent requirements" for the investment of trust assets. Remedial actions may be assessed against fiduciaries for violations of fiduciary duty.

North Dakota state law provides broad fiduciary guidelines for the SIB members. NDCC 21-10-07 specifies that "the state investment board shall apply the prudent investor rule in investing for funds under its supervision except that Section 21-10-07.1 requires the SIB to give preference to qualified investment firms and financial institutions with a presence in the state for legacy fund investment purposes. The "prudent investor rule" means that in making investments, the fiduciaries shall exercise the judgment and care, under the circumstances then prevailing, that an institutional investor of ordinary prudence, discretion, and intelligence exercises in the management of large investments entrusted to it, not ~~in regard to~~regarding speculation but ~~in regard to~~regarding the permanent disposition of funds, considering probable safety of capital as well as probable income."

Procedural prudence is a term that has evolved to describe the appropriate activities of a person (or persons) who act in a fiduciary role. Court decisions to date indicate that procedural prudence is more important in assessing fiduciary activities than actual portfolio performance. A fiduciary cannot be faulted for making the "wrong" decision provided that proper due diligence was performed.

The key to successfully discharging the SIB's fiduciary duties is the establishment of and adherence to proper due diligence procedures. While not bound by ERISA (Employee Retirement and Income Security Act of 1974), the SIB will use the procedural prudence outlined by ERISA as guidance in developing its procedures:

1. An investment policy must be established for each fund and must be in writing.
2. Plan assets must be diversified, unless under the circumstances it would be prudent not to do so.
3. Investment decisions must be made with the skill and care of a prudent expert.
4. Investment performance must be monitored.
5. Investment expenses must be controlled.
6. Prohibited transactions must be avoided.

Policy Implemented: September 20, 1995.
Amended: May 30, 1997, January 22, 1999, February 27, 2009, October 26,2018.

POLICY TYPE: INVESTMENTS

POLICY TITLE: *INVESTMENT PROCESS*

The SIB believes that an investment program must be built and managed like any good business, with a clear statement of mission, overall objectives, roles and responsibilities, and policies and guidelines. Major issues to be faced by the SIB will revolve around:

- Setting asset allocation targets
- Setting appropriate benchmarks
- Finding the right managers
- Funds implementation and ongoing execution
- Monitoring the program
- Searching for appropriate new opportunities

~~Asset allocation targets:~~

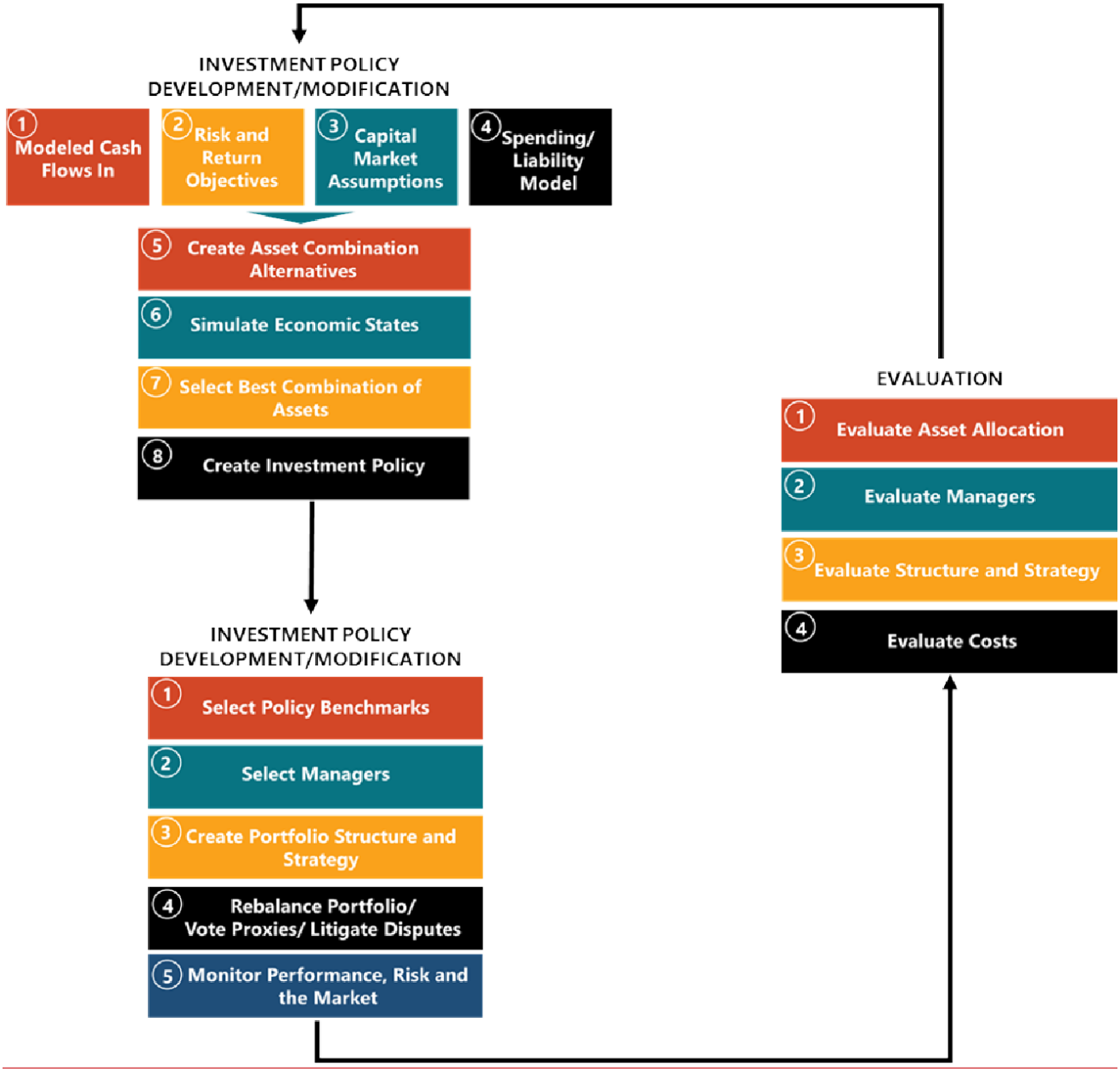
- ~~Setting appropriate benchmarks.~~
- ~~Finding the right managers.~~
- ~~Monitoring the program.~~
- ~~Searching for appropriate new opportunities.~~

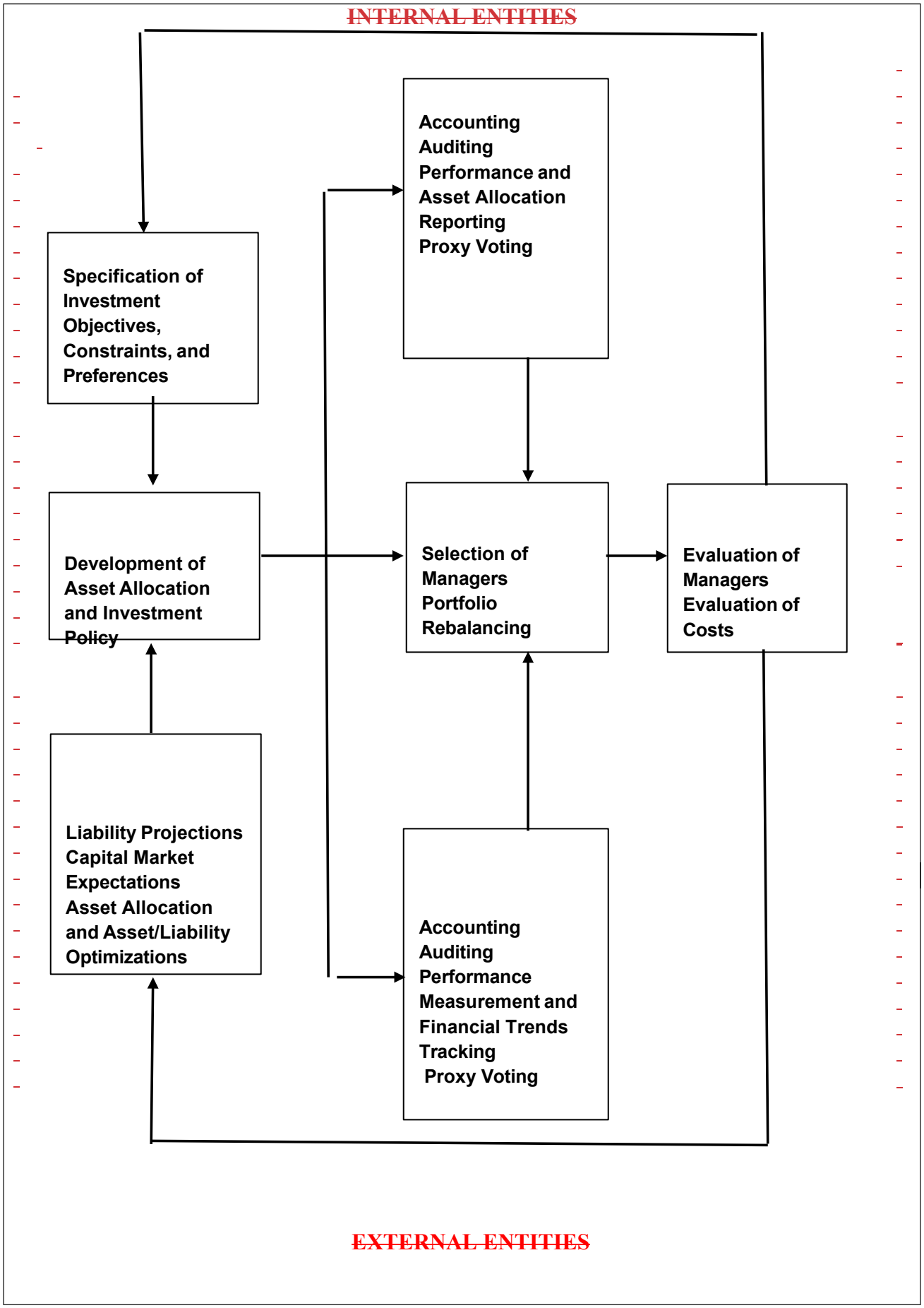
To ensure rigorous attention to all aspects of the investment program, the SIB follows an established investment process. This process, described by the diagram on the following page, involves three phases:

- Investment policy development/modification.
- Implementation/monitoring.
- Evaluation.

The first column of boxes describes the policy development phase, the middle column implementation/monitoring, and the last box on right evaluation. Activities associated with internal entities are shown along the top. Those associated with external entities are shown along the bottom. The middle shows activities that internal and external entities work on together.

Policy Implemented: September 20, 1995.


INVESTMENT POLICY DEVELOPMENT/MODIFICATION
1 Modeled Cash Flows In
2 Risk and Return Objectives
3 Capital Market Assumptions
4 Spending/ Liability Model
5 Create Asset Combination Alternatives
6 Simulate Economic States
7 Select Best Combination of Assets
8 Create Investment Policy
INVESTMENT POLICY DEVELOPMENT/MODIFICATION
1 Select Policy Benchmarks
2 Select Managers
3 Create Portfolio Structure and Strategy
4 Rebalance Portfolio/ Vote Proxies/ Litigate Disputes
5 Monitor Performance, Risk and the Market
EVALUATION
1 Evaluate Asset Allocation
2 Evaluate Managers
3 Evaluate Structure and Strategy
4 Evaluate Costs


INTERNAL ENTITIES
Accounting
Auditing
Performance and
Asset Allocation
Reporting
Proxy Voting
Specification of
Investment
Objectives,
Constraints, and
Preferences
Development of
Asset Allocation
and Investment
Policy
Selection of
Managers
Portfolio
Rebalancing
Evaluation of
Managers
Evaluation of
Costs
Liability Projections
Capital Market
Expectations
Asset Allocation
and Asset/Liability
Optimizations
Accounting
Auditing
Performance
Measurement and
Financial Trends
Tracking
Proxy Voting
EXTERNAL ENTITIES

POLICY TYPE: INVESTMENTS

POLICY TITLE: *KEY PROGRAM ENTITIES AND RESPONSIBILITIES*

The key responsibilities of the entities involved in the investment program are:

Fund Governing Bodies

1. Establish policy on investment goals and objectives.
2. Establish asset allocation or approve a pool allocation..
3. Hire actuary when required.

SIB

1. Invest funds entrusted by statute and contracted entities, delegating investment authority when deemed appropriate.
2. Set policies for appropriate investments and investment practices of entrusted funds.
3. Approve asset allocation and investment policies of participating trust funds or establish pool asset allocation previously approved by the Investment Committee.
4. Monitor the progress of the implementation of the investment strategy.
5. Monitor the performance and risk of the investment program provided by an independent third-party performance appraisal.
6. The Board will receive program updates, training regarding investment topics, market updates, investment performance/risk, investment procedures, program costs and updates on investment execution of investment strategies from Investment Committee representatives.
7. Approve benchmark recommendations from an independent third-party benchmark consultant previously approved by the Investment Committee.
8. Review summaries of Investment Committee proceedings.
9. Review updates regarding specific investment strategies, manager selection, termination, guideline changes and changes to instrument usage.
10. The Board may choose to have decision authority over specific Investment Committee decisions when deemed appropriate including new investment programs, strategies, techniques, instruments, and initiatives.

Investment Committee

1. The Committee will suggest and recommend changes to the SIB Investment Policy, as necessary including any delegation of authority to RIO investment staff.
2. The Committee will review periodically and approve changes and additions to the IC Guidelines and will report any revisions to the SIB.
3. The Committee may examine internally (if approved) and externally managed portfolios, individual

investments, correlation among portfolios, and such other matters as the Committee deems appropriate for the purpose of understanding, measuring, controlling, monitoring, and reporting SIB investment exposure.

4. The Committee will review and approve the use of new investment instruments prior to their implementation in internal (if approved) and external SIB portfolios.

5. The Committee will oversee the review and implementation of any other new investment programs or initiatives in all SIB portfolios and will coordinate any necessary related SIB approvals.

6. For purposes of fulfilling its risk management and oversight responsibilities, the Committee will act as liaison between the RIO investment Staff and the SIB on issues concerning investment risk management.

7. The Committee will review subset of asset class strategies at least quarterly to assess established risk limits and evaluate strategy and will approve such strategies annually. The relevant Investment Staff shall be responsible for the specific investment decisions and implementations including internally (if approved) and externally managed mandates that are used to execute the approved strategies.

8. The Committee will review all compliance-related issues including compliance with statutes, administrative rules, internal and external manager investment guidelines or as otherwise requested.

9. The Committee will review asset allocation plans and strategies and will review and approve any proposed changes to SIB's strategic asset allocations and fund-level active risk objectives before they are presented to the Board for approval. The Committee will provide consultation and assistance to the SIB, ED and staff concerning total fund allocation changes or rebalance decisions, as needed.

10. The Committee will review and act on all requests from investment managers, both internal (if approved) and external for waivers to provisions in their investment guidelines. On an emergency basis when it is impractical to timely convene a meeting of the Investment Committee, either the Chair or Vice Chair of the committee with the concurrence of the Chief Investment Officer of the Committee or the Executive Director, may approve a waiver. That waiver will be brought to the Committee for ratification at its next regularly scheduled meeting.

11. The Committee may review and analyze other compliance-, risk- or derivative-related (if approved) matters that are directed to the attention of the Committee by the SIB, external auditors, the Internal Audit group, and RIO investment and accounting staff.

12. The Committee will receive quarterly reports regarding transitions (if any) and shall review with the applicable Investment Staff the costs and impacts associated with the transitions. It will also from time-to-time review reports on the trading effectiveness of investment execution of internal investment strategies (if approved).

13. The Committee will review annual benchmark recommendations from a Board-appointed benchmark consultant and will provide its evaluation and recommendation to the Board.

14. The Committee will review and revise portfolio guidelines as necessary.

15. The Committee will establish procedures for the methodology and frequency of review of (i) fund, asset class and portfolio performance, (ii) performance attribution, (iii) allocation within asset classes and (iv) risk levels. Procedures will be shared with the Board.

16. The Committee will conduct periodic round table discussions of the economic and investment environment.

4. Report the investment performance of the funds to each fund's governing authority.

5. Hire and terminate money managers, custodians, and consultants.

Chief Investment Officer and RIO Staff

1. Participate on the Investment Committee and report to the Board as required.
2. Implement investment policies approved by the Investment Committee and the Board.
3. Provide research and administrative for SIB client funds and client projects.
4. Recommend investment policies and procedures appropriate for governing the investment of entrusted funds.
5. Lead the development of asset allocations, investment strategies, manager mandates, manager guidelines, investment implementations and investment policies to be approved by the Investment Committee and Board.
6. ~~Hire and terminate money managers, custodians, and consultants as delegated by the Investment Committee and Board.~~
7. ~~7.~~6. Negotiate manger contract terms and conditions as delegated by the Investment Committee and Board.
8. ~~8.~~7. Evaluate money manager adherence to investment objectives, mandate requirements and guidelines.
9. ~~9.~~8. Provide performance reports to the Investment Committee, the Board and Boards of participating funds as a representative of the Investment Committee and the SIB.
10. ~~10.~~9. Recommend hiring or terminating money managers, custodians, consultants, and other outside services needed to effectively manage the investment funds.
11. ~~11.~~10. Develop and maintain appropriate accounting policies and investment systems for the funds entrusted to the SIB.

Investment Consultant

1. Measure money manager performance and monitor adherence to investment goals, objectives, and policies.
2. Assist in the annual evaluation of program policies, results, and the development of annual work plan.
3. Work with Staff to develop the asset allocation or asset/liability studies.
4. Provide information for requested money manager searches.
5. Assist in development of investment policies and manager structure and rebalancing guidelines.
6. Extension of staff for special projects.

Actuary

1. Assist fund governing bodies in developing benefit and funding policies.
2. Measure actuarial soundness of plan.
3. Perform experience studies as requested by plan sponsor.
4. Provide liability projections as needed.
5. Conduct annual evaluation of program policies, results, and assist in developmental of annual work plan.
6. Assist in implementation of annual work plan.

Auditor

1. Measure, validate, and offer an opinion on agency financial statements and management.
2. Assist in developing appropriate accounting policies and procedures.
3. Bring technical competence, sound business judgment, integrity, and objectivity to the financial reporting process.

Master Custodian

1. Provide safekeeping of all securities purchased by managers on behalf of the SIB.
2. Provide global custody services.
3. Collect interest, dividend, and principal payments in a timely manner.
4. Provide for timely settlement of securities.
5. Price all securities and post transactions daily.
6. Maintain short-term investment vehicles for investment of cash not invested by SIB managers. Sweep all manager accounts daily to ensure all available cash is invested.
7. Provide monthly, quarterly, and annual accounting reports for posting to RIO's general ledger.
8. May manage a securities lending program to enhance income.
9. Provide electronic access to accounting reports.
10. Provide other services that assist with the monitoring of managers and investments.

Portfolio Managers

1. Manage portfolios as assigned by the SIB.
2. Provide liquidity, as required, in a timely and cost-efficient manner.
3. Vote proxies.
4. Provide educational assistance to board.

Policy Implemented: September 20, 1995.
Amended: February 27, 2009

~~SIB~~

~~1. Invest funds entrusted by statute and contracted entities.~~

~~2. Set policies on appropriate investments and investment practices for entrusted funds.~~
~~3. Approve asset allocation and investment policies of participating trust funds.~~
~~4. Report the investment performance of the funds to each fund's governing authority.~~

~~5. Hire and terminate money managers, custodians, and consultants. Investment Officer and~~

RIO Staff

1. Implement investment policies approved by the SIB.
2. Provide research and administrative support for SIB projects.
3. Recommend investment regulations appropriate for governing the investment of entrusted funds.
4. Assist fund governing bodies in developing asset allocation and investment policies.
5. Evaluate money manager adherence to investment objectives.
6. Provide performance reports to the SIB and boards of participating funds.
7. Recommend hiring or terminating money managers, custodians, consultants, and other outside services needed to effectively manage the investment funds.
8. Develop and maintain appropriate accounting policies and systems for the funds entrusted to the SIB.

Investment Consultant

1. Measure money manager performance and monitor adherence to investment goals, objectives, and policies.
2. Conduct annual evaluation of program policies and results, and assist in development of annual work plan.
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7. Provide monthly, quarterly, and annual accounting reports for posting to RIO's general ledger.
8. May manage a securities lending program to enhance income.
9. Provide electronic access to accounting reports.
10. Provide other services that assist with the monitoring of managers and investments.

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1. Manage portfolios as assigned by the SIB.
2. Provide liquidity, as required, in a timely and cost-efficient manner.
3. Vote proxies.
4. Provide educational assistance to board.

Policy Implemented:

September 20, 1995.

Amended: February 27, 2009

POLICY TYPE: INVESTMENTS

POLICY TITLE: *INVESTMENT POLICY DEVELOPMENT – TRUST FUNDS*

All funds under SIB management must have a written investment policy. Investment policy forms the cornerstone of the management of any investment program. A sound investment policy ensures that fund assets are managed in a disciplined process, based on long-term fundamental investment principles.

For the larger, more complex trust funds, consultants are used to assist in policy and asset allocation development. Their specialized skills are needed to model and analyze the many variables that go into determining a proper asset allocation.

Policy development starts with the specification of investment objectives, constraints, and preferences. Fund trustees must address a number of factors:

- What is the fund's objective(s)?
- What is the board's tolerance for risk or threshold for under-performance?
- What are the fund's liquidity needs and cash flow characteristics?
- What are the board's asset class preferences and constraints?
- What is the actuarial earnings assumption?
- What are the legal or political considerations?
- What is the investment time horizon?

Since the ultimate objective of fund investments is to provide for the payment of future capital needs, claims, or other monetary requirements, it is essential that the investment policy be developed within the context of fund liabilities or spending policy. The development of investment policy, therefore, is always unique to the circumstances of each fund.

Complex actuarial models are used to quantify the liabilities of the pension plans and Workforce Safety and Insurance. Internal entities develop cash flow forecasts for the smaller funds based on past claims or anticipated expenditures.

Asset allocation optimizations are used to quantify the range of future investment outcomes. Investment consultants contribute needed expertise on capital market expectations and in identifying the risks associated with a particular asset allocation.

For some funds, the risk/return tradeoffs of alternative portfolios are not well represented by expected returns and standard deviation. More important are the expected results for required sponsor and participant contributions and funded ratios over time. Asset/liability modeling is the tool that allows the governing boards to examine and assess the tradeoffs leading to an appropriate investment policy.

The results of the optimizations are a description of the range of financial results that might realistically be expected to occur. These results provide the basis for determining an asset allocation.

POLICY TYPE: INVESTMENTS

POLICY TITLE: *INVESTMENT POLICY DEVELOPMENT – TRUST FUNDS*

In accordance with NDCC 21-10-02.1, RIO staff works with each fund's governing authority, and consultants as needed, to develop an investment policy, which includes an appropriate asset allocation, for each of the statutory funds. Contracted entities are responsible for their own policy development. Pooling of funds is allowed by statute. A pooled allocation will have an investment policy that can be approved by each fund's governing authority.

Each policy, as a minimum, will include the following information:

1. Fund characteristics and constraints.
    a. An explanation as to the purpose of the portfolio and its legal structure.
    b. Size of portfolio and the likelihood and amount of future contributions and disbursements
    c. Participant demographics when applicable.
    d. Fiscal health of fund.
    e. Constraints.
    f. Unique circumstances.
2. Responsibilities of SIB.
3. Investment objectives.
4. Standards of investment performance.
5. Asset allocation policy and guidelines.
6. Evaluation and review.

Policy Implemented: September 20, 1995.
Amended: February 27, 2009

Asset Class Implementation

The SIB may internally manage investment of funds as approved by the Investment Committee and if there is a policy approval for internal investment management by the Board. Within each asset class there are numerous manager strategies, internal and external that may be employed by the SIB to affect exposure to the various asset classes as well as achieve an excess return to the policy benchmark.

Investment Pools

Investment pools may be defined for asset allocations as well as individual asset classes, sub-asset classes, manager portfolios or transactions and unitized for allocation to client funds.

SIB investment pool policy statements will define the following:
~~The SIB does no in-house investment of funds. All investment activity is delegated to outside money managers. Within each asset class there are numerous manager styles (i.e. market sector specializations) that may be employed by the SIB to affect exposure to the various asset classes.~~

~~SIB investment pool policy statements will define the following for each asset class~~:

1. Strategic objectives.
2. Performance objectives.
    a. Appropriate capital market benchmarks.
    b. Excess return targets, after payment of investment management fees.
    c. Peer-group ranking.
    d. Risk characteristics.
    e. Termination factors.
3. Portfolio constraints.
    a. Quality of securities/portfolio (security – BAA/portfolio – AA).
    b. Quality held (maximum in company/industry/economic sector).
    c. Other specific restrictions if applicable (ADRs, 144A securities, prohibited transactions, etc.).
4. Investment structure.
    a. Percent of assets per manager cycle.
    b. Ranges for rebalancing.

5. Control Procedures

    a. Duties and responsibilities of the SIB

    b. Duties and responsibilities of money managers.

    c. Reporting requirements.

Policy Implemented: September 20, 1995.
Amended: February 27, 2009

STATEMENT OF POLICY

It shall be the policy of the State Investment Board (SIB) to vote all proxies appurtenant to shares held in the various plans administered by the Board, and to vote said shares in a manner that best serves the system's interests. Specifically, all shares are to be voted with the interest of preserving or enhancing share value. The Board endorses the Department of Labor opinion that proxies have economic power which shareholders are obligated to exercise to improve corporate performance. The Board further recognized that proxy issues are frequently complex, requiring expert guidance; accordingly, it has adopted procedures that employ such experts.

The objectives of these policies are as follows:

1. Exercise the value empowered in proxies.

2. Maintain or improve share value for the exclusive benefit of the participants.

3. ~~Achieve changes for the common good whenever these do not conflict with the exclusive benefit objective.~~

PROCEDURES

DISTINCTION OF RESPONSIBILITIES

Master Custodian

The system's master custodian shall be responsible for timely receipt and distribution of proxy ballots to the appropriate investment management institutions.

Managers

The managers shall be responsible for promptly voting all proxies pursuant to the Board's policies, and in keeping with the managers' best judgments.

Staff

Staff, in concert with the master custodian and the managers, shall be responsible for monitoring the receipt and voting of all proxies.

Board

The Board shall administer and enforce its policies. This administration and enforcement require~~s~~ reporting from responsible persons, as discussed in the following.

REPORTING

Master Custodian

The master custodian shall report quarterly in writing on all pertinent proxy issues, including (1) receipt of proxy material; (2) nature of issues; (3) due date; (4) names of managers and dates forwarded; and (5) deficiency reports covering proxies that should have been received but were not.

Managers

Managers shall report quarterly in writing on how proxies have been voted, with explanations given whenever the Board's guidelines have not been followed.

Staff

Internal compliance staff shall report annually on the efficiency of the process, the portion of total proxies that have actually been voted, and compliance with Board directives.

~~GUIDELINES~~

~~The Board believes that good corporate investment decisions require good corporate governance, and that social responsibilities cannot be ignored in these decision processes. Accordingly, the practice of faithfully voting with management will *not* be tolerated, nor will the "Wall Street Rule" which advocates the sale of shares if there is disagreement with management.~~

~~In keeping with the Board's philosophy, the managers are encouraged to vote *for* proposals that *increase* or enhance the following, and against those that decrease or diminish the same:~~

- ~~Health of the population~~
- ~~Environmental conditions~~
- ~~Management and Board accountability~~
- ~~Abolition of management entrenchment~~
- ~~Control of executive compensation~~
- ~~Shareholder rights and ownership~~
- ~~Fair labor practices~~

~~Guidelines may be altered periodically by the Board as situations warrant.~~

Policy Implemented: September 20, 1995.
Amended: February 27, 2009, October 26, 2018.

POLICY TYPE: INVESTMENTS

POLICY TITLE: *IMPLEMENTATION – INVESTMENT MANAGER SELECTION*

The SIB hires investment managers with the intention of maintaining long-standing relationships. Care is taken to select managers for defined roles based on their strengths in designated areas. The hiring process is done in accordance with all applicable state and federal laws.

~~Some manager selections are conducted by the consultant while others may be directed by the staff in coordination with the SIB. Ultimately, the selection process is often a team effort involving the investment consultants, SIB members, and RIO staff. A consultant may be invaluable in this activity due to the large volume of data that needs to be collected, verified, and summarized. Also, their ongoing dialogue with money management firms provides useful qualitative input.~~

The investment management business has rapidly evolved since the 1990's. It is recognized that many viable firms have been formed as the result of spin-offs or start-ups and may not have a traditional long-term investment performance history in accordance with the following guidelines. There has also been a tremendous increase in the types of strategies available to institutional investors resulting in the need for flexibility in the establishment of investment criteria. Subject to the case-by-case acceptance of deviation by the SIB members, money managers must meet the following minimum selection criteria for inclusion in a manager search:

- Must be a registered investment adviser, bank, insurance company, or investment company (mutual fund). Should provide ADV Part II (registered investment adviser) prospectus (investment company) or comparable information (bank or insurance company).
- Provide at least five years of actual quarterly performance data that is time weighted a representative composite of ~~accounts, and~~accounts and meets Global Investment Performance Standards (GIPS).
- Provide information that illustrates the key investment personnel have been together for at least five years and the capabilities of the firm can handle the current level of investment activity.
- Able to articulate the firm's investment strategies and philosophy in a manner understandable by the Board, and provide a statement that the strategy has been followed for at least five years.
- Disclose any pending or past litigation or censure.
- Be willing to acknowledge their fiduciary status in writing (mutual funds are exempted from this requirement).

The following steps will be followed in the selection process, subject to modification relative to investment strategy and manager search circumstances:

- Develop a profile of the type of manager needed. This is based on the investment goals and asset allocations. Included in the profile are such things as:
  1. Quantitative characteristics, such as GIPS-compliant composite return data, risk-adjusted rates of return and relevant portfolio characteristics.
  2. Qualitative characteristics, such as key personnel, investment philosophy, investment strategy, research orientation, decision making process, and risk controls.
  3. Organizational factors such as type and size of firm, ownership structure, client servicing capabilities, ability to obtain and retain clients, and fees.

POLICY TYPE: INVESTMENTS

POLICY TITLE: *IMPLEMENTATION – INVESTMENT MANAGER SELECTION*

~~The following steps will be followed in the selection process, subject to modification relative to investment strategy and manager search circumstances:~~

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  ~~Quantitative characteristics, such as GIPS-compliant composite return data, risk-adjusted rates of return and relevant portfolio characteristics.~~

  ~~Qualitative characteristics, such as key personnel, investment philosophy, investment strategy, research orientation, decision making process, and risk controls.~~

  ~~Organizational factors, such as type and size of firm, ownership structure, client servicing capabilities, ability to obtain and retain clients, and fees.~~

- Staff will provide a written report to the Investment Committee as required on the due diligence process conducted during the selection process. This report will include selection steps followed and process steps excluded. ~~The Investment Officer will give a written report to the SIB on the due diligence process conducted by the Investment Officer, RIO staff, and the SIB in the manager selection process. This report will include selection steps followed and process steps excluded.~~

- Consultant and/or staff use the profile to screen their data base for managers that meet SIB criteria.

- Consultant and/or staff reduce the group to the top candidates and prepare a summary report. The report will contain pertinent data on each of the candidates.

- When appropriate, on-site visits may be made by staff and board members to the candidates' home offices. Visits by board members to potential manager sites must have board approval.

- When appropriate the Investment Officer will conduct fact-finding pre-interviews. SIB trustees and RIO staff will receive notice of these pre-interviews.

  Interviews are conducted with each of the finalists in Bismarck. All are required to bring the potential portfolio manager to the interview. Particular attention is paid to gaining an understanding of the investment process and determining the manager's compatibility with the SIB's ~~guidelines~~ requirements and objectives.

  The Investment Officer will schedule manager interviews with the SIB. Following these interviews, the Investment Officer, with the advice of RIO staff and consultants, will make recommendations to the SIB on manager selection.

- The SIB will select the investment manager by majority vote.

- Manager(s) selected by the SIB are notified immediately by RIO staff. Unsuccessful candidates are notified by consultant.

- Investment management contracts are reviewed and finalized, sent to the Attorney General for ~~approval~~review, and executed.

- Accounts are set up at the master custodian and on the internal general ledger.

- Consultant is notified when to begin the measurement of the investment performance of the manager(s).

Policy Implemented: September 20, 1995
Amended: February 27, 2009

Portfolio Rebalancing

The need to rebalance the portfolio can arise ~~due to~~from a new asset allocation or because market activity has driven the actual distribution of assets away from the desired mix. To minimize transaction costs ~~due to~~from rebalancing, RIO ~~works with the investment consultants to determine~~develops appropriate ranges around the target mix (which are specified in the policy statement). Rigidly adhered to, such a policy is a valuable risk control tool. By maintaining asset mix within reasonably tight ranges, the SIB avoids making unintentional "bets" in the asset mix and avoids market-~~-~~timing decisions.

All ~~of the~~ funds the SIB oversees have an asset allocation with minimum and maximum limits assigned. RIO's rebalancing policy requires the asset mix to be determined at the end of each month and that appropriate rebalancing takes place.

~~RIO's rebalancing policy requires the asset mix to be determined at the end of each month. At the end of each quarter, all portfolios deviating from the target beyond the acceptable limits are rebalanced to target.~~

Policy Implemented: September 20, 1995.

The Board and the Investment Committee ~~The SIB~~ will follow an annual evaluation cycle for the investment program to ensure systematic review of investment policies and performance results and the development and implementation of corrective action plans. Evaluation of the program seeks to answer such questions as:

- Are all investment goals being met?
- What has worked and what has not?
- Have changes occurred in the capital markets, plan design, or board philosophy to warrant changes in investment policy?
- Are money managers meeting our expectations?
- Is continued confidence in the money managers warranted?
- Are accounting practices sound and fair to participating funds?
- Is service delivered in the most cost-effective manner?

The SIB's consultants play a key role in helping to answer some of these questions. The external auditor's report provides insight on accounting practices and cost effectiveness.

Evaluation of Money Managers

Achievement of the SIB's performance goals hinges on the success of the investment strategies and money managers it employs. Evaluation of each money manager must consider the following:

- Has the manager achieved the SIB's performance objectives?
- Has the firm adhered to the investment philosophy for which it was hired?
- Have there been any organizational or personnel changes that may negatively affect future performance?
- Are areas of concern being adequately addressed?
- Can the manager perform well in the future, regardless of whether extraordinary events, long-term performance, and/or short-term performance argue for termination?

These criteria are assessed by quantitative and qualitative means:

- Analyses provided by the investment consultant.
- Annual meetings with each manager in Bismarck, onsite at the managers' offices or virtually to discuss performance, investment philosophy, organizational changes, economic outlook, and areas of concern.

Longer periods of time are better than shorter time periods when assessing a manager's performance. Ideally, performance should be assessed over a market cycle. Market cycles have varying lengths but have historically averaged 5-7 years. The SIB will use a minimum five-year period to evaluate manager performance against long-term performance standards. Long-term performance standards will be a market index that the manager has previously agreed to be measured against.

Shorter-term performance standards will also be established for each money manager. These standards will incorporate a minimum three-year measurement period and measure the manager against a previously agreed-upon peer group or style market index.

Long-term performance standards, short-term performance standards, extraordinary events, and termination factors will be incorporated in the written asset class investment policies.

Evaluation of Program Costs

Costs will be broken out by internal administration, investment consultants, master custodian, and external manager fees. Reports will detail this information by investment pool, managers, and by fund.

These costs will be compared to other funds on an annual basis and generally include a fee study conducted by an experienced investment consultant every two years. Staff is encouraged to identify other cost- comparison sources which may include the engagement of specialized fee consultants to conduct in-depth fee reviews on a periodic basis, subject to board review and approval.

Policy Implemented: September 20, 1995.
Amended: October 26, 2018, July 22, 2022.

2023 Legislative Session Planning - TFFR

TFFR Board

NORTH Dakota
Be Legendary.

Topics & Guidance

TFFR Technical Bill

Retirement Plan Design Changes

- TFFR
- PERS

Investment Program Changes

- SIB Governance
- RIO Initiatives

- GPR Committee Rec.
  - Support
  - Neutral
  - Oppose

Technical Bill Draft 53 23.0053.01000 – Employee Benefits Programs Committee 6/21/22

https://ndlegis.gov/assembly/67-2021/interim/23-0053-01000.pdf

TFFR Technical Bill

Submitted by the TFFR Board

Includes:

- Clarification of Statutory Provisions.
- Easing of Re-employed Retiree restrictions.
- Pioneer Project Budget hearing Support?

- GPR Committee Rec:
  - Support
- Parameters
  - Proposed amendments
    - Definitions
    - Re-employed Retiree Plan Policy
    - Actuarial Impact

Clarifying/ No Actuarial Impact.

Major Changes/High Impact

Retirement Plan Design Changes - TFFR

Known Bills:

- Military Exemption

EBPC 6-21-22:

https://ndlegis.gov/assembly/67-2021/interim/23-0016-02000.pdf

Anticipated Topics:

- Exemption - Other Groups.
- Plan Design Changes.

- GPR Committee Rec:
  - Oppose

Parameters

- Plan Risks associated with Exemptions from participation.
- Public Policy concerns.
- Actuarial Impact.

Retirement Plan Design Changes - PERS

Known Bills:

- DB Plan Closure

Retirement Comm. 10-31-22:

- https://ndlegis.gov/assembly/67-2021/interim/23-0280-02000.pdf

Anticipated Topics:

- Plan Design Changes.

- GPR Committee Rec:

  Further Board discussion needed.

  - Neutral
  - Oppose
- Parameters
  - Public Policy concerns.

  Note: Opportunity for Board Discussion relating to Plan Design Analysis.

Investment Program Changes

RIO Initiatives - Known

- Internal Investment Opportunities

SIB Governance - Anticipated

- Board Composition
  - Land Assets

- GPR Committee Rec:
  - Support
- Parameters
  - Client Fund Benefits
  - Agency HR Impact
  - Governance & Control
  - TFFR representation

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MEMORANDUM

TO: **TFFR Board of Trustees**
FROM: **Chad R. Roberts, DED/CRO**
DATE: **November 1, 2022**
RE: **Pioneer Project Update**

This report highlights the progress of the development of the new pension administration system and any issues with that project.

Current tasks

Currently staff is in the Pilot 1 elaboration portion of the development. These meetings started in early September and are scheduled to be complete on December 16, 2022. Elaboration meetings are being conducted in the following areas:

- Enrollment and employer reporting
- Financial transactions
- Service credit purchases
- Financial legal documents
- Non-financial legal documents
- Data conversion detailed mapping sessions

Budgetary status

The project is currently within budget, a change to the login authentication platform utilized for the system resulted in a cost savings and credit to the management reserve for the project of $3,300.00.

Project timeline status

The project is presently on target for the agreed upon timeline. No significant hurdles have been encountered thus far in the elaboration sessions to create any delays in schedule.

BOARD ACTION REQUESTED: Board Information.

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MEMORANDUM

TO: **TFFR Board of Trustees**
FROM: **Denise Weeks**
DATE: **November 9, 2022**
RE: **November 2022 Board Meeting Outreach Programs Update**

Events completed

- TFFR Group Counseling Sessions – In Person
  - Devils Lake, Grand Forks, Fargo, Minot, Jamestown, Mandan, Bismarck, Dickinson in September through November
  - 263 Attendees
  - Collaboration by Retirement Program Specialists and Retirement Services Administrative Assistant.

- Business Manager Trainings – Virtual
  - Info Mixer
    - Multiple topics on TFFR Employer Reporting - October 11 and 12, 2022
    - 32 attendees
    - Collaboration by Employer Services Coordinator and Retirement Services Administrative Assistant, and Retirement Services Manager
  - New Business Manager Workshop
    - Multiple topics on TFFR Employer Reporting – November 2, 2022
    - 26 attendees
    - Collaboration by Employer Services Coordinator, Retirement Services Administrative Assistant, and Retirement Services Manager

- ND Council of Educational Leaders – In Person
  - October 20, 2022, in Bismarck
  - TFFR information booth and video
  - Retirement Program Specialists (both) and Deputy Executive Director/Chief Retirement Officer attended

- ND School Board Association Conference – In Person
  - October 28, 2022, in Bismarck
  - TFFR Information booth and Video
  - Employer Services Coordinator, Retirement Programs Manager, and Deputy Executive Director/Chief Retirement Officer attended

- National Council on Teacher Retirement (NCTR) - In Person
  - October 8-11, 2022, in Tucson, AZ
  - Deputy Executive Director/Chief Retirement Officer attended

- National Pension Education Association (NPEA) - In Person
  - October 22-26, 2022, in Seattle, WA
  - Retirement Program Specialists (both) and Retirement Programs Manager attended

- Employer Newsletter – Briefly
    - October 2022
    - TFFR Employer Reporting information, Business Manager profile, RIO staff profile and word search
    - Collaboration by Retirement Services staff

Upcoming events

- TFFR Group Counseling Sessions – Virtual
    - 2 statewide virtual sessions scheduled for all school districts November 15, 2022, and December 8, 2022

- Business Manager Trainings
    - Info-Mixers – Virtual
        - Two TFFR Employer Reporting topics covering 4 sessions November 15 and 16, 2022, and December 13 and 14, 2022

BOARD ACTION REQUESTED: Board Information.

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MEMORANDUM

TO: **TFFR Board of Trustees**
FROM: **Chad R. Roberts, DED/CRO**
DATE: **November 16, 2022**
RE: **2022 Return to Teach Presentation and Report**

Each year the Board receives a report regarding the performance of the Return to Teach Program. Included with this memo is a presentation on the program.

The presentation includes data from 2022 in the following areas:

- Returning Retirees
  - Total number reemployed
  - Reemployment in rule category (General, Critical Shortage Area and Suspend and Recalc)
  - Reemployed retirees by subject area
  - Reemployed retirees by job type (Superintendent, Other administration, Teacher)
  - Salary data for returning retirees
  - Contract hours of returning retirees
- Employers reemploying retirees
  - Percent of employers reemploying retirees
  - Employers reemploying retirees by employer size (Small, Medium and Large)

The presentation contains historical trend data for the years 2013 to 2022 in the following areas:

- Trend analysis of Return to Teach Program 2013 to 2022
  - Total reemployed retirees by year
  - Reemployed retirees by job type
  - Reemployed retirees by rule

Highlights of Report

- The number of reemployed retirees in 2022 dropped substantially as compared to previous years. The total reemployed in 2021-2022 was 273 compared to a peak of 347 in 2018.
- There was an increase of reemployments in critical shortage areas over 2021, rising to 35 from 25.
- The average salary of reemployed retirees increased to $29,665 in 2022 from $23,589 in 2021
- The average age of reemployed retirees decreased from an average age of 64 in 2021 to an average age of 63 in 2022
- The number of employers reemploying retirees decreased substantially in 2022 to 92 employers from 114 employers in 2021
- There were 5 suspend and recalc reemployed retirees in 2022, there were 4 in 2021

- There was a significant increase in reemployed retirees in the “administrators” category
- The number of medium and large employers reemploying retirees increased in 2022 while the number of small employers reemploying retirees decreased
- The core subjects of math, science, reading and history all saw significant decreases in reemployed retirees as compared to 2021.

BOARD ACTION REQUESTED: Board Acceptance.

2022 RETURN TO TEACH REPORT

TFFR Board Meeting November 17, 2022

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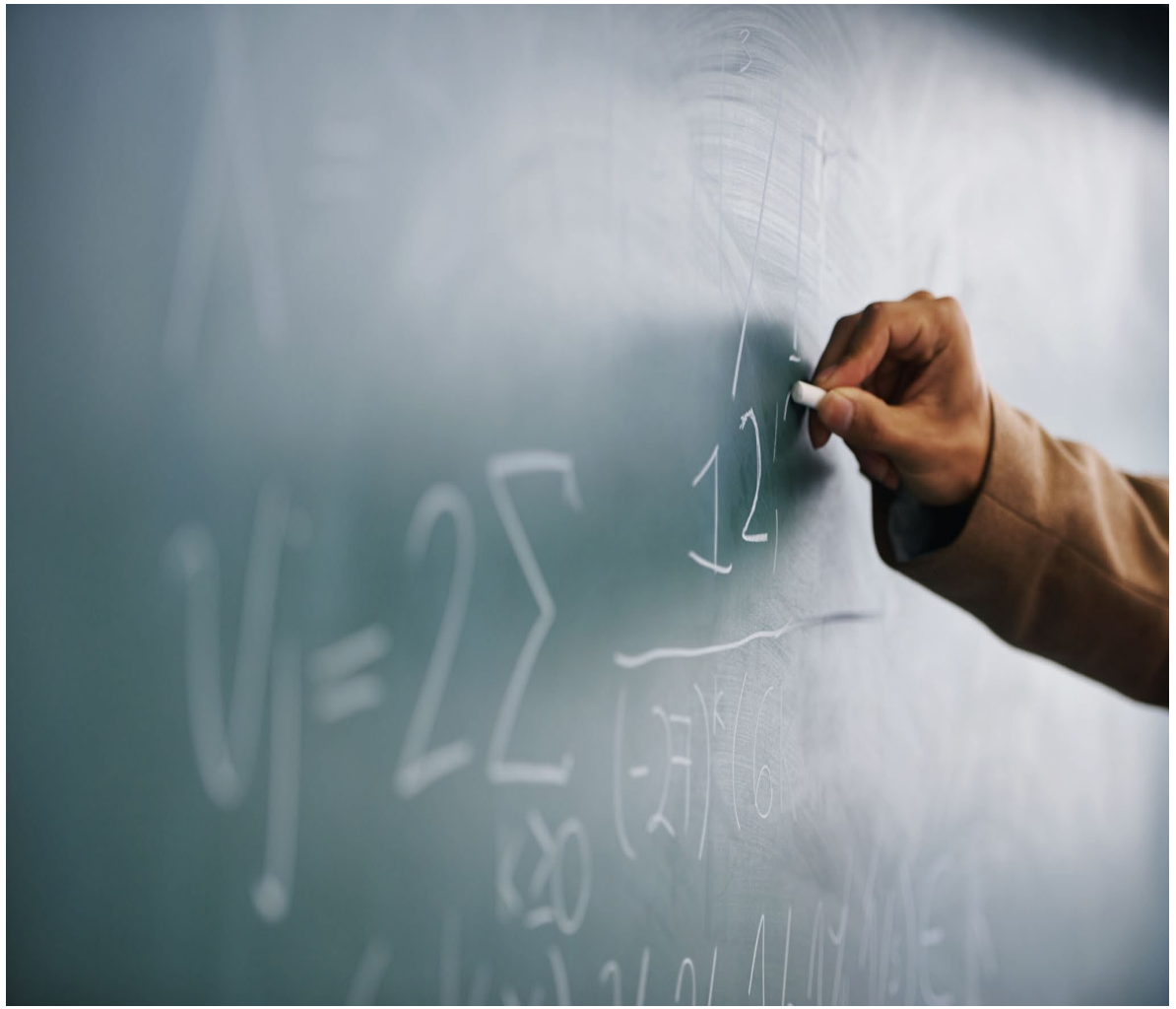
OBJECTIVES OF REPORT

- FY2022 breakdown of retirees returning to the teaching profession
  - Hours contracted
  - Salaries paid
  - Types of reemployment
  - Educational subject areas
- FY2022 employers benefitting from the return to teach program
  - Total employers reemploying retirees
  - Reemploying employers by size
- Historical trend analysis of return to teach program

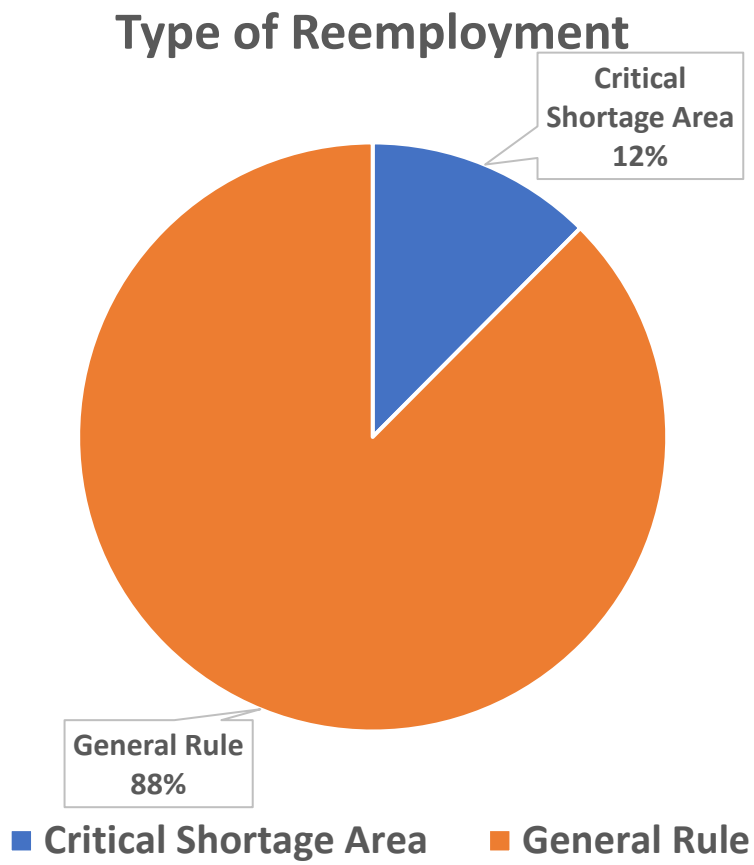
RETURNING RETIREES 2021-2022 SCHOOL YEAR

- 273 Retirees returned to the classroom for the 2021-2022 school year
- 35 of those Retirees returned to critical shortage areas
- The average salary was $29,665 for returning teachers
- The median age for a returning teacher was 63 years old

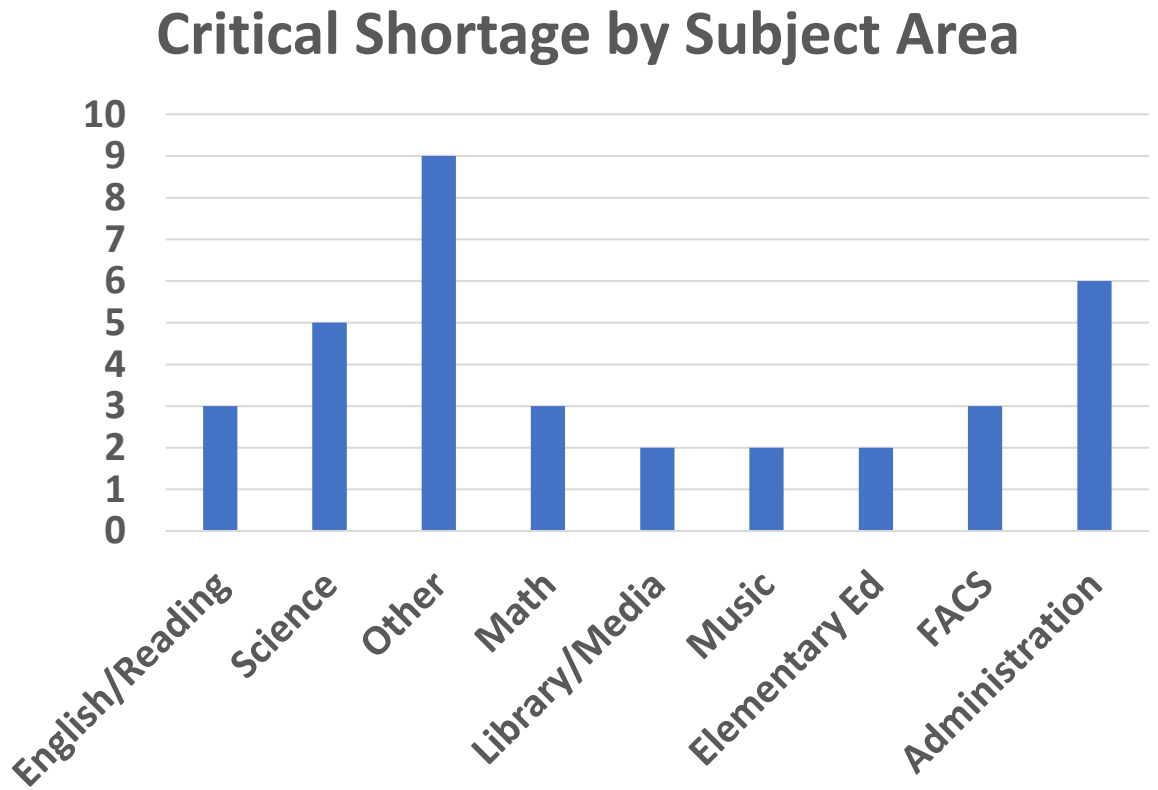


REEMPLOYED TEACHERS BY RULE

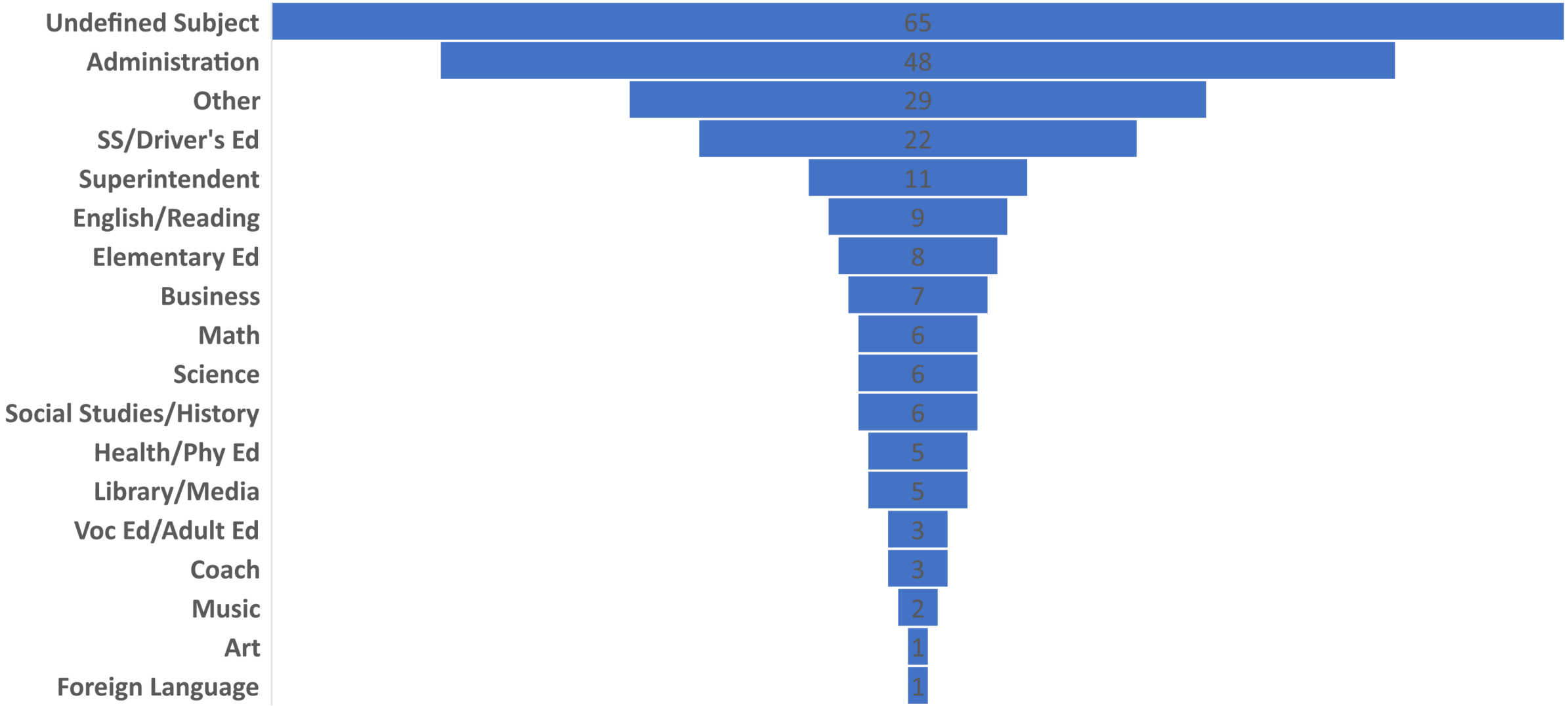
- CSA vs. General Rule



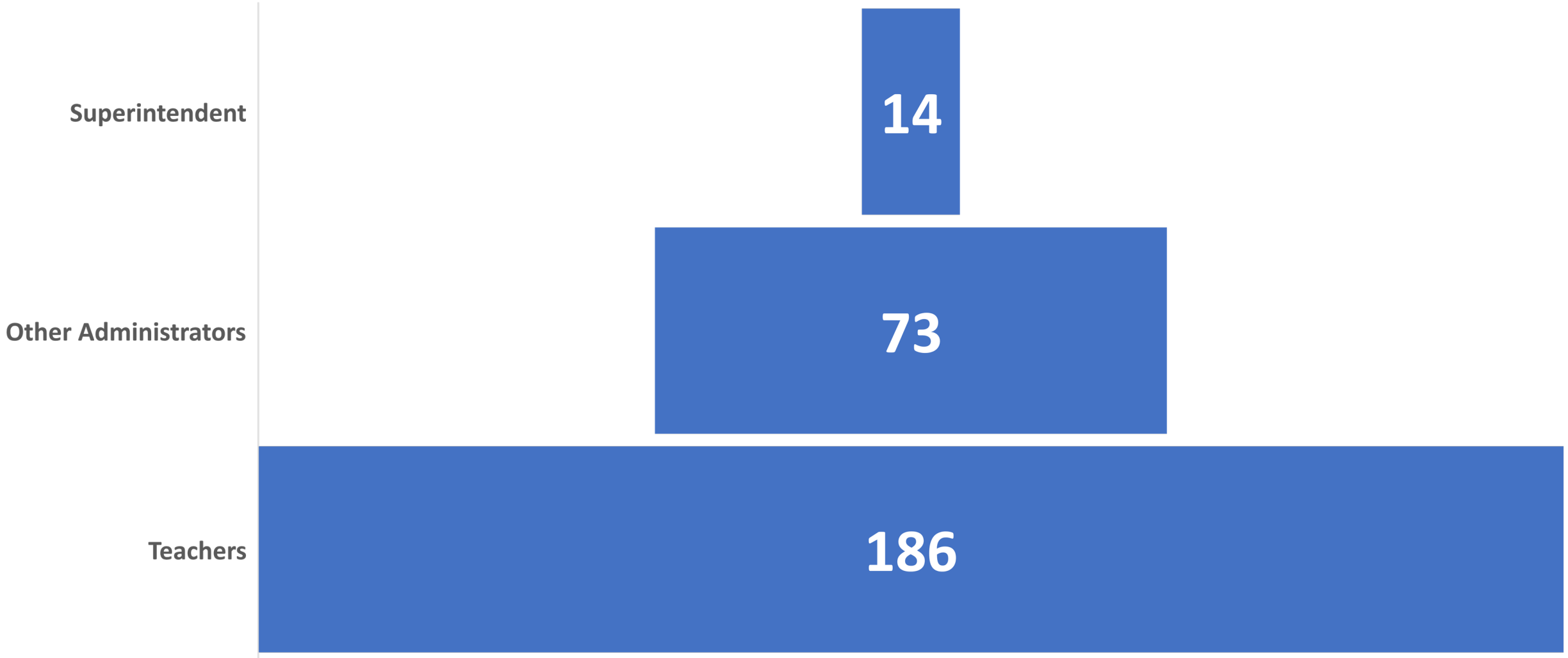
- CSA Reemployment by Subject Area



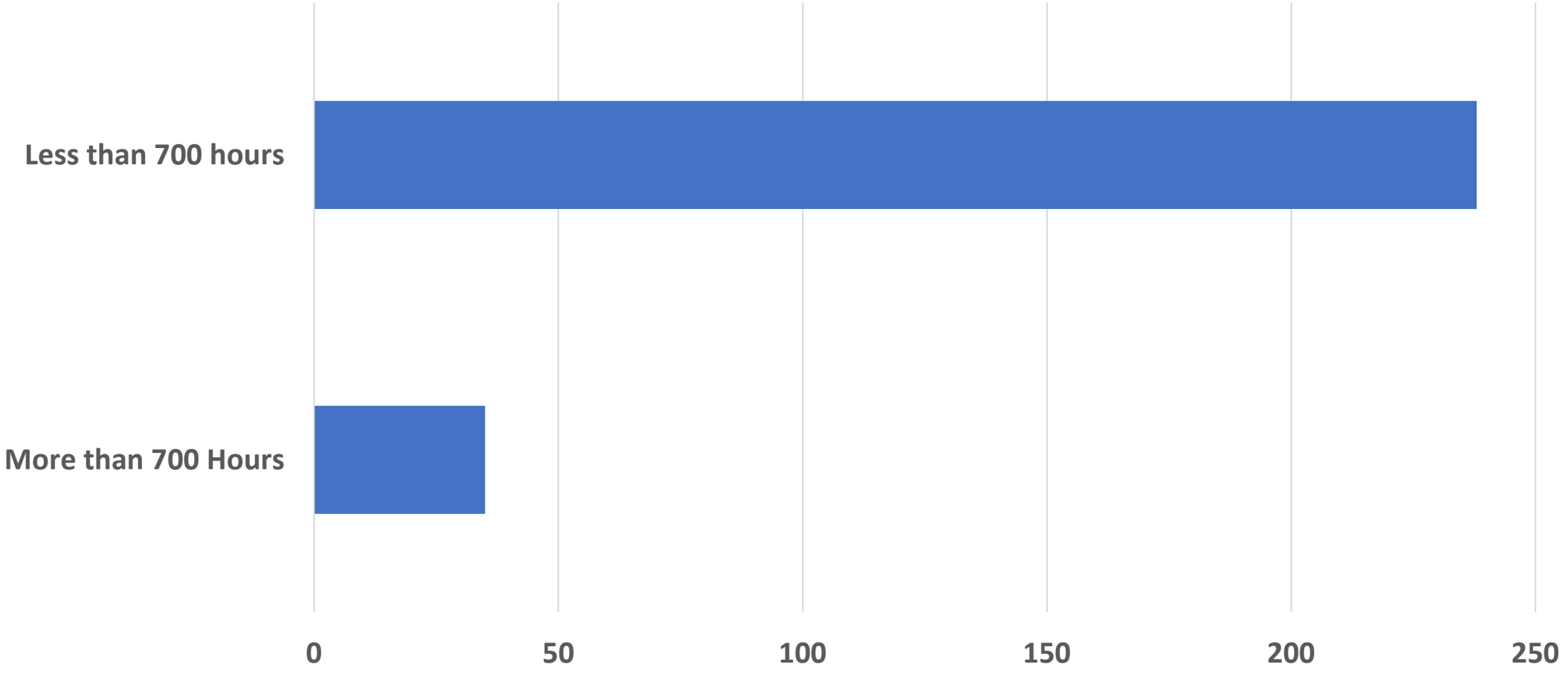
General Rule Reemployment by Subject Area

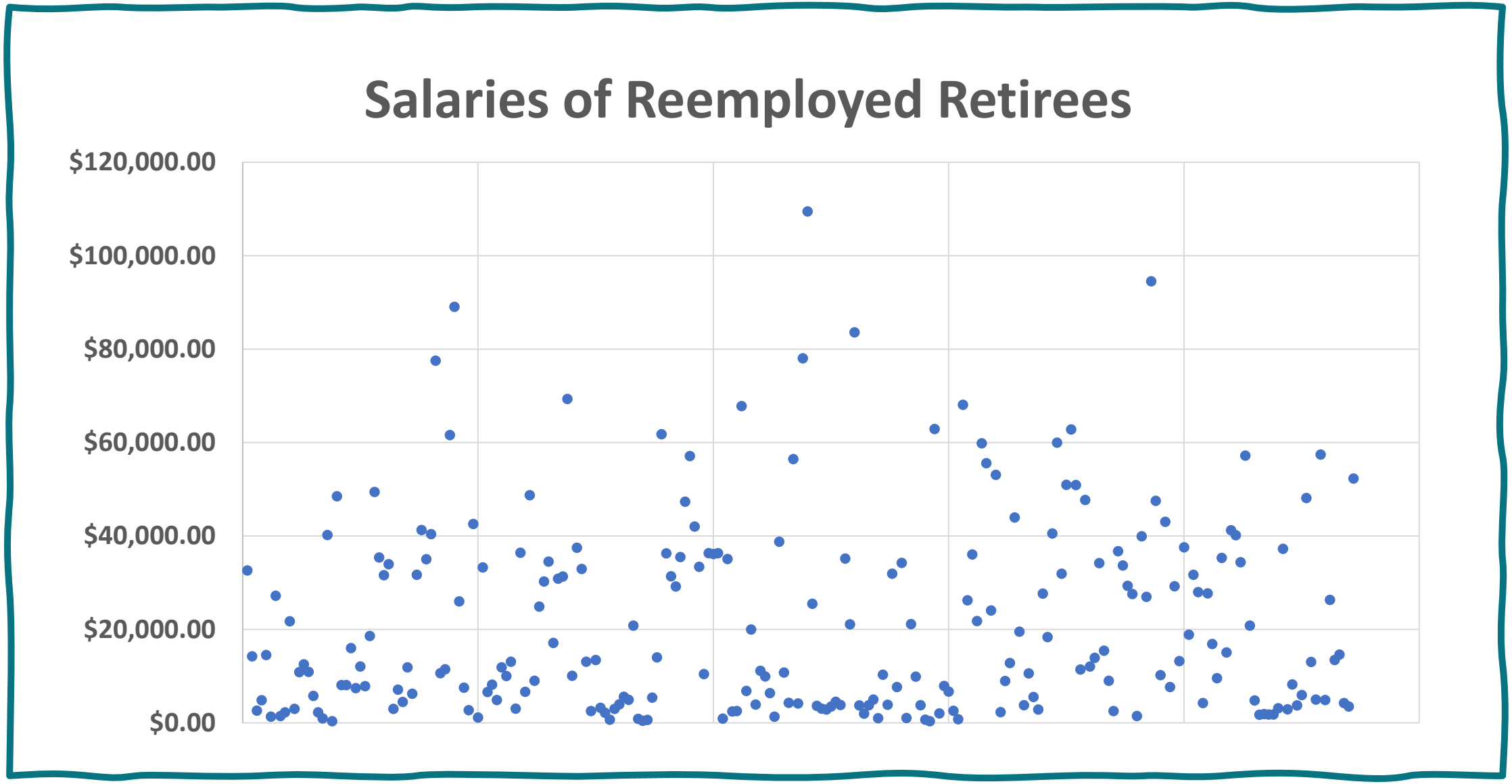


Job Types of Reemployed Retirees



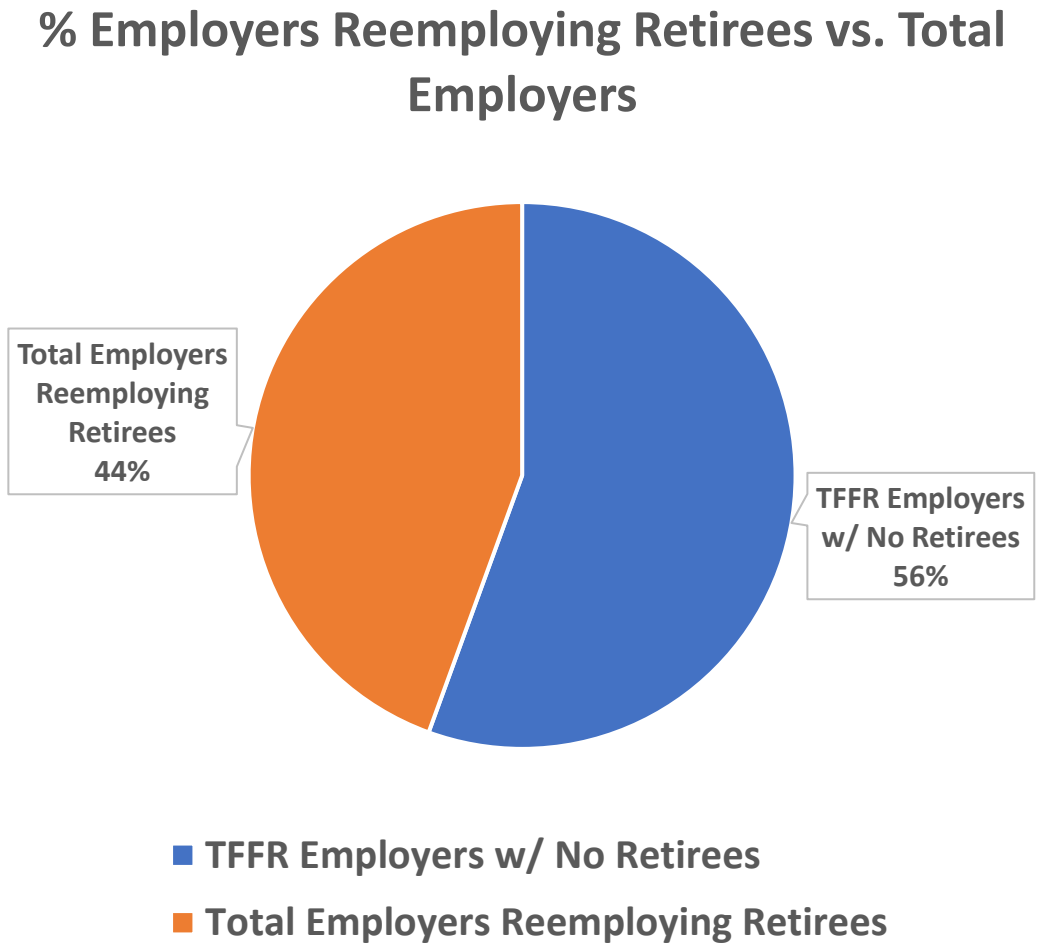
Reemployed Retiree Contracted Hours




Salaries of Reemployed Retirees
$120,000.00
$100,000.00
$80,000.00
$60,000.00
$40,000.00
$20,000.00
$0.00

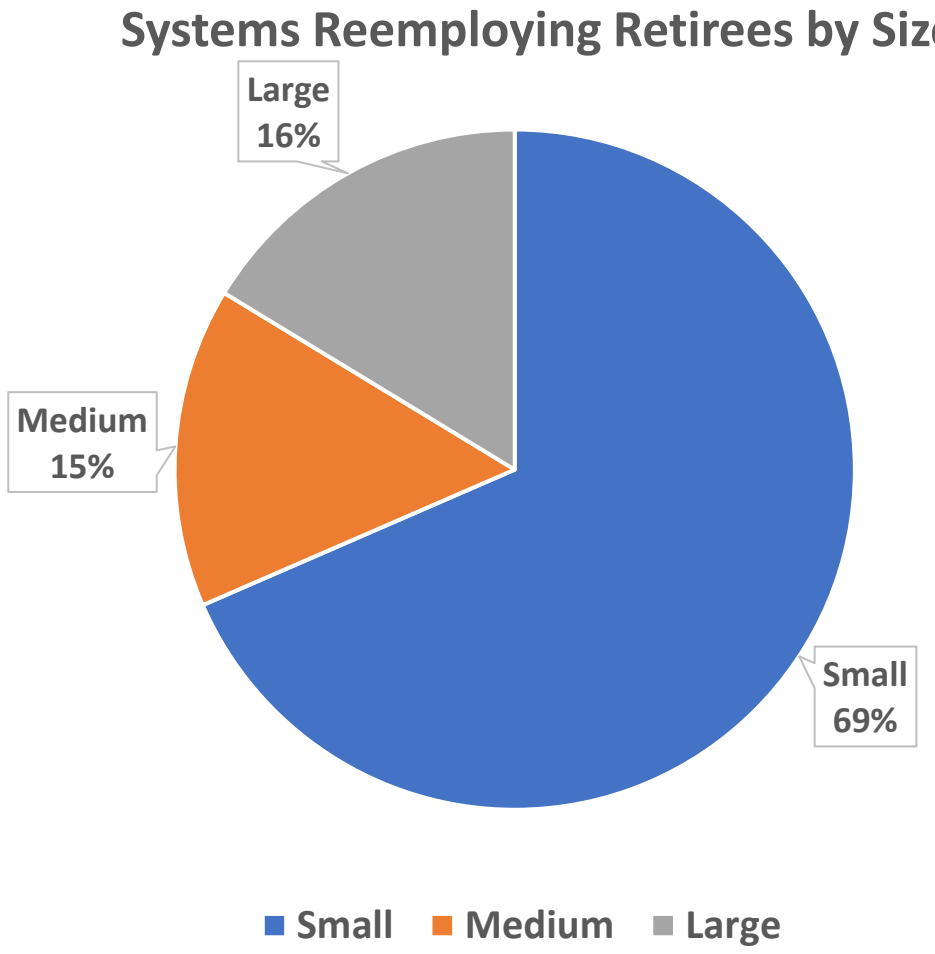
NUMBER OF EMPLOYERS REEMPLOYING RETIREES

- 207 total TFFR employers in North Dakota
- 92 employers reemployed retirees during 2021-2022 school year
- 115 employers did not employ any retirees in the 2021-2022 school year

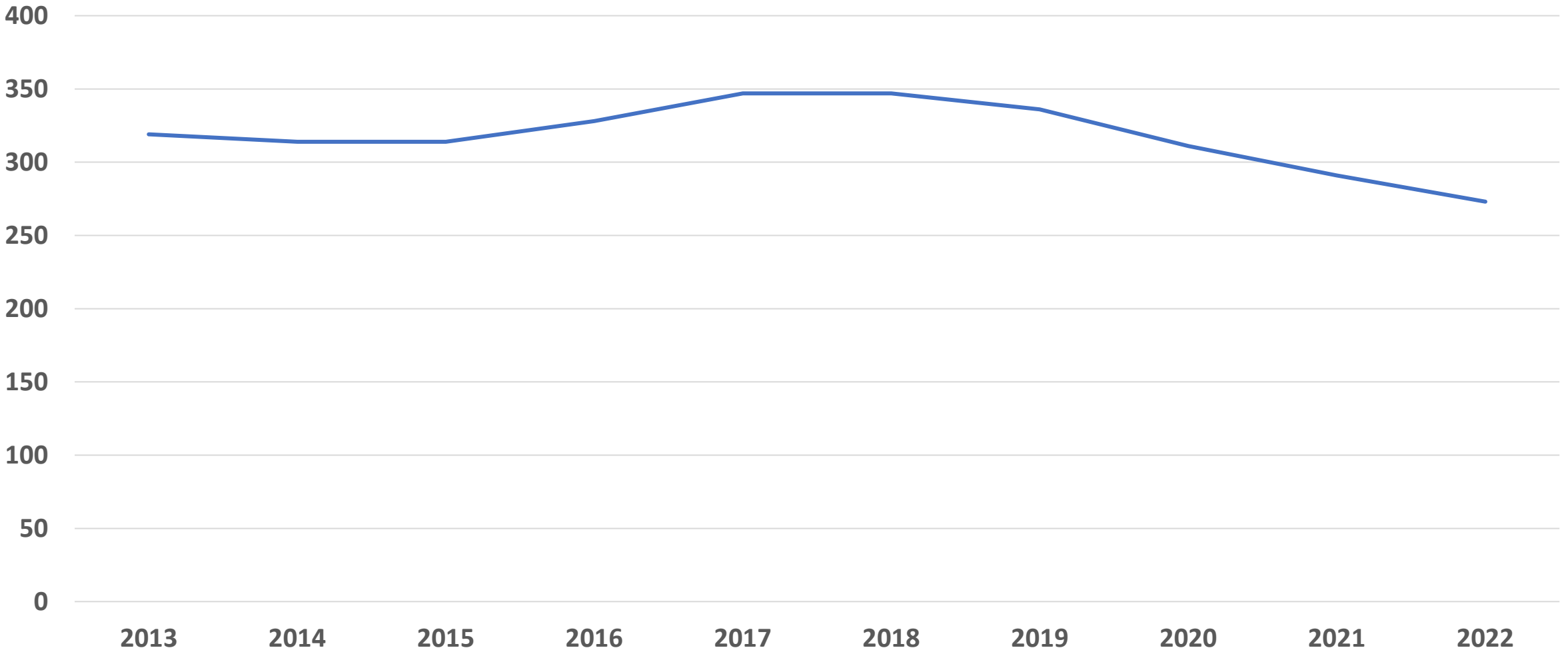


EMPLOYER BY SIZE REEMPLOYING RETIREES

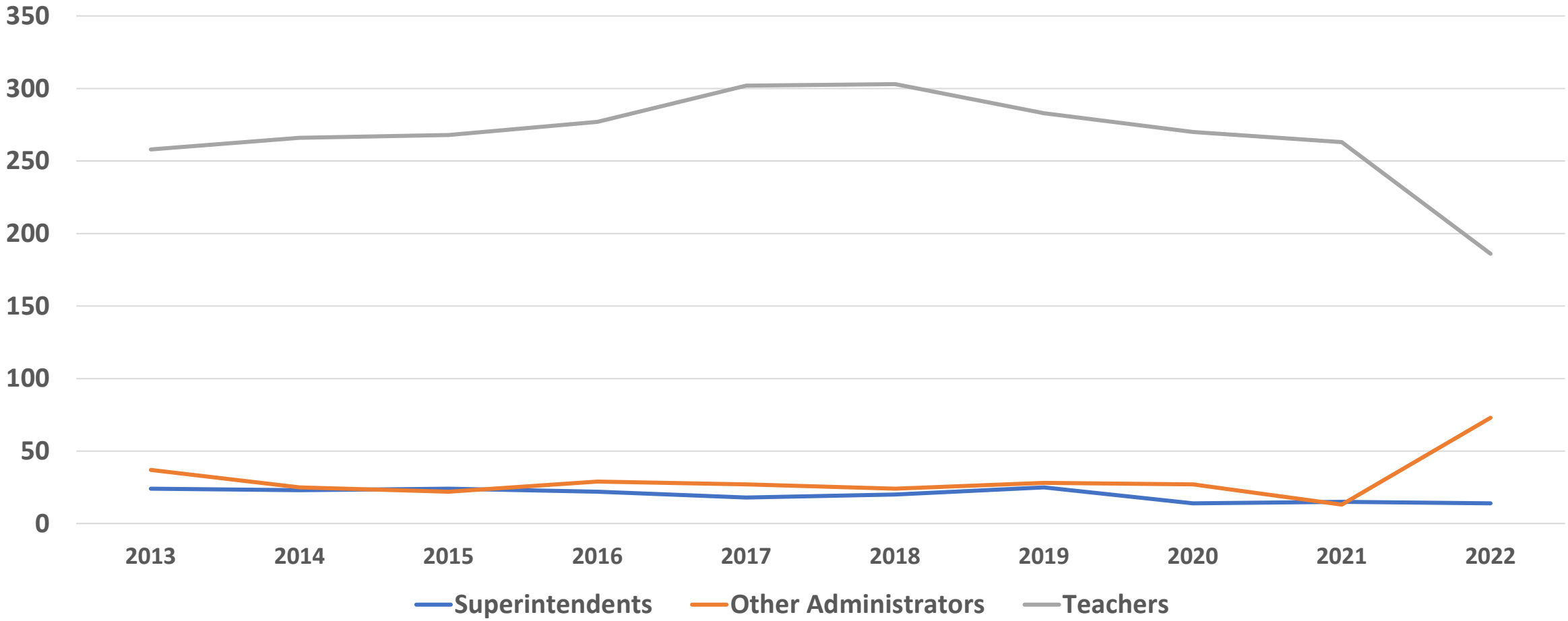
- Small Employer Less Than 50 Employees (63)
- Medium Employer Between 51 and 100 Employees (14)
- Large Employer More Than 100 Employees (15)



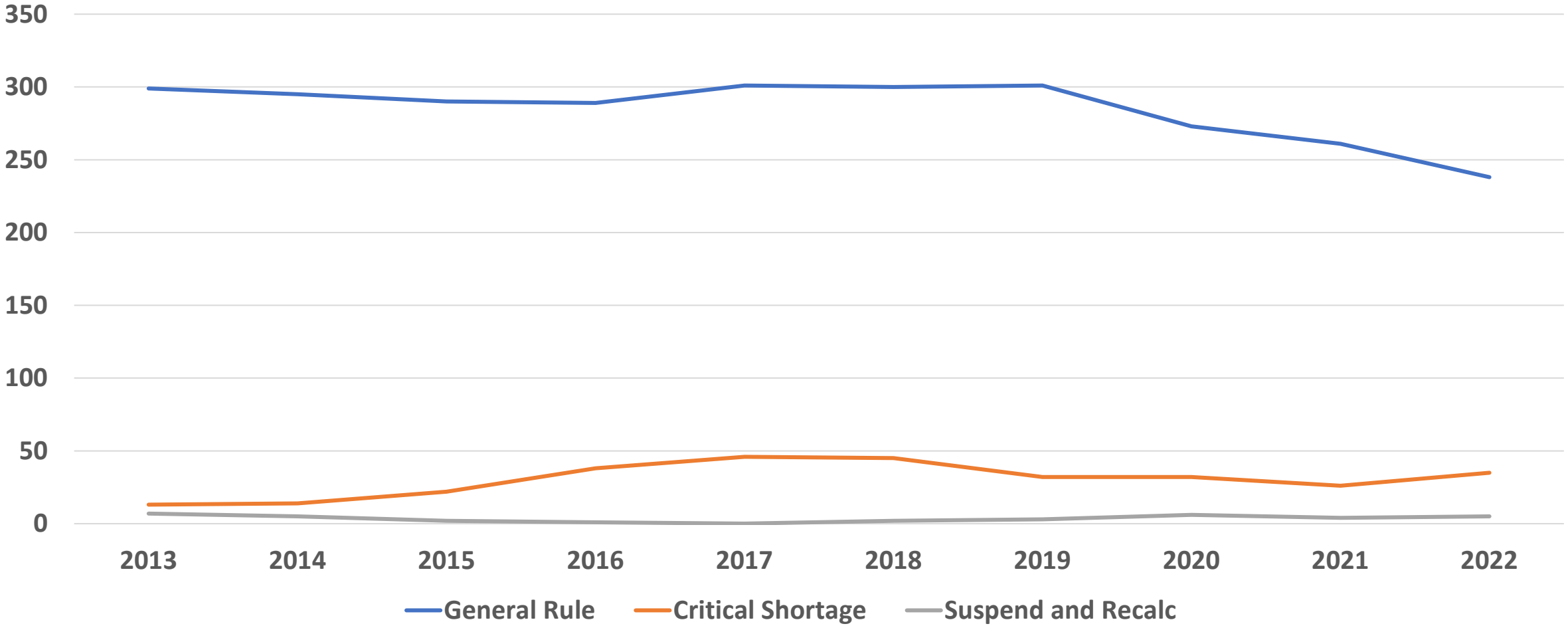
Total Reemployed Retirees by Year 2013-2022



Reemployed Retirees by Job Type 2013-2022



Retiree Reemployment by Rule 2013-2022



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MEMORANDUM

TO: **TFFR Board of Trustees**
FROM: **Ryan K. Skor, CFO/COO**
DATE: **November 17, 2022**
RE: **Annual/Quarterly Budget & Expense Reports**

Enclosed are the following annual budget and expense reports for fiscal year ended June 30, 2022:

- Expenditure Summary Report
- 2021-2023 Biennium Appropriation Status Report
- PAS Modernization Project Status Report
- Schedule of Consulting Expenses
- Schedule of Investment Expenses

Additionally, the following quarterly budget and expense reports for the quarter ended September 30, 2022 are enclosed:

- Budget Appropriation Status Report
- Expenditure Report
- PAS Modernization Project Status Report

BOARD ACTION REQUESTED: Board Acceptance.

RETIREMENT AND INVESTMENT OFFICE
EXPENDITURE SUMMARY REPORT
FISCAL YEAR ENDED JUNE 30, 2022

	TFFR		SIB		Total RIO	
	Actual Expenses	% of Total	Actual Expenses	% of Total	Actual Expenses	% of Total
CONTINUING APPROPRIATIONS						
INVESTMENT EXPENDITURES	$ 22,928,396	8.2%	$ 82,483,449	97.7%	$ 105,411,845	29.1%
MEMBER CLAIMS						
ANNUITY PAYMENTS	244,705,096		-		244,705,096	
REFUND PAYMENTS	7,142,359		-		7,142,359	
TOTAL MEMBER CLAIMS	251,847,455	90.6%	-	0.0%	251,847,455	69.5%
OTHER CONTINUING APPROPRIATIONS	386,508	0.1%	640,694	0.8%	1,027,201	0.3%
TOTAL CONTINUING APPROPRIATIONS	275,162,359	99.0%	83,124,143	98.4%	358,286,501	98.8%
APPROPRIATED EXPENDITURES						
SALARIES AND BENEFITS	975,127	0.4%	1,341,181	1.6%	2,316,307	0.6%
OPERATING EXPENSES	1,633,346 •	0.6%	279,509	0.3%	1,912,855	0.5%
SIB EXPENSES ALLOCATED TO TFFR	278,358		(278,358)		-	
TOTAL APPROPRIATED EXPENDITURES	2,886,831	1.0%	1,342,332	1.6%	4,229,163	1.2%
TOTAL EXPENDITURES	$ 278,049,190		$ 84,466,474		$ 362,515,664	

• Includes capital asset amounts paid through June 30, 2022 for the TFFR Pension Administration System Project that will be capitalized.

RETIREMENT AND INVESTMENT OFFICE
2021-2023 BIENNIUM APPROPRIATION STATUS REPORT
AS OF JUNE 30, 2022

			EXPENDITURES			
	2021-2023 BUDGET	ADJUSTED APPROPRIATION	BIENNIUM TO DATE ACTUAL	BUDGET AVAILABLE	% BUDGET AVAILABLE	% OF BIENNIUM REMAINING
SALARIES AND BENEFITS	$ 5,103,977.00 *	6,835,839.00 **	2,316,307.79	$ 4,519,531.21	66.12%	50.00%
OPERATING EXPENDITURES	3,567,403.00 *	3,642,403.00 **	897,297.84	2,745,105.16	75.37%	50.00%
CAPITAL ASSETS	6,300,000.00	6,300,000.00	934,912.50	5,365,087.50	85.16%	50.00%
CONTINGENCY	100,000.00	100,000.00	80,644.81	19,355.19	19.36%	50.00%
TOTAL	$ 15,071,380.00	$ 16,878,242.00	$ 4,229,162.94	12,649,079.06	74.94%	50.00%

* In addition to the Capital Assets line, the salaries and benefit line includes $50,000 and the operating expenditure budget includes $2,318,875 for the TFFR Pension Administration System Project.

** The adjusted appropriation includes additional amounts appropriated during the Special Legislative Session in November 2021.

PAS MODERNIZATION PROJECT
Budget vs Actual as of June 30, 2022

	Budget	Actual Paid	Budget Status
Salaries	$ 50,000	$ -	$ 50,000
Operating	2,650,000	665,921	1,984,079
Capital Assets	6,300,000	934,913	5,365,088
Total Project Budget	$ 9,000,000	$ 1,600,834	$ 7,399,166

RETIREMENT AND INVESTMENT OFFICE
SCHEDULE OF CONSULTING EXPENSES
FOR THE YEARS ENDED JUNE 30, 2022 and 2021

	Pension Trust		Investment Trust	
	2022	2021	2022	2021
Actuary fees:				
Segal Consulting	$ 122,505	$ 93,241	$ -	$ -
Auditing/Accounting fees:				
CliftonLarsonAllen LLP	84,999	77,659	22,460	13,855
Project management fees:				
Segal Consulting	185,909	292,258	-	-
Disability consulting fees:				
Sanford Health	150	-	-	-
Legal fees:				
Office of Administrative Hearings	-	-	-	-
K&L Gates LLP	10,649	13,246	13,936	18,013
Kasowitz, Benson, Torres & Friedman	-	-	-	-
Jackson Walker LLP	9,204	7,099	15,487	37,641
ND Attorney General	20,494	16,689	12,819	16,703
Total legal fees:	40,347	37,034	42,242	72,357
Total consultant expenses	$ 433,910	$ 500,192	$ 64,702	$ 86,212

ND State Investment Board
Schedule of Investment Expenses

	FY 2022				FY 2021			
	Average Market Value	Fees in $	Fees as % of Average MV	Contribution to Total Fees	Average Market Value	Fees in $	Fees as % of Average MV	Contribution to Total Fees
Investment managers' fees:								
Global equity managers	778,055,038	2,565,320	0.33%	0.01%	903,889,805	3,383,918	0.37%	0.02%
Domestic large cap equity managers	3,508,296,807	3,880,337	0.11%	0.02%	3,480,469,655	10,269,281	0.30%	0.06%
Domestic small cap equity managers	1,066,504,540	6,919,320	0.65%	0.04%	1,105,339,702	6,792,748	0.61%	0.04%
Developed international equity managers	2,615,506,915	9,620,944	0.37%	0.05%	2,717,215,402	9,347,629	0.34%	0.05%
Emerging markets equity managers	243,976,660	1,295,609	0.53%	0.01%	262,317,481	2,337,066	0.89%	0.01%
Investment grade domestic fixed income managers	5,462,267,919	13,330,897	0.24%	0.07%	5,197,870,346	16,779,361	0.32%	0.09%
Below investment grade fixed income managers	744,017,535	11,176,827	1.50%	0.06%	667,750,173	12,610,063	1.89%	0.07%
Real estate managers	1,328,183,734	10,055,390	0.76%	0.05%	1,128,492,024	11,889,614	1.05%	0.06%
TIPS managers	684,813,857	759,536	0.11%	0.00%	656,989,146	714,401	0.11%	0.00%
Timber managers	142,726,721	936,658	0.66%	0.00%	173,201,278	1,169,122	0.68%	0.01%
Infrastructure managers	796,049,219	28,966,983	3.64%	0.15%	662,492,628	25,944,149	3.92%	0.14%
Private equity managers	666,645,838	11,411,863	1.71%	0.06%	399,678,493	16,069,801	4.02%	0.09%
Short term bond managers	765,934,121	867,223	0.11%	0.00%	775,345,671	880,375	0.11%	0.00%
Balanced fund managers	264,062,038	1,173,541	0.44%	0.01%	263,117,675	1,129,687	0.43%	0.01%
Cash & equivalents managers	132,831,403	201,849	0.15%	0.00%	197,971,523	202,177	0.10%	0.00%
Total investment management fees	**19,199,872,344**	**103,162,297**	**0.54%**		**18,592,141,002**	**119,519,392**	**0.64%**	
Custodian fees		1,597,784	0.01%	0.01%		1,669,049	0.01%	0.01%
Investment consultant fees		569,956	0.00%	0.00%		895,609	0.00%	0.00%
SIB Administrative fees		2,264,039	0.01%	0.01%		2,543,965	0.01%	0.01%
Total investment expenses		**107,594,076**	**0.56%**			**124,628,015**	**0.67%**	
Performance/Incentive Fees (included in totals above)								
Domestic large cap equity managers		(1,626,614)	-0.05%	-0.01%		4,758,123	0.14%	0.03%
Domestic small cap equity managers		-	0.00%	0.00%		1,201,276	0.11%	0.01%
Developed international equity managers		186,251	0.01%	0.00%		-	0.00%	0.00%
Emerging markets equity managers		-	0.00%	0.00%		948,464	0.36%	0.01%
Investment grade domestic fixed income managers		1,521,483	0.03%	0.01%		3,737,218	0.07%	0.02%
Below investment grade fixed income managers		5,938,304	0.80%	0.03%		9,301,952	1.39%	0.05%
Real estate managers		2,215,907	0.17%	0.01%		5,340,282	0.47%	0.03%
Infrastructure managers		16,628,448	2.09%	0.09%		18,614,096	2.81%	0.10%
Total Performance Fees Paid (excluding private equity)		**24,863,779**	**0.13%**			**43,901,412**	**0.24%**	
Breakdown of Total Fees by Pool								
Pension	7,467,975,530	54,060,784	0.72%		6,942,637,107	67,970,508	0.98%	
Insurance	3,101,308,221	7,959,546	0.26%		3,137,072,860	9,566,500	0.30%	
Legacy	8,359,201,542	43,567,947	0.52%		8,244,918,536	45,937,264	0.56%	

BUDGET APPROPRIATION STATUS

AS OF SEPTEMBER 30, 2022

	2021-2023 BUDGET		ADJUSTED APPROPRIATION	EXPENDITURES BIENNIUM TO DATE ACTUAL	EXPENDITURES BUDGET AVAILABLE	EXPENDITURES % BUDGET AVAILABLE	EXPENDITURES % OF BIENNIUM REMAINING
SALARIES AND BENEFITS	$ 5,103,977.00	*	$ 6,841,839.00	$ 3,023,054.81	$ 3,818,784.19	55.82%	37.50%
OPERATING EXPENDITURES	3,567,403.00	*	3,642,403.00	1,077,341.43	2,565,061.57	70.42%	37.50%
CAPITAL ASSETS	6,300,000.00		6,300,000.00	934,912.50	5,365,087.50	85.16%	37.50%
CONTINGENCY	100,000.00		100,000.00	83,531.81	16,468.19	16.47%	37.50%
TOTAL	$ 15,071,380.00		$ 16,884,242.00	$ 5,118,840.55	11,765,401.45	69.68%	37.50%

* In addition to the Capital Assets line, the salaries and benefit line includes $50,000 and the operating expenditure budget includes $2,318,875 for the TFFR Pension Administration System Project.

The adjusted appropriation includes additional amounts appropriated during the Special Legislative Session in November 2021.

EXPENDITURE REPORT

AS OF AND FOR THE QUARTER ENDED SEPTEMBER 30, 2022

	INVESTMENT	RETIREMENT	QUARTERLY TOTALS	FISCAL YEAR TO - DATE	BIENNIUM TO - DATE
CONTINUING APPROPRIATIONS					
INVESTMENT EXPENDITURES	$ 0	$ 0	$ 0	$ 0	$ 75,493,703
MEMBER CLAIMS					
1. ANNUITY PAYMENTS	0	63,866,807	63,866,807	63,866,807	308,571,902
2. REFUND PAYMENTS	0	2,115,833	2,115,833	2,115,833	9,258,193
TOTAL MEMBER CLAIMS	0	65,982,639	65,982,639	65,982,639	317,830,095
OTHER CONTINUING APPROPRIATIONS	805	24,322	25,127	25,127	872,476
TOTAL CONTINUING APPROPRIATIONS	805	66,006,962	66,007,767	66,007,767	394,196,274
BUDGETED EXPENDITURES					
1. SALARIES & BENEFITS					
SALARIES	289,078	212,603	501,682	501,682	2,209,817
OVERTIME/TEMPORARY	16,903	20,858	37,761	37,761	74,149
TERMINATION SALARY & BENEFITS	0	0	0	0	0
FRINGE BENEFITS	87,313	79,991	167,304	167,304	739,089
TOTAL SALARY & BENEFITS	393,294	313,453	706,747	706,747	3,023,055
2. OPERATING EXPENDITURES					
DATA PROCESSING	16,343	70,082	86,425	86,425	423,455
TELECOMMUNICATIONS - ISD	948	945	1,893	1,893	11,592
TRAVEL	3,235	1,772	5,007	5,007	43,540
IT - SOFTWARE/SUPPLIES	33	34	67	67	109
POSTAGE SERVICES	651	3,354	4,004	4,004	29,790
IT - CONTRACTUAL SERVICES	506	42,176	42,682	42,682	119,243
BUILDING/LAND RENT & LEASES	10,228	7,817	18,044	18,044	127,315
DUES & PROF. DEVELOPMENT	1,048	2,247	3,294	3,294	24,001
OPERATING FEES & SERVICES	354	722	1,076	1,076	41,898
REPAIR SERVICE	0	0	0	0	654
PROFESSIONAL SERVICES	0	9,529	9,529	9,529	233,204
INSURANCE	669	571	1,240	1,240	2,432
OFFICE SUPPLIES	11	119	130	130	2,145
PRINTING	4	595	599	599	8,254
PROFESSIONAL SUPPLIES & MATERIALS	166	528	694	694	2,321
MISCELLANEOUS SUPPLIES	81	30	110	110	1,500
IT EQUIPMENT UNDER $5000	6	58	65	65	305
OTHER EQUIP. UNDER $5000	0	0	0	0	0
OFFICE EQUIP. & FURNITURE UNDER $5000	0	0	0	0	399
TOTAL OPERATING EXPENDITURES	34,282	145,761	180,044	180,044	1,077,341
3. CAPITAL ASSETS	0	0	0	0	934,913
4. CONTINGENCY	2,887	0	2,887	2,887	83,532
TOTAL BUDGETED EXPENDITURES	430,463	459,214	889,678	889,678	5,118,841
TOTAL EXPENDITURES	$ 430,463	$ 66,441,854	$ 66,897,444	$ 66,897,444	$ 399,315,115

EXPENDITURE REPORT

AS OF AND FOR THE QUARTER ENDED SEPTEMBER 30, 2022

PAS PROJECT - UNEXPENDED PORTION CARRIED FORWARD TO 2021-23 BIENNIUM

	2019-2021 Biennium Approved Budget	2019-2021 Biennium Actual	Carryover to 2021-2023 Biennium	2021-2023 Biennium Actual *	Total PAS Project to Date
TEMPORARY SALARIES	50,000	0	50,000	0	0
IT - DATA PROCESSING (NDIT PROJECT MGMT)	775,000	34,025	740,975	47,737	81,763
PROFESSIONAL SERVICES	1,875,000	297,099	1,577,901	353,352	650,451
CAPITAL ASSETS	6,300,000	0	6,300,000	934,913	934,913
TOTAL PAS PROJECT BUDGET	**9,000,000**	**331,125**	**8,668,875**	**1,336,002**	**1,667,126**

* The amounts in the 2021-2023 actual column are included in the totals on the Expenditure Report on the previous page.

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MEMORANDUM

TO: **TFFR Board of Trustees**
FROM: **Chad R. Roberts, DED/CRO**
DATE: **October 24, 2022**
RE: **TFFR Ends Report 1st QTR 2023 ending September 30, 2022**

This report highlights exceptions to the normal operating conditions of the TFFR program for the period spanning July 1, 2022, through September 30, 2022.

Advertisement for the newly created position of Communications and Outreach Director was posted with an expected onboarding of late October or early November for the selected candidate.

Advertisement for the Accounting Intern for employer reporting was posted to replace the previous intern who completed college. Onboarding is expected to be in the late November early timeframe for the selected candidate.

Requirements sessions for the "Pioneer" project were completed in early September. Pilot 1, the first of four parts in the design phase, was begun in mid-September with an anticipated completion date of December 16, 2022.

A NDIT Business Analyst that supported RIO operations resigned in September to take another position. NDIT is supplementing the workload with additional assets until a replacement is hired. A replacement is expected to be in place in late November.

An RFP was issued for the actuarial audit and the vendor, GRS, was selected. A kickoff meeting was scheduled for early October to begin the study.

The TFFR GPR Committee met in September 2022 and established a 2023 workplan. Included in that workplan is a full review of the TFFR policy manual with the delivery of all recommended changes in 4th QTR of 2023 to the full TFFR Board of Trustees.

Executive Director Jan Murtha provided testimony at the September Retirement Committee regarding impact to TFFR plan relating to the proposed PERS defined benefit plan closure legislation.

BOARD ACTION REQUESTED: Board Acceptance.

TEACHERS' FUND FOR RETIREMENT

Eric Chin

November 17th, 2022

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PERFORMANCE – BENCHMARK INDICES

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Summary of Returns September 30, 2022					
Benchmark Indices (% change, annualized)	**YTD**	**1 Yr**	**5 Yr**	**10 Yr**	**10 Yr Volatility**
Russell 1000	-24.6%	-17.2%	8.9%	11.6%	17.4%
Russell 2000	-25.1%	-23.5%	3.3%	8.5%	21.8%
S&P 500	-23.9%	-15.5%	9.1%	11.7%	17.3%
MSCI ACWI IMI Net	-25.7%	-21.2%	4.1%	7.2%	13.9%
MSCI World ex US	-26.2%	-23.9%	-0.4%	3.5%	14.0%
MSCI Emerging Markets	-27.2%	-28.1%	-1.8%	1.0%	15.4%
Bloomberg Aggregate	-14.6%	-14.6%	-0.3%	0.9%	3.9%
Bloomberg Gov/Credit	-15.1%	-14.9%	0.0%	1.0%	4.3%
Bloomberg US High Yield	-14.7%	-14.1%	1.6%	3.9%	4.9%
NCREIF Property Index (09/30/2022)	9.4%	16.1%	8.6%	9.47%	2.6%

Source: Callan, Bloomberg

PERFORMANCE – BENCHMARK INDICES

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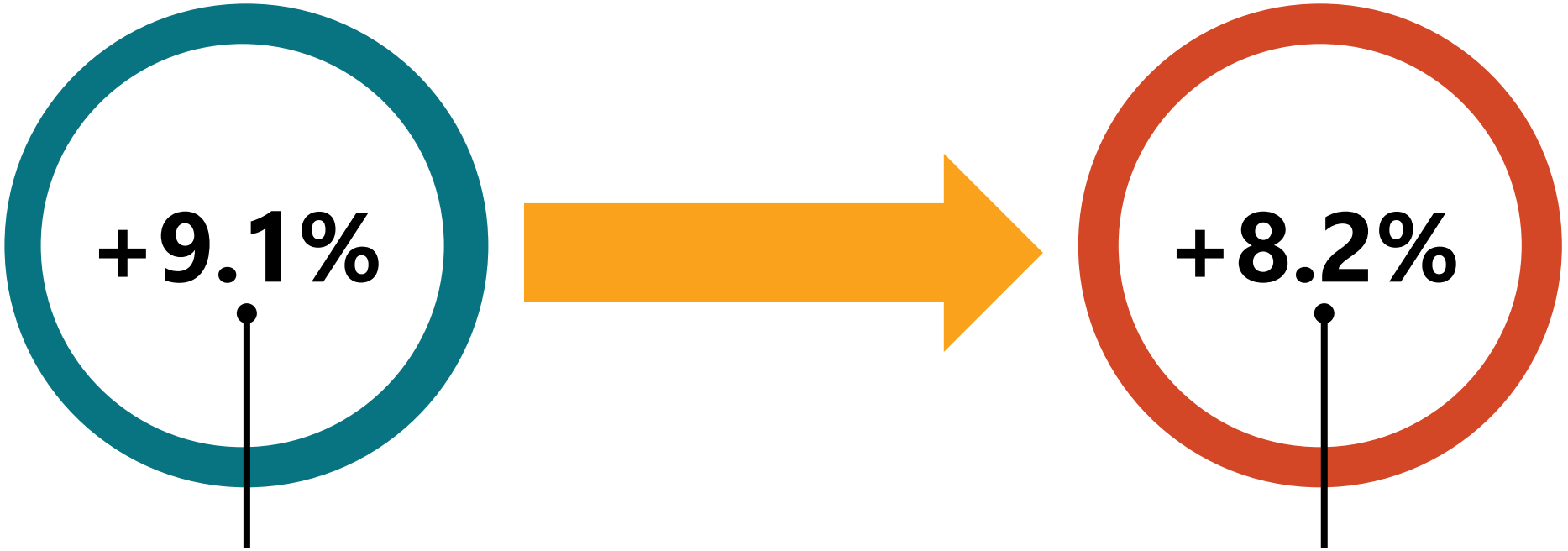
Summary of Returns October 31, 2022					
Benchmark Indices (% change, annualized)	**YTD**	**1 Yr**	**5 Yr**	**10 Yr**	**10 Yr Volatility**
Russell 1000	-18.5%	-16.6%	10.2%	12.7%	17.6%
Russell 2000	-16.9%	-20.6%	5.6%	9.9%	22.0%
S&P 500	-17.7%	-14.8%	10.4%	12.8%	17.4%
MSCI ACWI IMI Net	-21.1%	-20.7%	5.0%	8.0%	14.0%
MSCI World ex US	-22.2%	-22.9%	0.4%	4.1%	14.1%
MSCI Emerging Markets	-29.4%	-31.0%	-3.1%	0.8%	15.5%
Bloomberg Aggregate	-15.7%	-15.6%	-0.5%	0.7%	3.9%
Bloomberg Gov/Credit	-16.2%	-15.9%	-0.3%	0.9%	4.4%
Bloomberg US High Yield	-12.5%	-11.7%	2.0%	4.1%	5.0%
NCREIF Property Index (09/30/2022)	9.4%	16.1%	8.6%	9.47%	2.6%

Source: Callan, Bloomberg

HAS INFLATION PEAKED?[1]



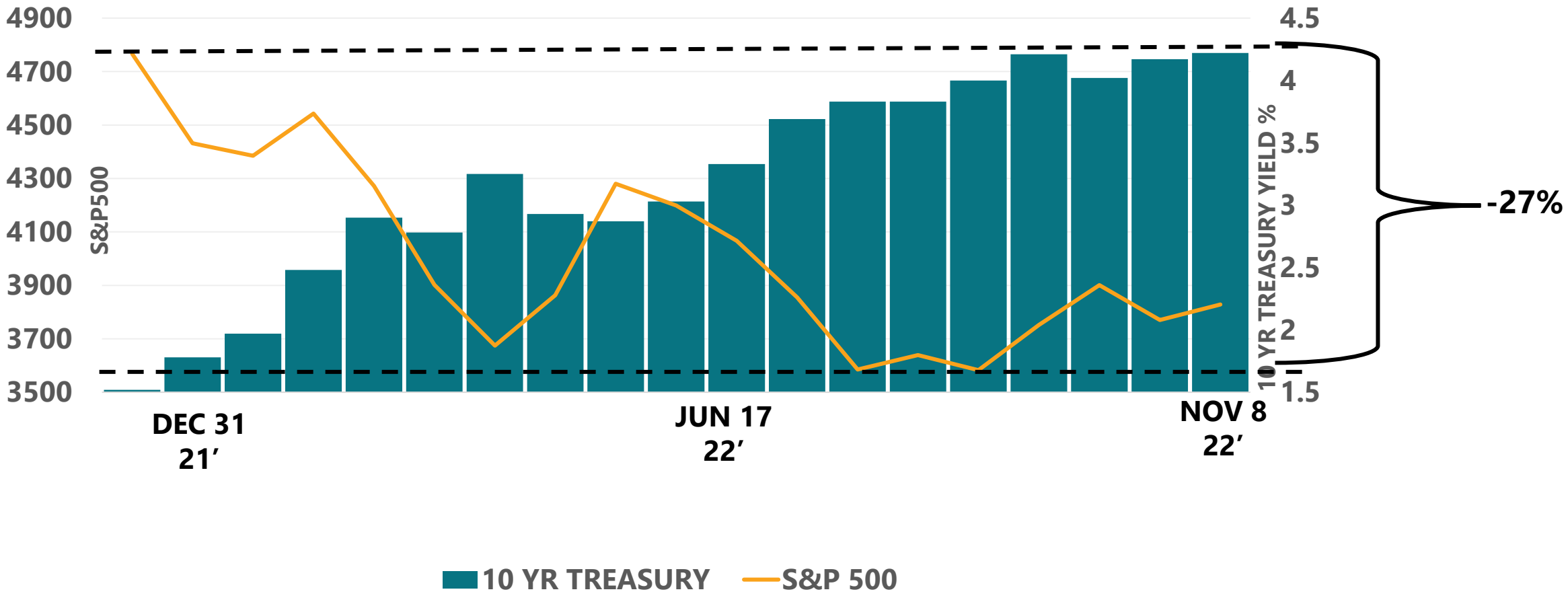
ANNUAL INFLATION RATE
(June 2021 thru June 2022)

ANNUAL INFLATION RATE
(September 2021 thru September 2022)
6.6% Ex Food & Energy

1. Bureau of Labor Statistics

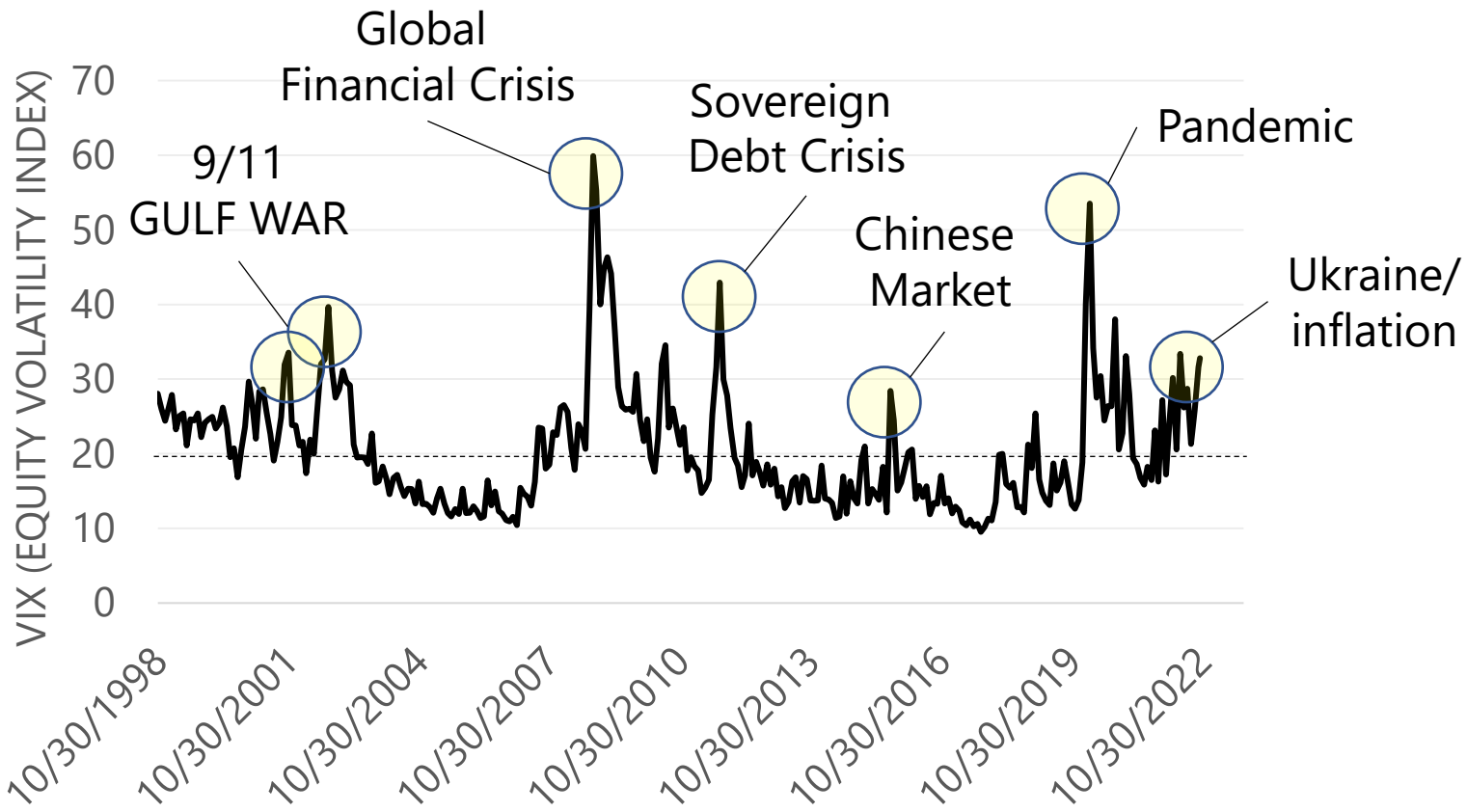
Eric Chin – TFFR, November 17th, 2022

THE S&P500 HAS TRACKED INFLATION EXPECTATIONS[1]



1. FRED (Federal Reserve Bank of St. Louis)

EQUITY VOLATILITY HIGH[1]



1. CBOE equity volatility index

ASSET ALLOCATION – TFFR (SEPTEMBER 2022)

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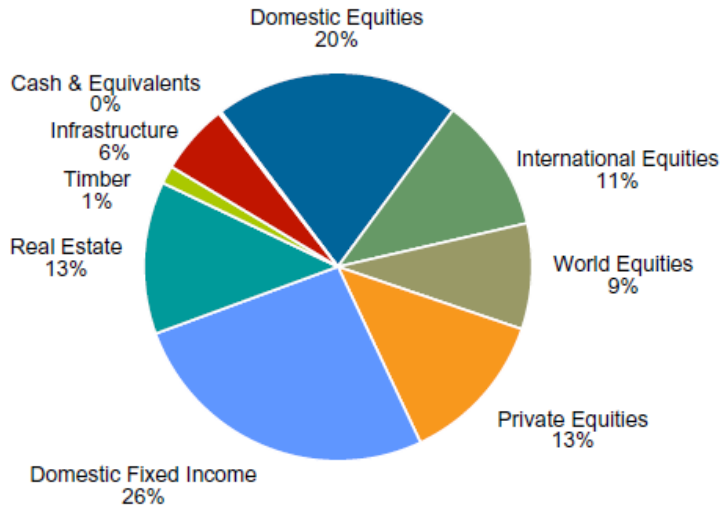
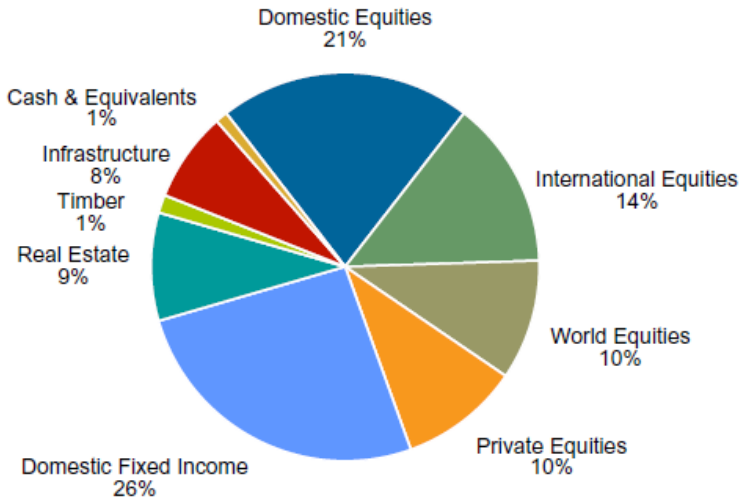
Actual Asset Allocation



Target Asset Allocation



Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Domestic Equities	580,807	20.4%	21.0%	(0.6%)	(16,322)
International Equities	320,344	11.3%	14.0%	(2.7%)	(77,742)
World Equities	251,643	8.8%	10.0%	(1.2%)	(32,704)
Private Equities	363,965	12.8%	10.0%	2.8%	79,618
Domestic Fixed Income	750,116	26.4%	26.0%	0.4%	10,813
Real Estate	360,064	12.7%	9.0%	3.7%	104,151
Timber	42,547	1.5%	1.5%	(0.0%)	(0)
Infrastructure	167,742	5.9%	7.5%	(1.6%)	(45,623)
Cash & Equivalents	6,244	0.2%	1.0%	(0.8%)	(22,190)
Total	2,843,471	100.0%	100.0%		

1. Callan developed chart – before fees

PERFORMANCE – TFFR[1]

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AS OF SEPTEMBER 30, 2022

TFFR ($2.8 BILLION)	YEAR TO DATE	1 YEAR	3 YEAR	5 YEAR	RISK (5 YEAR)
TOTAL FUND RETURN	-14.3%	-9.9%	5.7%	5.6%	9.7%
POLICY BENCHMARK	-14.2%	-10.2%	5.5%	5.6%	9.8%
TOTAL RELATIVE RETURN	-0.1%	0.3%	0.2%	0.0%	

1. After fees performance

FUND COMPARISON – TFFR (SEPT. 2022)

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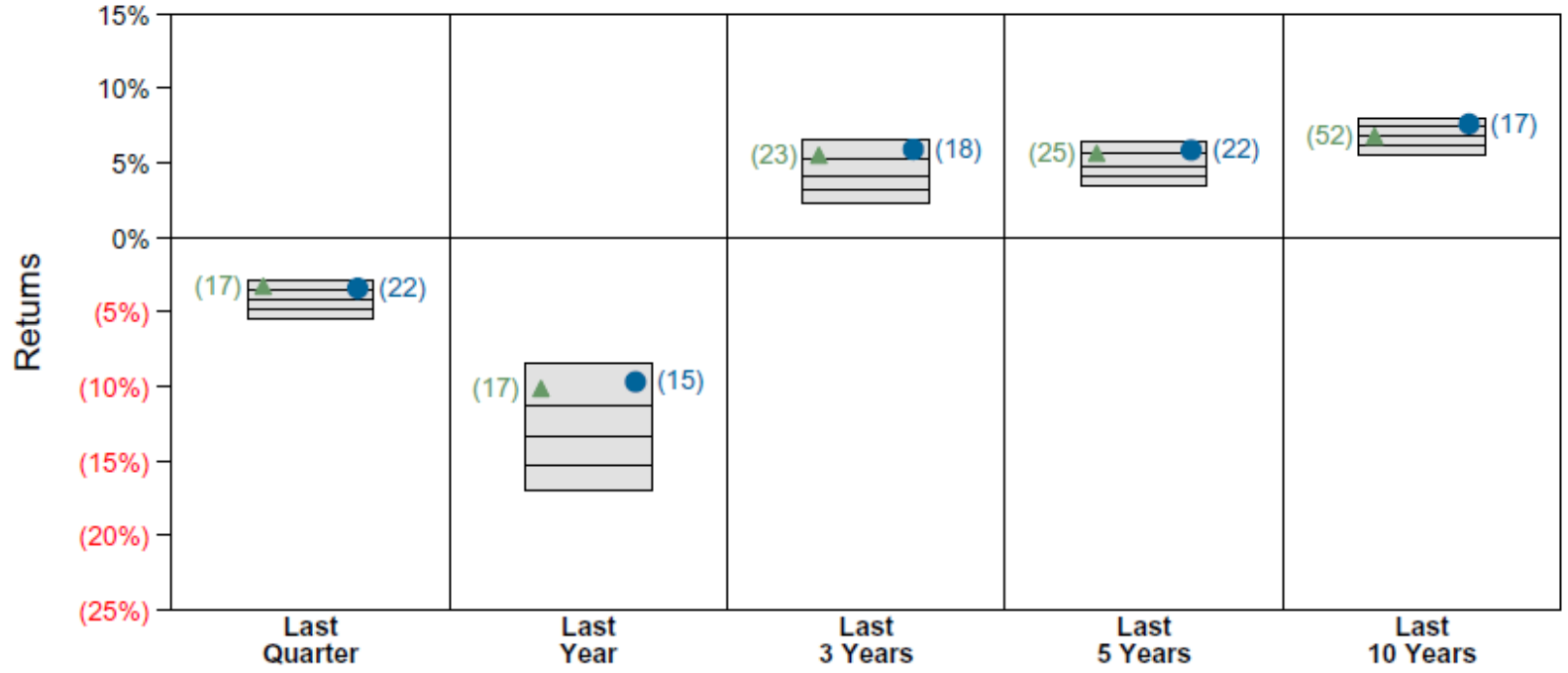
Callan Public Fund Sponsor Database [1]



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(2.91)	(8.50)	6.55	6.46	7.95
25th Percentile	(3.54)	(11.25)	5.31	5.66	7.39
Median	(4.23)	(13.39)	4.11	4.78	6.83
75th Percentile	(4.89)	(15.29)	3.13	4.10	6.13
90th Percentile	(5.43)	(17.03)	2.32	3.44	5.50
Total Fund ●	(3.42)	(9.70)	5.90	5.85	7.60
Policy Target ▲	(3.28)	(10.15)	5.50	5.64	6.80

1. Callan developed chart – before fees (as of September 30, 2022)

NEW EQUITY IMPLEMENTATION

EQUITY PORTFOLIO VERSION 1.0

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EXECUTIVE SUMMARY

1. THE SIB APPROVED A NEW EQUITY PORTFOLIO ACROSS THE THREE POOLS DURING THE MAY 2022 SIB MEETING
2. THREE KEY OBJECTIVES:
   - HARMONIZE THE EQUITY PORTFOLIOS ACROSS THE THREE POOLS (19 DIFFERENT EQUITY PORTFOLIOS) AND CREATE ONE OPTIMAL EQUITY ALLOCATION
   - IMPLEMENT ONE POLICY BENCHMARK THAT SETS THE RUSSELL 3000 AND MSCI ACWI EX US IMI AS THE NEW POLICY BENCHMARK (OR RELEVANT SUB-INDICES WHERE APPROPRIATE)
   - ADD PASSIVE INDEX EXPOSURE TO EQUITY SUB-ASSET CLASSES FOR EXPOSURE MANAGEMENT AND LIQUIDITY

CLIENT PORTFOLIO EQUITY WEIGHTS

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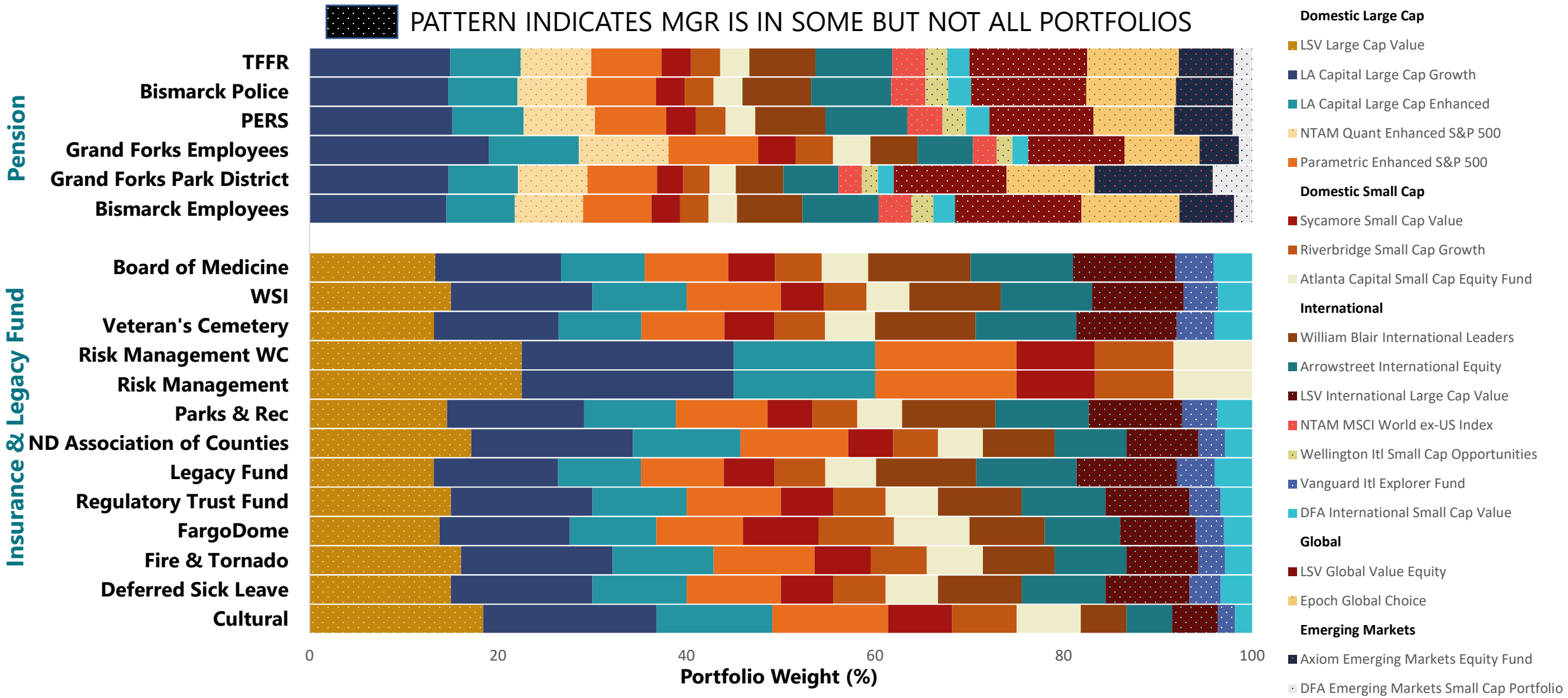

DESIGN FUND STRUCTURE FOR SUCCESS

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PHASE	ACTIVITIES
1.0	**SUB-ASSET STRUCTURE** • INDEXING FOR LIQUIDITY, TRACKING ERROR CONTROL, AND REBALANCING • CONSISTENT SUB-ASSET ALLOCATIONS AND ASSET ALLOCATION POOLS ACROSS FUNDS BASED ON MARKET REPRESENTATIVE UNIVERSES AND BENCHMARKS • MANGER'S MANDATES RISK ALIGNED TO ASSET ALLOCATION AND TO MANAGE RISK
2.0	**SUB-ASSET OPTIMIZATION** • FIND OPTIMAL POOL OF MANAGERS FOR SUB-ASSET ACTIVE RETURN AND RISK GOALS • CONSTRUCT OPTIMAL WEIGHTING OF MANAGER MANDATES
3.0	**ADVANCED FUNDS MANAGEMENT** • OFFSET SUB-ASSET EXPOSURES TO OPTIMIZE ACTIVE RETURN/RISK • MANAGE LIQUIDITY, REBALANCING AND EXPOSURES WITH INDEX FUNDS

BENCHMARK HARMONIZATION

ALLOCATION	BENCHMARK	TFFR EQUITY BENCHMARK	WSI EQUITY BENCHMARK	LEGACY FUND EQUITY BENCHMARK	NEW POLICY BENCHMARK
WORLD EQUITY	MSCI WORLD	22%			
LARGE CAP DOMESTIC	RUSSELL 1000	37%	50%	44%	52%
SMALL CAP DOMESTIC	RUSSELL 2000	9%	14%	16%	9%
INTERNATIONAL ALL CAP DEVELOPED	MSCI ACWI EX US IMI				15%
INTERNATIONAL	MSCI WORLD EX US	24%	36%	40%	15%
INTERNATIONAL SMALL CAP	MSCI WORLD EX US SMALL CAP				2%
EMERGING MARKETS	MSCI EMERGING MARKETS	8%			7%
TOTAL		**100%**	**100%**	**100%**	**100%**

- NEW POLICY BENCHMARK CORRESPONDS TO THE MSCI ACWI IMI 60% US/40% NON-US RATIO
- INTERNATIONAL COMPONENTS OF THE NEW POLICY BENCHMARK AMALGAMATES TO THE MSCI ACWI IMI EX US INDEX
- STAFF MAINTAINS FLEXIBILITY TO ADJUST SUB-ASSET CLASS ALLOCATIONS TO RESPOND TO MARKETS

IMPLEMENT ONE EQUITY ALLOCATION

	MANAGER/STRATEGY	TFFR PRIOR EQUITY ALLOCATION (% EQUITY)	WSI PRIOR EQUITY ALLOCATION (% EQUITY)	LEGACY PRIOR EQUITY ALLOCATION (% EQUITY)	NEW EQUITY ALLOCATION
	WORLD EQUITY	**22.3%**	**-**	**-**	**-**
1	EPOCH GLOBAL CHOICE	9.6%	-	-	-
	LSV GLOBAL VALUE EQUITY	12.7%	-	-	-
	LARGE CAP DOMESTIC EQUITY	**39.9%**	**50.5%**	**50.7%**	**51.8%**
	LA CAPITAL LARGE CAP GROWTH	14.7%	14.5%	15.1%	1.3%
	LA CAPITAL 60% LARGE CAP/40% ACTIVE EXTENSION	8.9%	10.8%	11.3%	21.3%
2	LSV LARGE CAP VALUE	-	15.4%	12.3%	
	NTAM - QUANT ENHANCED S&P 500	8.3%	-	-	8.1%
3	PARAMETRIC/CLIFTON GROUP ENHANCED S&P 500	8.0%	9.9%	12.0%	8.1%
	RUSSELL 1000 INDEX	-	-	-	12.9%
	SMALL CAP DOMESTIC EQUITY	**10.3%**	**10.4%**	**9.3%**	**9.1%**
	ATLANTA CAPITAL SMALL CAP EQUITY FUND	3.7%	3.6%	3.2%	2.9%
	RIVERBRIDGE SMALL CAP GROWTH	2.8%	3.3%	3.2%	2.9%
	SYCAMORE SMALL CAP VALUE	3.9%	3.5%	3.0%	2.9%
	RUSSELL 2000	-	-	-	0.5%
	INTERNATIONAL ALL CAP	**13.9%**	**19.9%**	**23.4%**	**15.2%**
	WILLIAM BLAIR INTERNATIONAL LEADERS	5.8%	8.7%	12.5%	6.1%
	ARROWSTREET INTERNATIONAL EQUITY	8.1%	11.2%	10.9%	8.6%
	MSCI ACWI EX US IMI PASSIVE	-	-	-	0.5%
	DEVELOPED INTERNATIONAL EQUITY	**3.3%**	**11.6%**	**10.0%**	**14.6%**
	NTAM - MSCI WORLD EX-US INDEX	3.3%	-	-	-
	MSCI WORLD EX-US INDEX SSGA	-	-	-	14.6%
2	LSV INTERNATIONAL LARGE CAP VALUE	-	11.6%	10.0%	-
	INTERNATIONAL SMALL CAP	**4.5%**	**7.5%**	**6.6%**	**2.6%**
	DFA INTL. SMALL CAP VALUE PORTFOLIO	2.3%	4.1%	3.7%	1.0%
3	WELLINGTON INTERNATIONAL SMALL CAP	2.2%	-	-	1.0%
2	VANGUARD INTERNATIONAL EXPLORER FUND	-	3.4%	3.0%	-
	MSCI WORLD EX US SMALL	-	-	-	0.5%
	EMERGING MARKETS	**5.7%**	**-**	**-**	**6.7%**
	AXIOM EMERGING MARKETS EQUITY FUND	4.0%	-	-	4.7%
3	DFA EMERGING MARKETS SMALL CAP PORTFOLIO	1.7%	-	-	1.6%
	MSCI EMERGING MARKETS	-	-	-	0.5%
	TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

4

IMPLEMENT ONE EQUITY ALLOCATION

1 REMOVE WORLD EQUITIES FROM PENSION POOL

2 REMOVE LSV LARGE CAP VALUE, LSV INTL. LARGE CAP VALUE & VANGUARD INTL. EXPL. FUND FROM LEGACY AND INSURANCE

3 ADD NTAM QUANT ENHANCED S&P 500, WELLINGTON INTL. SMALL CAP & EMERGING MARKETS ASSET CLASS TO LEGACY AND INSURANCE

4 ADD PASSIVE INDEX TO EACH SUB ASSET CLASS

EQUITY PORTFOLIO TRANSITION UPDATE

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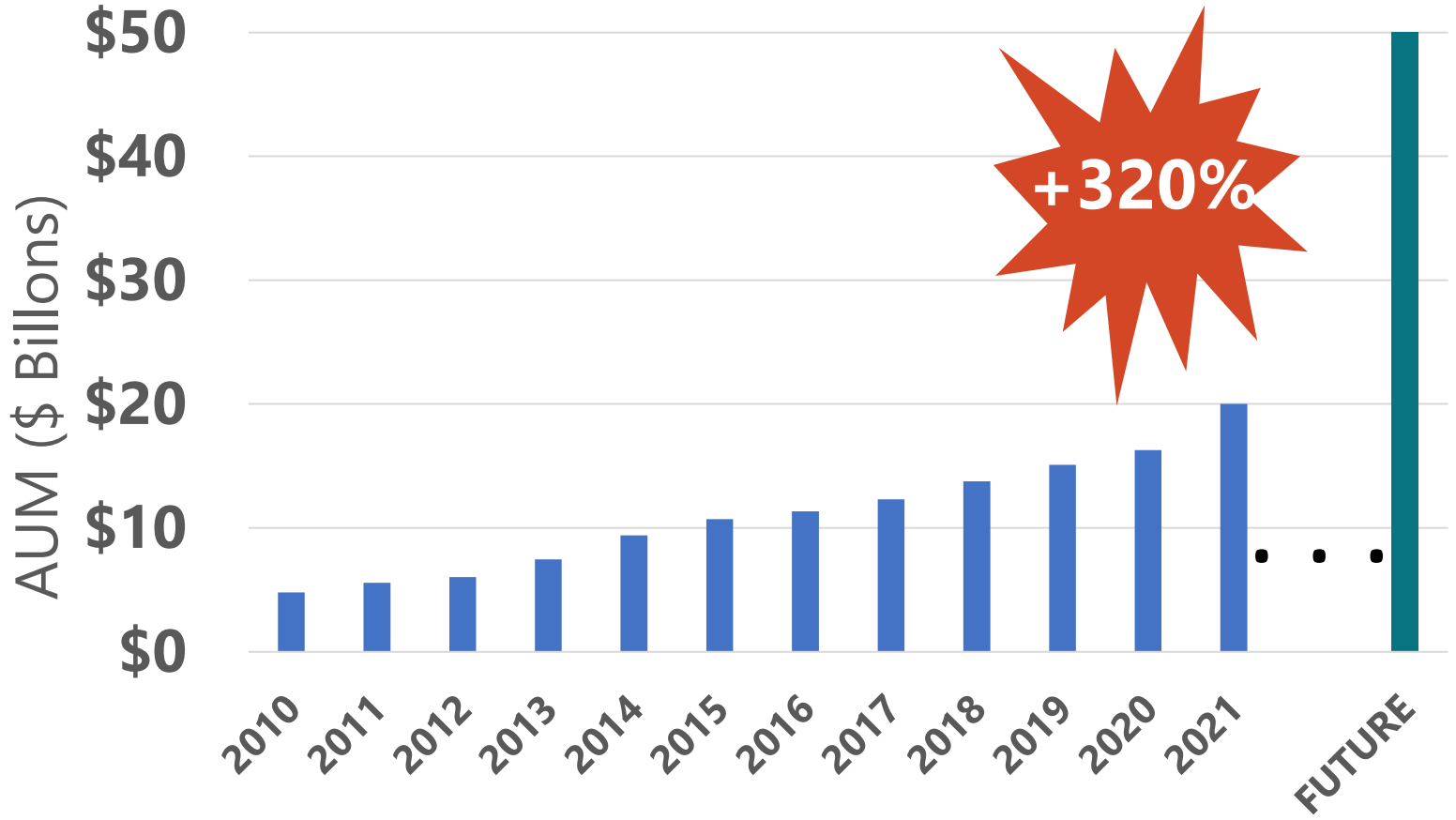
NEXT STEPS

- TRANSITION TO THE NEW EQUITY PORTFOLIO IS 99% COMPLETE. LAST STEP: FINALIZE AND CONDUCT POST TRADE REVIEW WITH TRANSITION MANAGER.
- IMPLEMENTATION OF EQUITY 2.0 COMMENCES
  I. EVALUATE SUB-ASSET CLASS STRATEGIES TO IDENTIFY STRATEGY GROUPS WITH HIGHER PROBABILITIES TO GENERATE ATTRACTIVE RISK ADJUSTED EXCESS RETURNS
  II. IDENTIFY ATTRACTIVE MANAGERS IN EACH STRATEGY GROUP
  III. DEVELOP PORTFOLIO OF ATTRACTIVE MANAGERS AND OPTIMIZE TARGETING 100 BPS OF EXCESS RETURN AND 200 BPS OF TRACKING ERROR
  IV. IMPLEMENT NEW STRUCTURE WITH CONSIDERATIONS AROUND TRANSACTION COSTS

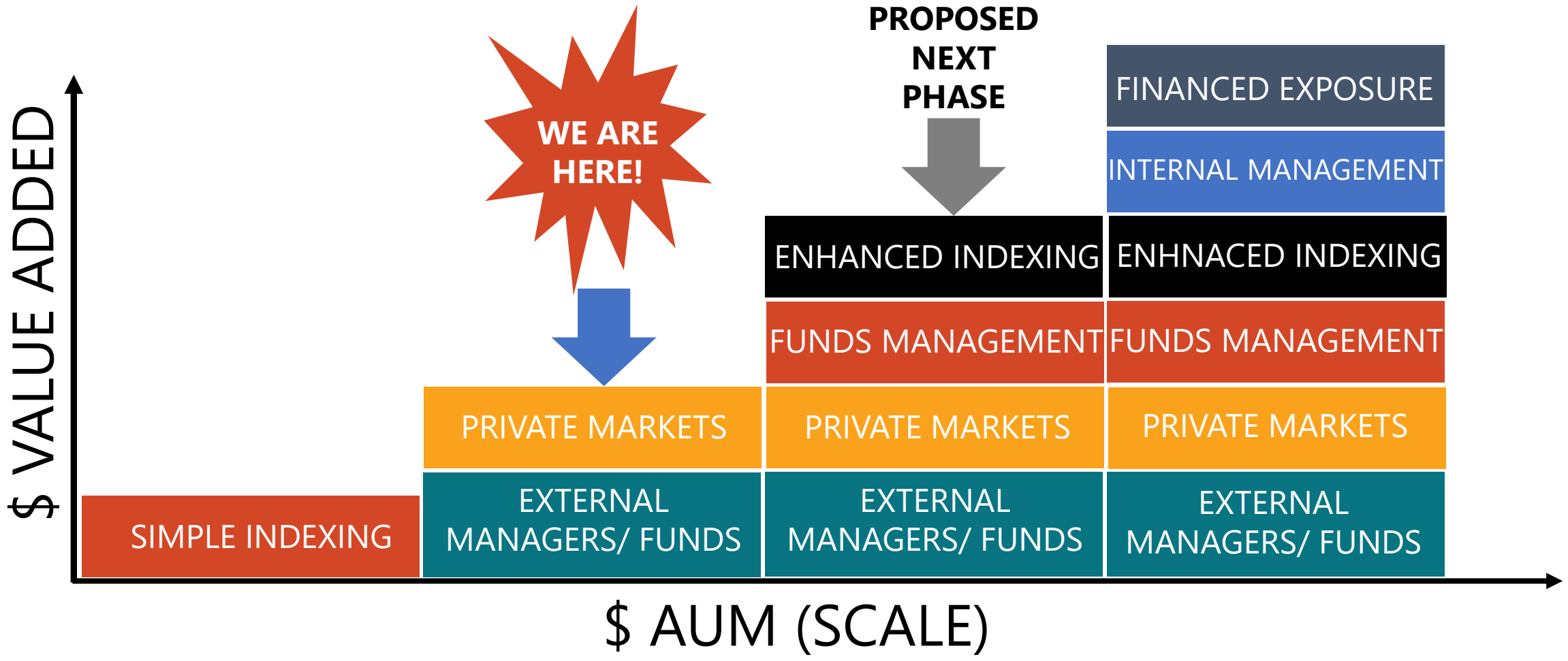
INTERNAL INVESTMENT MANAGEMENT PROGRAM

ASSETS UNDER MANAGEMENT GROWTH



Eric Chin – TFFR, November 17th, 2022

OPPORTUNITY



INTERNAL INVESTMENT MANAGEMENT

- LOWER COST THAN WITH EXTERNAL MANGERS
- APPLIED WHERE THERE IS A COST/BENEFIT
- ENABLES ENHANCED LIQUIDITY MANAGEMENT, REBALANCING AND EXPOSURE MANAGEMENT

THE COST OF THE PROGRAM IS LOW WHEN COMPARED TO THE FEES IT REPLACES

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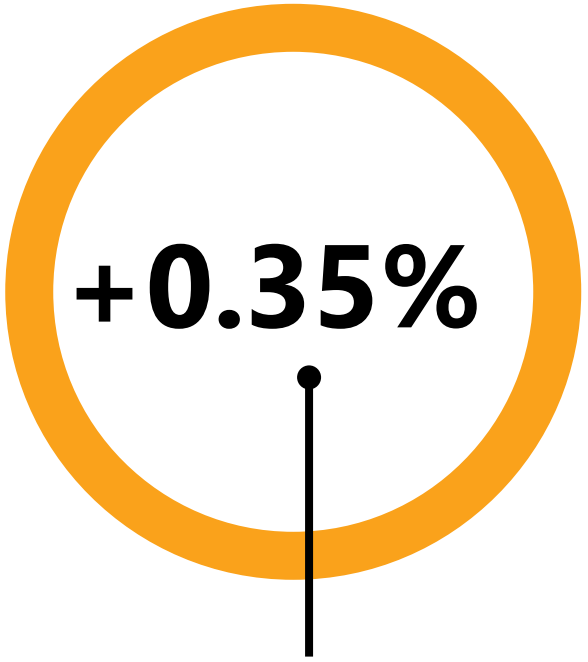
PROGRAM COST

INCLUDES TOTAL REWARDS AND INFRASTRUCTURE

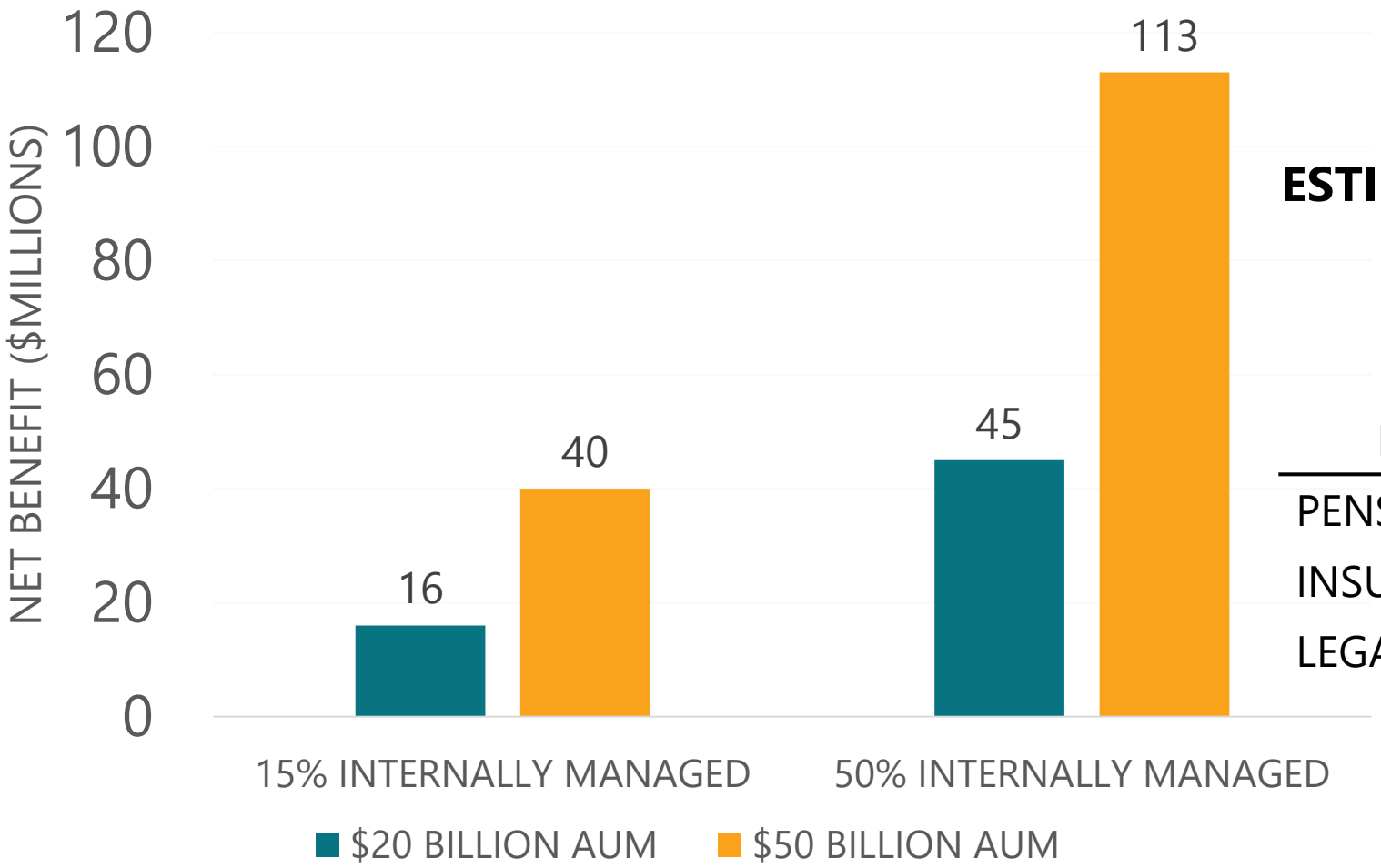
CURRENT COST

DOMESTIC EQUITY



INVESTMENT GRADE FIXED INCOME

THE BENEFIT SCALES WITH THE SIZE OF THE COMMITMENT



ESTIMATED ANNUAL SAVINGS PER YEAR ($20 BILLION AUM)

	10% OF ASSETS		50% OF ASSETS	
PLAN	$(MIL)	%	$(MIL)	%
PENSION	$6	0.08%	$16	0.23%
INSURANCE	$3	0.10%	$8	0.26%
LEGACY	$7	0.09%	$21	0.25%

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MEMORANDUM

TO: **Teachers' Fund for Retirement Board**

FROM: **Sara Seiler, Supervisor of Internal Audit**

DATE: **November 14, 2022**

SUBJECT: **Audit Activities Quarterly Update**

The SIB Audit Committee will meet on November 15, 2022. The SIB Audit Committee will review the first quarter audit activities and receive an update on current audit activities.

The following will be presented:

1. June 30, 2022, Fiscal Year Financial Statement Audit
    a. 2022 Financial Statement Audit Results
        i. Unmodified "clean" opinion
        ii. No material weaknesses were identified
        iii. No significant deficiencies were identified
    b. GASB 68 Schedule Audit
        i. Tested 12 separate employers, 137 total employees tested
            1. One employer with a finding – immaterial
        ii. Expected to issue final report end of 2022
2. Payroll Audit
    a. Reviewed agency's payroll from time period January 2022-August 2022
    b. Recommendation
        i. Annual training for managers and staff on the Overtime Policy and procedures.
3. File Maintenance Audit
    a. Reviewed various retirement processes, transactions, and information for accuracy
    b. Recommendations
        i. Review death, purchases, refunds, and retirements for FY 2021 & 2022 for accuracy and documentation
        ii. Ensure all staff Is adequately cross trained on policies and procedures
4. Internal Audit Business Process
    a. Issued RFP to evaluate internal audit and its future needs
    b. Weaver & Tidwell, LLP was awarded the bid
        i. Kickoff is tentatively scheduled for November 2022

The following link has the committee materials that were presented for your reference:
https://www.rio.nd.gov/sites/www/files/documents/PDFs/SIB%20Audit/Board/Materials/sibauditmat20221115.pdf

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MEMORANDUM

TO: **SIB**
FROM: **Jan Murtha, Executive Director**
DATE: **November 9, 2022**
RE: **Executive Limitations/Staff Relations**

Ms. Murtha will provide a verbal update at the meeting on agency efforts to address current and future organizational risk through strategic planning. Including updates on the following topics:

1. **Retirements/Resignations/FTE's/Temporary Assistance**:

Employee Title	Status
TFFR Compliance Officer-Retirement Accountant.	2 FTE's attributed to the retirement program were reorganized effective November 2022 and represent the final phase of a reorganization plan that had been initiated in September 2021. The existing Employer Services Coordinator position was reorganized into a TFFR Compliance Officer position (with the same employee remaining in that FTE), and the vacant full-time Member Specialist position is pending reclassification into a Retirement Accountant position – currently pending HRMS review. The duties of the Membership Specialist position are currently being performed by a temporary employee. This reorganization was prompted by system improvements resulting from the Pioneer Project.
Chief Risk Officer	Interviews Scheduled.
Sr. Investment Officer	Starting November 2022.
Sr. Investment Officer	Offer Accepted, start date pending.
Investment Officer	Starting November 2022.
Risk Officer	Starting November 2022.
Communications/Outreach Director	Started November 7, 2023.
Accounting Intern	Offer pending.

2. **Current Project Activities/Initiatives:**

- **Legacy Fund Asset Allocation Study –** RVK continues its work on the Legacy Fund Asset Allocation Study and provided recommendations for changes to the Legacy Fund Investment Policy Statement (IPS) and recommendations regarding future program considerations at the October meeting. The Advisory Board will finalize it's requested changes to the IPS at its next meeting and those changes will be presented to the SIB thereafter.
- **TFFR PAS Project** (hereinafter TFFR "Pioneer Project")– The TFFR Pioneer Project continues with implementation consistent with the project plan. Currently the project is in an elaboration phase involving review of system components. The amount of time spent on the project by various staff members currently varies from 5 to 25 hours or more per week.
- **Northern Trust Initiative** – In an effort to enhance the infrastructure for the investment program the Investment and Fiscal teams are leading an initiative to coordinate with Northern

Trust for additional functionality/capabilities.

- **Audit Consultant RFP:** In September staff issued an RFP for Audit consultant services to assist with the development of additional internal audit business practices to support program evolution consistent with the agencies strategic plan. A notice of award has been issued and the finalization of the contract is currently pending.

3. **RIO Board & Committee Presentations – November 1 through November 30, 2022**

   Staff provided or is scheduled to provide the following presentations to Boards and Committees during the above referenced time period.

   - **SIB Investment Committee – 11/10/22**
   - **TFFR GPR Committee – 11/10/22**
   - **SIB Audit Committee – 11/15/22**
   - **SIB GPR Committee – 11/16/22**
   - **TFFR Board – 11/17/22**
   - **SIB meeting - 11/18/22**

BOARD ACTION REQUESTED: Board Acceptance.

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MEMORANDUM

TO: **TFFR Board of Trustees**
FROM: **Chad R. Roberts, DED/CRO**
DATE: **October 24, 2022**
RE: **Board Reading Materials for November 2022 TFFR Board Meeting**

Attached are two articles and two papers for your review regarding the impact of economic recession and rising inflation on pension plans. Included is a study by Segal in conjunction with National Institute on Retirement Research evaluating the public pension experiences since the great recession. This study was presented at the NCTR Conference this year. There is a research article from the Center for Retirement Research addressing what hurdles public pensions face with declining markets and increasing inflation. Last are articles from Bloomberg and Pew Charitable Trusts discussing the potential implications of market downturns on pension plans.

References

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Hawkins, M. (2022, July 22). Public Pensions Face Worst Funding Decline Since Great Recession. *Bloomberg*.

Mennis, G. (2020, April 23). How the Market Downturn Could Affect Public Pension Funds. *The Pew Charitable Trusts*.

Tyler Bond, D. N. (2022). *Examining the Experiences of Public Pension Plans Since the Great Recession.* Natinal Institute on Retirement Security.

EXAMINING THE EXPERIENCES OF PUBLIC PENSION PLANS SINCE THE GREAT RECESSION

Segal LAZARD ASSET MANAGEMENT

NATIONAL INSTITUTE ON Retirement Security

Reliable Research. Sensible Solutions.

By Tyler Bond, Dan Doonan, Todd Tauzer, and Ronald Temple

October 2022

ABOUT THE AUTHORS

Tyler Bond is the research manager for the National Institute on Retirement Security. He works with the executive director to plan all NIRS research products. Since joining NIRS, Bond has authored and co-authored numerous research reports, issue briefs, and fact sheets on a wide range of topics relating to retirement security. He regularly speaks at conferences about NIRS research and testifies before policymakers. Previously, Bond spent four years at the National Public Pension Coalition, where he directed the research program and authored six original research reports. He also has held positions on Capitol Hill and at the Center on Budget and Policy Priorities. Bond holds a B.A. in political science and philosophy from Indiana University and an M.A. in public policy from The George Washington University. He is a member of the National Academy of Social Insurance.

Dan Doonan is the executive director of the National Institute on Retirement Security. With the Board of Directors, Doonan leads the organization's strategic planning, retirement research and education initiatives. Doonan has more than 20 years of experience working on retirement issues from different vantage points including an analyst, consultant, trainer, and a plan trustee. He comes to NIRS after serving as a senior pension specialist with the National Education Association. Doonan began his career at the Department of Labor as a mathematical statistician. He then spent seven years performing actuarial analysis with Buck Consultants in the retirement practice. His experience also includes positions as a research director and labor economist. Doonan holds a B.S. in Mathematics from Elizabethtown College and is a member of the National Academy of Social Insurance.

Todd Tauzer is a Vice President and Actuary in Segal's San Francisco office, specializing in public pension funding, risk management, and plan sustainability. He is Segal's National Public Sector Retirement Practice Leader and a member of Segal's Public Sector Leadership Group. Mr. Tauzer came to Segal as Director of Municipal Pensions from S&P Global Ratings, where he helped develop a detailed framework to evaluate the sustainability and security of public pension and OPEB plans across the country. Prior to S&P, he was a senior pension actuary for CalPERS. At CalPERS, he was heavily involved in the Enterprise Risk Management and Asset Liability Management space. He is a Fellow of the Society of Actuaries with a specialty in Enterprise Risk Management, a Chartered Enterprise Risk Analyst, a Fellow of the Conference of Consulting Actuaries (CCA), and a member of the American Academy of Actuaries. Mr. Tauzer serves as Chair of the Academy's Public Plans Committee, the Chair of the SOA's Retirement Section Council, and on the CCA's Annual Planning Committee.

Ronald Temple is a Managing Director and Co-Head of Multi-Asset and Head of US Equity at Lazard. In this role, Ron is responsible for overseeing the firm's multi-asset and US equity strategies as well as several global equity strategies. He is also a Portfolio Manager/Analyst on various US and global equity teams. He joined Lazard in 2001 with ten years of global experience including fixed-income derivative trading, risk management, corporate finance and corporate strategy in roles at Deutsche Bank AG, Bank of America NT & SA and Fleet Financial Group. Ron has an MPP from Harvard University and graduated magna cum laude with a BA in Economics & Public Policy from Duke University. He is a member of the Council on Foreign Relations, the Economic Club of New York, the CFA Society New York, is the chair of Duke University's Graduate School Board of Visitors and is Co-Chair of the Duke University Talent Identification Program Advisory Board.

ACKNOWLEDGEMENTS

The authors are grateful for the assistance, comments, and support provided by a number of individuals including Keith Brainard, Alex Brown, Tony Dote, Jacob Itzcowitz, Jason Katz, Kelly Kenneally, Lorenzo Rossi, Frank Sposato, and Alfred Wang. The authors especially want to thank Celia Ringland for her extensive help in researching and producing this report. The views in this report and any errors and omissions are those of the authors' alone.

EXECUTIVE SUMMARY

The Great Recession, or the Global Financial Crisis (GFC), was the severe economic downturn that occurred between 2007-2009. It impacted nearly all sectors of the U.S. economy. Individual and institutional investors lost sizeable assets as financial markets contracted, and the economic recovery period, characterized by slow job growth and high unemployment, was prolonged.

Public pension plans have made a number of adjustments to their actuarial assumptions and investment allocations since the Great Recession to adapt to structural changes in the economy. Costs and liabilities for many plans have increased due to these changes, but these plans should be better positioned for potential future market downturns.

This report considers the impact of the Great Recession on public pension plans in the U.S. It focuses on both the immediate and long-term impacts of the financial crisis as well as recent demographic and economic changes that are increasing the cost of retirement. It also reviews the asset allocation decisions made by public pension plans, and the behavior of individual retail investors during and after the Great Recession.

The report's key findings are as follows:

- The majority of public pension plans recovered their pre-recession asset levels within six years, while continuing to pay over a trillion dollars in benefits. In recent years, public plans have reported record-high asset levels.

- Discount rates, or the assumed rate of return on investments, have broadly decreased from 8% to 7% for the median public pension plan, based on actuarial and financial forecasts of future market returns.

- Generational mortality tables, possible today with more advanced financial modeling software, have been broadly adopted by nearly all large public plans and future longevity improvements are now incorporated into standard financial projections.

- Many public plans have shortened their amortization periods, or the period of time required to pay off an unfunded actuarial accrued liability, to align with evolving actuarial best practices. Tightening amortization periods–akin to paying off a mortgage more quickly–has had the effect of increasing short-term costs; in the long run, plans and stakeholders will benefit.

- The intense focus on public plan investment programs since the recession has missed the more important structural changes that generally have had a larger impact on both plan finances and the resources necessary for retirement security.

- Plans have adjusted their strategic asset allocations in response to market conditions. With less exposure to public equities and fixed income, plans increased their exposure to real estate, private equity, and hedge funds.

- Professionally managed public defined benefit plans rebalance during volatile times and avoid the behavioral drag observed in retail investment.

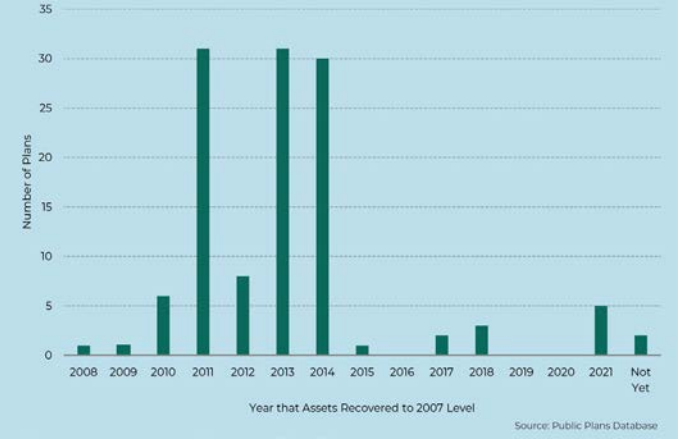
In summary, public plans have modified their funding processes, continued to pay benefits, and recovered and exceeded their pre-recession asset levels as the overall operating environment has become increasingly complex since the Great Recession.

I. INTRODUCTION

The Great Recession of 2008 and 2009, sometimes referred to as the Global Financial Crisis (GFC), was the most severe economic downturn since the Great Depression of the 1930s. The recession had an impact on nearly all aspects of economic life in the United States and its effects were felt for years after, especially given the long, slow recovery that followed. Financial markets plunged as the recession set in, and many investors, both individuals and institutions, lost a significant portion of their assets.

Public pension plans were not immune from this crisis. The majority of public plans experienced sizable losses from the crash in financial markets, which resulted in a notable year-to-year decline in the funded ratio of those plans. Many public plans took years to recover their funded status, due to the drawn-out economic recovery as well as other factors. Most public plans became more conservative during the recovery by lowering their assumed rates of return, adopting generational mortality tables, and shortening their amortization periods. **Figure 1** shows that the median plan took until 2013 to recover its fiscal year 2007 asset levels.

Figure 1: Great Recession Recovery Period: Year in Which Market Value of Plan Assets Exceeded FYE 2007



This paper seeks to understand the true impact of the Great Recession on public pension plans in the U.S. and to dispel common misperceptions about their funding progression and investment performance. In the aftermath of the crisis, nearly every state made changes to one, or more, of its public pension plans, ranging from benefit adjustments to plan design changes. These were mostly political decisions that followed the recession and will not be the focus of this paper as they have been well-documented elsewhere.[1] Instead, this paper will focus on both the immediate impact of the financial crisis on public plans and the long-term effects from the structural changes that occurred in investment markets and among the public plan community.

The paper also will examine the asset allocation decisions made by public pension plans during and after the GFC to assess whether the funds are taking on inordinate risks to fill funding gaps. Finally, the paper will examine the investment decisions of retail investors as a proxy for decision making by individuals who depend on defined contribution plans for retirement savings.

What was the Great Recession?

The National Bureau of Economic Research (NBER) is the organization that officially dates the start and end of recessions. NBER dates the beginning of the recession as December 2007 and the end as June 2009, an 18-month economic contraction.[2] Many of the key events of the crisis occurred during 2008.

One of the first clear signs of the crisis was the distressed sale of Bear Stearns to JPMorgan Chase in March 2008. Over the summer of 2008, shares of Fannie Mae and Freddie Mac fell sharply and in September 2008, both entities were placed in federal conservatorship. Just a week later, Lehman Brothers declared bankruptcy and Bank of America purchased Merrill Lynch. The next day, the Federal Reserve extended a loan to AIG and the federal government took an 80 percent equity stake in the company. Just over a week after that, the Federal Deposit Insurance Corporation (FDIC) seized Washington Mutual and sold its assets to JPMorgan Chase.

By early October 2008, Congress had passed and President George W. Bush had signed the Emergency Economic Stabilization Act of 2008, which created the Troubled Asset Relief Program (TARP). From 2008 to 2012, 465 banks with assets totaling $689 billion failed.[3] Above and beyond bank failures, there were widespread failures of nonbank financial institutions that added to the sense of financial panic and triggered the most comprehensive regulatory overhaul of the U.S. financial system since the Great Depression.

This economic crisis shook the foundations of financial markets. The Great Recession coincided with a bear market that began in October 2007 when all three major indices,

the NASDAQ, the S&P 500, and the Dow Jones Industrial Average (DJIA), peaked and then began their decline. All three indices hit bottom on March 9, 2009, having lost more than half their value.

The causes of the Great Recession have been well-documented. The growth in the subprime and Alt-A mortgage market throughout the aughts had led to financial firms selling pools of these mortgages that were packaged into Mortgage-Backed Securities (MBS) that were then disaggregated and repackaged into Asset-Backed Collateralized Debt Obligations (ABS CDOs) and other derivatives thereof. When the underlying borrowers began to default in large numbers, the meltdown of MBS and related securities led to financial turmoil and the stock market collapse referenced above. Relatedly, another new investment vehicle called a credit derivative or credit default swap (CDS) also had grown in popularity, but was unregulated and contained unforeseen risk. The collapse of both the MBS and CDS markets contributed to the bankruptcy of major institutions such as Bear Stearns and Lehman Brothers, the distressed sale of Merrill Lynch, and the government rescue of AIG.

This financial market turmoil inflicted sizable losses on the vast majority of investors including public pension plans. In the United States, the stock market decline wiped out nearly $8 trillion in value between late 2007 and 2009. Americans lost $9.8 trillion in wealth as their home values plummeted and their retirement accounts shrank. In the fourth quarter of 2007, the combined value of defined benefit plan assets held by state and local governments was $3.19 trillion, according to the Federal Reserve. By the fourth quarter of 2008, that had declined to $2.44 trillion, a loss of 23.5 percent.

The economy-wide effects of the recession were pronounced. Unemployment rose from 4.4 percent in December 2006 to a peak of 10 percent in October 2009. Employment began to grow again in March 2010, but it took seven years to return unemployment to the pre-GFC lows.

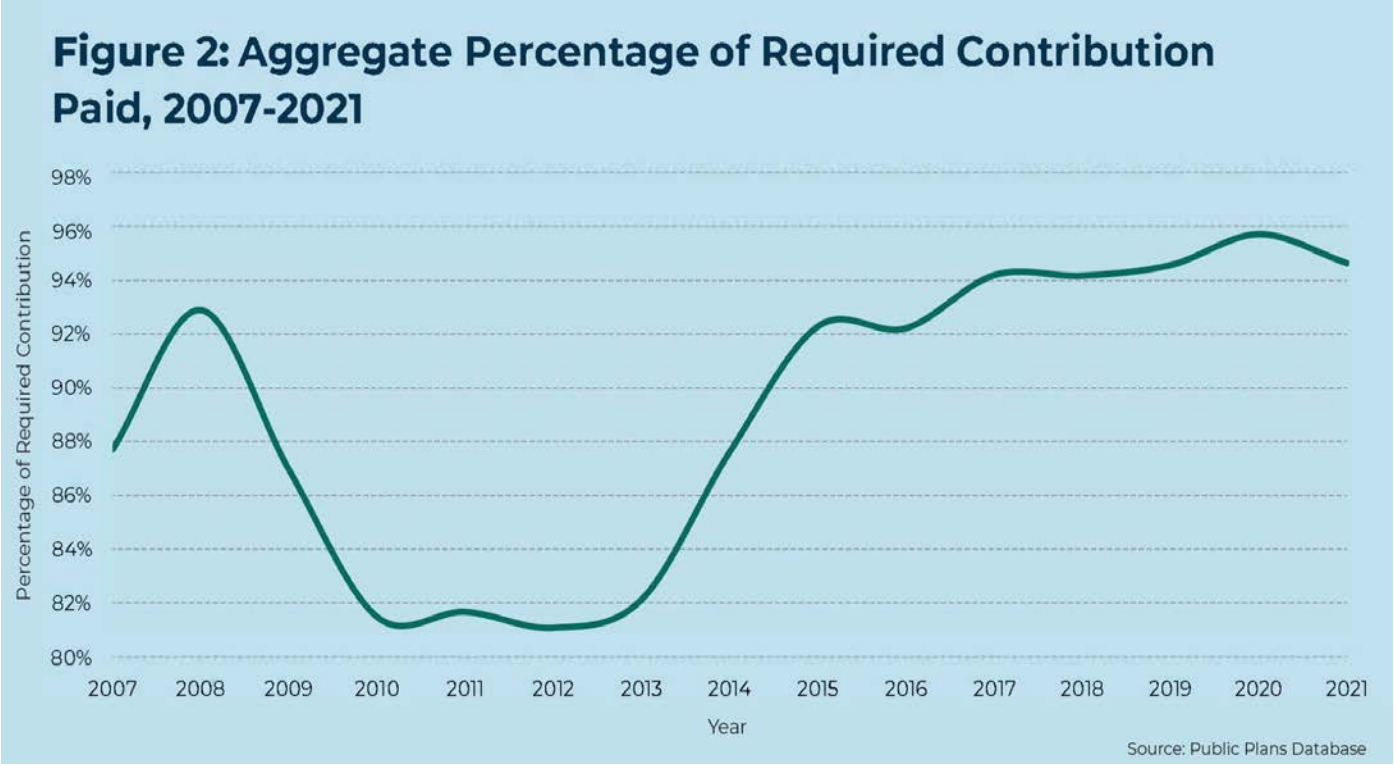
There also were a greater number of people considered "long-term unemployed" during the Great Recession than during previous recessions. The share of the population with a job declined to levels not seen since the mid-1980s. And the ratio of job seekers to job openings was historically high. The economic impact of the Great Recession continued for many years after its official end.[4]

II. PUBLIC PLANS BEFORE THE GREAT RECESSION

As noted above, in the fourth quarter of 2007, a period of time that includes both the start of the bear market and the official beginning of the recession, the combined value of state and local government DB plan assets peaked at $3.19 trillion, a record high at the time, and the aggregate actuarial funded ratio for public plans was 86.3 percent.

Public plans already had experienced a recent recession before the Great Recession. When the dot-com bubble burst, the U.S. entered a relatively shallow recession from March to November 2001. The dot-com bubble had caused significant asset value appreciation in investment markets and that benefitted public plans. In 2001, the aggregate actuarial funded ratio stood at 101.8 percent. This number declined to 94.8 percent by 2002 as the impacts of the recession were realized. The aggregate funded ratio continued to decline over the next few years, but had increased in 2007, just before the onset of the Great Recession. The aggregate funding ratio of plans declined despite asset growth in each year from 2003 to 2007, as public plans began to adopt more conservative funding assumptions during this period, a trend that was accelerated after the Great Recession and will be discussed at great length later in this paper.

Failure of state and local governments to fulfill required contributions to public plans did contribute to the decline in funded status in some, but not all, cases. During fiscal year (FY) 2007, which for many plans was July 1, 2006 to June 30, 2007 (before the start of the recession), in aggregate, 88 percent of required contributions were made to public plans. During fiscal year 2008, which for many plans began on July 1, 2007, that number rose to 93 percent, but declined to 87 percent in FY 2009 and 81 percent in FY 2010 (**Figure 2**). During FY 2007, 58 percent of plans had received at least 100 percent of their required contribution. By FY 2010, that number had declined to 52 percent.

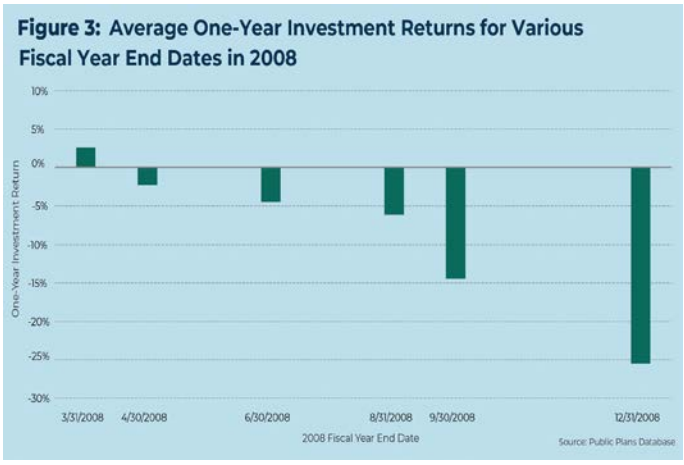


III. PUBLIC PLANS DURING THE GREAT RECESSION

Fiscal Year End and One Year Investment Returns

Most public pension plans end their fiscal year on one of two dates: either June 30th or December 31st. A much smaller number have fiscal years that end on other dates. When comparing one year investment returns from 2008, it matters greatly whether a plan ended their fiscal year on June 30th or December 31st. Examining the plans in the Public Plans Database (PPD) reveals that the majority of plans with June 30, 2008 fiscal year ends experienced one year investment losses in the low single digits, whereas the majority of plans with a December 31, 2008, fiscal year end experienced double digit investment losses (**Figure 3**) reflecting the ongoing sell-off in asset prices in the second half of calendar year 2008.

Highlighting this fact is not meant to indicate anything about the relative investment performance of different public plans. Rather, the point is that timing matters. Plans whose fiscal year ended on December 31, 2008 absorbed much more of the market downturn during their 2008 fiscal year, whereas plans ending on June 30th showed greater losses during their 2009 fiscal year. This cautions against reading too much into any single year of investment returns, whether positive or negative, as pension plans are meant to deliver benefits over decades and hence have a longer investment horizon than individuals.



FAILED PROJECTIONS OF MUNICIPAL BANKRUPTCIES

During the immediate aftermath of the Great Recession, it became common to read stories in the news media predicting municipal bankruptcies resulting from the decreased funded status of public pension plans. These media stories often relied on research that was based on flawed assumptions and a poor understanding of the funding mechanisms of defined benefit pension plans.

One set of projections that received widespread media attention focused on 77 municipal pension plans in major cities and the unfunded accrued liabilities in those plans.[5] This study received particular attention because the authors calculated a "solvency horizon" for these plans, beyond which the authors contended that the current assets in the plans would no longer be able to cover current liabilities. The authors' approach to assessing the funding of public plans was fundamentally flawed. The revenues in public plans come from three sources: employee contributions, employer contributions, and investment returns, which constitute the majority of revenue in most plans. Plan obligations generally are met from a combination of these three sources of revenue.

Defined benefit plans can invest on a long-term time horizon because they are not tied to any individual's lifecycle. They are ongoing and can act and invest differently as a result. Looking at a single point in time and trying to make projections from that point fundamentally misrepresents how DB plans function. Also, a "solvency horizon" is something that can't exist because a public pension plan can't go bankrupt or be defeased in the way a corporate pension plan could. State governments cannot declare bankruptcy and while county and municipal governments can, public pension benefits are entitled to legal and/or constitutional protections in most states.

Another problem was the type of news coverage this study received. Even this study, which made critical and inaccurate claims about municipal pension plans and their funding, was not predicting some of the things the news media said it was.[6] The media often would report without any criticism of the analysis and would overstate the findings. This led to many doom-and-gloom predictions about the future of public pensions that never came to pass.

Far from declaring bankruptcy, the majority of these municipal pension plans have higher asset levels today than a decade ago. Fifteen out of twenty plans examined had higher actuarial assets in fiscal year 2020[7] than in fiscal year 2010. Moreover, these plans have continued to pay benefits while recovering their asset bases, as pension plans throughout the U.S. have done.

The years immediately following the Global Financial Crisis were worrying times for many, given both the historic nature of the recession and the sluggishness of the subsequent recovery. Unfortunately, that time of economic anxiety resulted in a number of unfounded claims being made about public pension plans. While many of those claims never came to pass, they have influenced the thinking of many to this day. A more accurate understanding of how pension plans dealt with and recovered from the Great Recession would lead to a more balanced and nuanced understanding of the status of municipal pension plans today.

IV. PUBLIC PLANS AFTER THE GREAT RECESSION

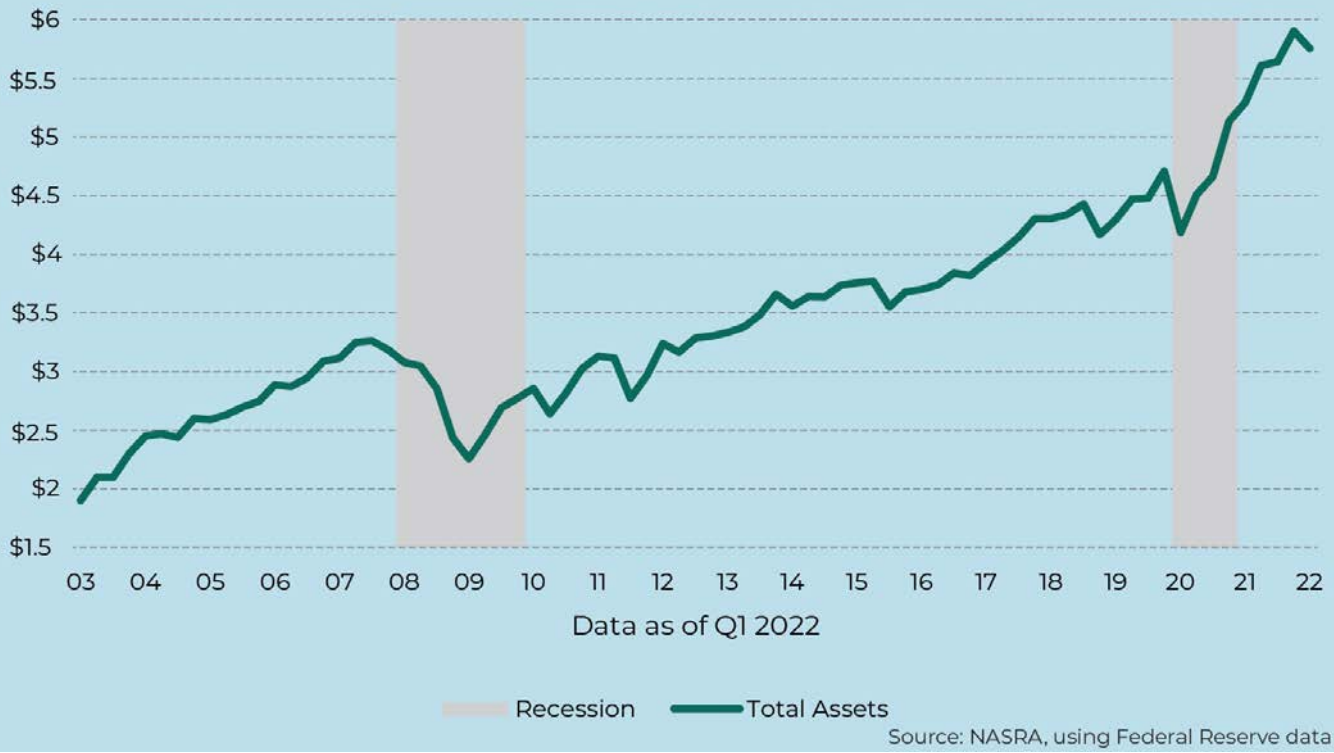
Most public pension plans experienced a notable decline in their funded status due to the investment losses experienced during the Global Financial Crisis. This decline showed up in different years for different plans depending on their fiscal year-end, but nearly all plans saw asset levels decline below fiscal year 2007 levels. Figure 1 above showed that the median plan recovered their 2007 asset levels by fiscal year 2013. The majority of plans had recovered their pre-recession asset base by 2014. **Figure 4** below similarly shows the quarterly change in the aggregate assets of state and local pension plans based on data from the Federal Reserve. It also demonstrates that aggregate assets had recovered to 2007 levels by 2013.

Not only did public pension plans recover their asset levels within six years, but they continued to pay out benefits while they did so. In fact, public plans paid benefits worth $1.4 trillion from 2007 through 2013. The fact that public pension plans were able to recover their asset base while paying out well over a trillion dollars in benefits is a testament to the sustainability of these plans.

As of the end of 2021, on average, plan assets were 88 percent above 2007 levels (**Figure 5**) and $3.8 trillion dollars had been paid out in benefits along with $89 billion in withdrawals. It is noteworthy that, while there has been much discussion about the value received by short-term employees, withdrawals represent only 2.1 percent of total payments during 2007-2021. Therefore, if policymakers wish to significantly increase the rewards for short-term workers through better return-of-contribution provisions, the financial costs are likely to be fairly minor for most systems.

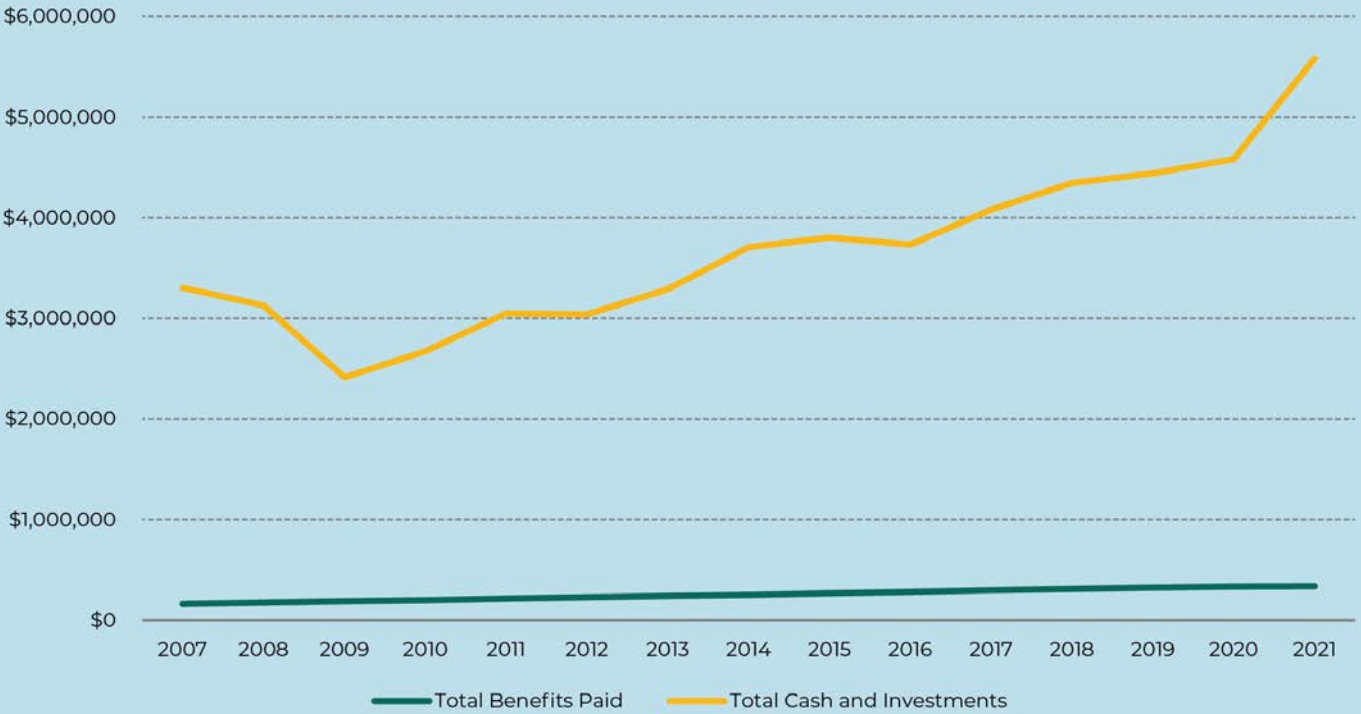
Some basic facts about public pension plans in recent years seem inconsistent. First, the aggregate actuarial funded ratio of public plans (from the PPD) has declined slightly

Figure 4: Quarterly Change in State & Local Defined Benefit Assets, 2003 - 2022 (in Trillions)



Source: NASRA, using Federal Reserve data

Figure 5: State & Local Benefits Paid and Total Assets (in Millions)



Source: U.S. Census Bureau Annual Survey of Public Pensions

Figure 6: Median Annualized Public Pension Investment Returns for Periods Ended 6/30/21 and 12/31/21

Source: NASRA, using Callan data

since 2009, from 78.3 percent to 75.5 percent. At the same time, contributions have increased since the onset of the Great Recession. And, investment returns over 10, 20, and 30 years are largely meeting plan expectations.[8] Given these three facts, a casual observer might think that the math simply doesn't work.

The real story is a consistent trend among public plans to adopt more conservative assumptions for future investment returns and longevity. This more cautious stance reflects the fact that retirement has become more expensive in recent years, for those in both defined benefit and defined contribution plans. Policies also have changed to accelerate funding. What this means is that the funding target has been moved, and significantly so, with plans generally trying to reach their targets in fewer years.

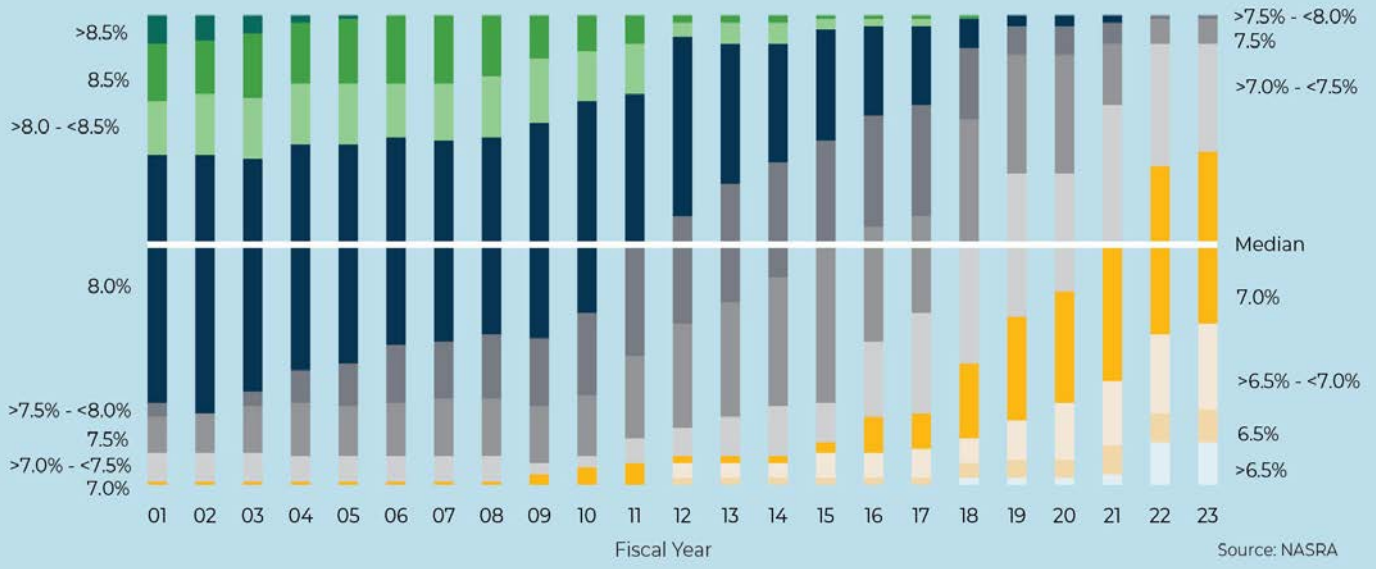
On investment returns, the median plan assumed an 8 percent return from 2001 through 2010. These years followed the boom markets of the 1990's, when pension fund returns were quite high. However, as noted above, plans began to get more conservative between 2003 and 2009. The more significant change occurred following the Great Recession. With the advent of Quantitative Easing (QE), monetary policy drove bond yields to a much lower point than seen in recent decades, and over time, the sense that this policy would quickly pass became less firm. As such, plans continued a march toward more conservative investment return assumptions until 2022 with the median plan return expectation around 7 percent.

Today, we may be seeing some of these trends reverse. After consistently falling below the Fed's 2 percent target for over a decade, inflation has reached the highest levels in nearly four decades. Surging inflation prompted the Federal Reserve to aggressively increase interest rates and shrink its balance sheet. Importantly for pension funds, Moody's Seasoned Aaa Corporate Bond yields reached 4.5 percent for the first time since 2014 after rising sharply throughout 2022.[9] If sustained, meaningfully higher inflation and interest rates could lead pension funds to reassess certain assumptions about future returns and discount rates used to value liabilities in the future. Higher interest rates could also lead to changes in asset allocation targets for the plans going forward.

Despite recent developments, lower discount rates likely will remain. In 2021, the seven largest plans (by assets under management) tracked in the Public Plans Database had a liability weighted average discount rate of 6.78 percent. In 2008, the same plans had an average discount rate of 7.89 percent. When thinking about funding these plans, this change is roughly equivalent to adding another 15-20 yards to a football field.

The tightening of actuarial assumptions did not stop there. The practice for setting mortality assumptions for public plans, which includes projecting future longevity improvements, has evolved significantly over the last 15 years. The most significant change was a methodological one.

Figure 7: Change in Distribution of Public Pension Investment Return Assumption, FY 01 to FY 22



Around the turn of the century, plans either did not project mortality projections. This meant that a plan would build a set amount of years of improvement into their current mortality tables (let's say 10 years of improvement, for example), and those mortality assumptions would not change until the next experience study (thus the term "static"). At the next experience study, the plan would need to build out 10 years of improvement from that date, thus increasing liability and costs. Since by design this would continue to happen at each experience study, pension plans were always expecting losses when they updated mortality experience as they continued to manually push forward longevity expectations.

In the early 2000s, a new approach was developed that was computationally more challenging called "generational" mortality projections. Generational projections apply certain mortality assumptions to each "cohort" or birth year of pension plan members, and each cohort is expected to live slightly longer than the previous year's cohort. This is why it's called "generational" – longevity improvement is built in incrementally into all future cohorts, one year at a time. Now, virtually all plans have moved to using generational mortality.[10] Often when making the one-time move from static projections to generational projections, plans experience a significant increase in their estimated liabilities as generational tends to anticipate future longevity improvements in a more robust way. At the same time, future experience studies will not anticipate the expected future increases in cost and liability that was caused by continually pushing out static projections.

In addition to this shift to generational mortality, most public plans have adopted two other significant changes in setting mortality assumptions. The first is that many plans moved to mortality tables set by public plan data (which were only developed in the last five years). Experience has shown that public plan participants tend to live longer than the general U.S. population, on average. So, moving to public-specific tables increased assessed liability and cost, but also should be a more accurate assessment of expected experience. The second is that research has shown that those with higher benefit levels tend to live longer than those with lower benefit levels. In general, they tend to have a higher standard of living, more access to healthcare, and other potential benefits. This means that those who are receiving higher benefits will tend to live longer than the average life expectancy of the plan, and those who are receiving lower benefits will tend to live shorter than the average life expectancy of the plan. In total, this pattern increases the cost of the plan. This has been proactively built into many plans' mortality tables through the use of "benefit weighted mortality", where different levels of mortality expectations are set based on the level of benefits received.

These tools allow for a level of fine-tuning of mortality projections that simply were not available to plans before generational tables became widely available, leading to more accurate projections of future benefit payments. Instead of being a one-way street that leads to higher costs, plans with generational mortality tables should expect some minor level of correction in the future. Ongoing adjustments to mortality assumptions likely will move in both directions, leading sometimes to lower and sometimes to higher costs, and are much more likely to be smaller overall adjustments.

Analysis of Three Sample Plans' Recent Experience

To get a sense of the cumulative impact of the changes in investment return and mortality assumptions, we've analyzed three large public plans under their current assumption set, as well as the results that would have been achieved had investment return and mortality assumptions remained static since 2008. This section examines the changes experienced by these three plans since the Great Recession.

Two of the three plans in **Figure 8** would have been overfunded had they not changed their investment return and mortality assumptions, and all three plans would have seen much higher funding ratios had assumption changes not increased the plan's liabilities. Figure 8 illustrates the cost of becoming more conservative. Adopting actuarial assumptions that incorporate future mortality improvement and anticipate more averse future investment markets increases costs in the near term, but it also increases the likelihood that pension systems will meet or exceed their expectations in the future.

Pension funds monitor their assumptions by conducting periodic experience studies, generally every three to five years. These studies look at economic, demographic, and other factors that impact a plan's costs. Generally, when data on participant behavior or economic conditions look different than what is currently assumed, plans react to the new trends, without overcorrecting. For instance, if a plan sees the average retirement age increase or decrease in a material way over a short period, it may be due to specific conditions that will continue or be temporary, e.g., the

Figure 8: Actuarial Accrued Liability with Prior Economic and Mortality Assumptions ($ in millions)

This chart shows the impact of the changes to the discount rate and mortality tables, but excludes other plan-specific adjustments that are less representative of public plans more broadly.

COVID-19 pandemic, or policy changes, e.g., a temporary change in return-to-work provisions. Such temporary conditions may not be applicable to the behavior of workers who have 10 to 20 more years before reaching retirement age. So, the goal is to recognize real changes, but adjust with long-term trends in mind.

Figure 9 illustrates how this process played out for one of the sample plans.

Figure 9 shows the actuarial accrued liability for the current plan and population under the assumptions that were in place at various points in time. The data above only illustrate the impact of the changes made to economic and mortality assumptions following each experience study conducted since 2008. The majority of the increase in the accrued liability occurred in 2009, 2012, and 2015 and more recent years have seen either modest increases or decreases. While lowering the discount rate increased liabilities in the years that decision was made, we actually saw a reduction in 2018 stemming from mortality changes that reduced costs (yellow bar at the bottom) after generational mortality tables were adopted.

Figure 10 shows the attribution of actual experience compared to expected experience, for investments and non-investment assumptions, by year for Plan A. It also shows the impact of assumption changes (in light green). The timeframe on this chart, beginning when GFC losses were starting to be felt, is unfavorable for measuring an investment program. Yet, investments were not the leading cause of increasing liabilities.

Figure 10 shows the gains and losses by year, and by the various contributing factors. Assumption changes were not made every year, but tended to have a significant impact when they were made. On the other hand, investment gains and losses show up every year, and generally tended to offset after the GFC. Figure 10 shows that the Great Recession did have a significant impact as most of the investment experience following the GFC increased unfunded liabilities. That started to change in 2013 when the plan had a positive investment experience that reduced unfunded liabilities as the market recovery led to larger than anticipated returns (after smoothing).

Figure 10 captures more than just assumption changes and investment experience. The actuarially determined contribution (ADC) of this plan is effective at reducing the unfunded liability over time, which has resulted in

a positive amortization (shown in the dark blue bars). Additionally, the plan's sponsors have made voluntary employer contributions (on top of the ADC) since 2014 to accelerate the funding of the plan, shown in gray bars.

Another interesting element, shown in this chart, is that the mortality assumption changes were always in the direction of higher costs before 2014, when a generational mortality table was adopted. Since that change, the amortization of gains and losses from mortality experience has gone both ways and produced much smaller changes that tend to offset over time. In fact, this plan made three major changes to its mortality assumptions: moving from no projection or static projection to generational projection; moving to public-specific mortality tables; and moving to benefit-weighted mortality tables, which assumes higher earners tend to live longer. In each of these three cases, liability was increased significantly.

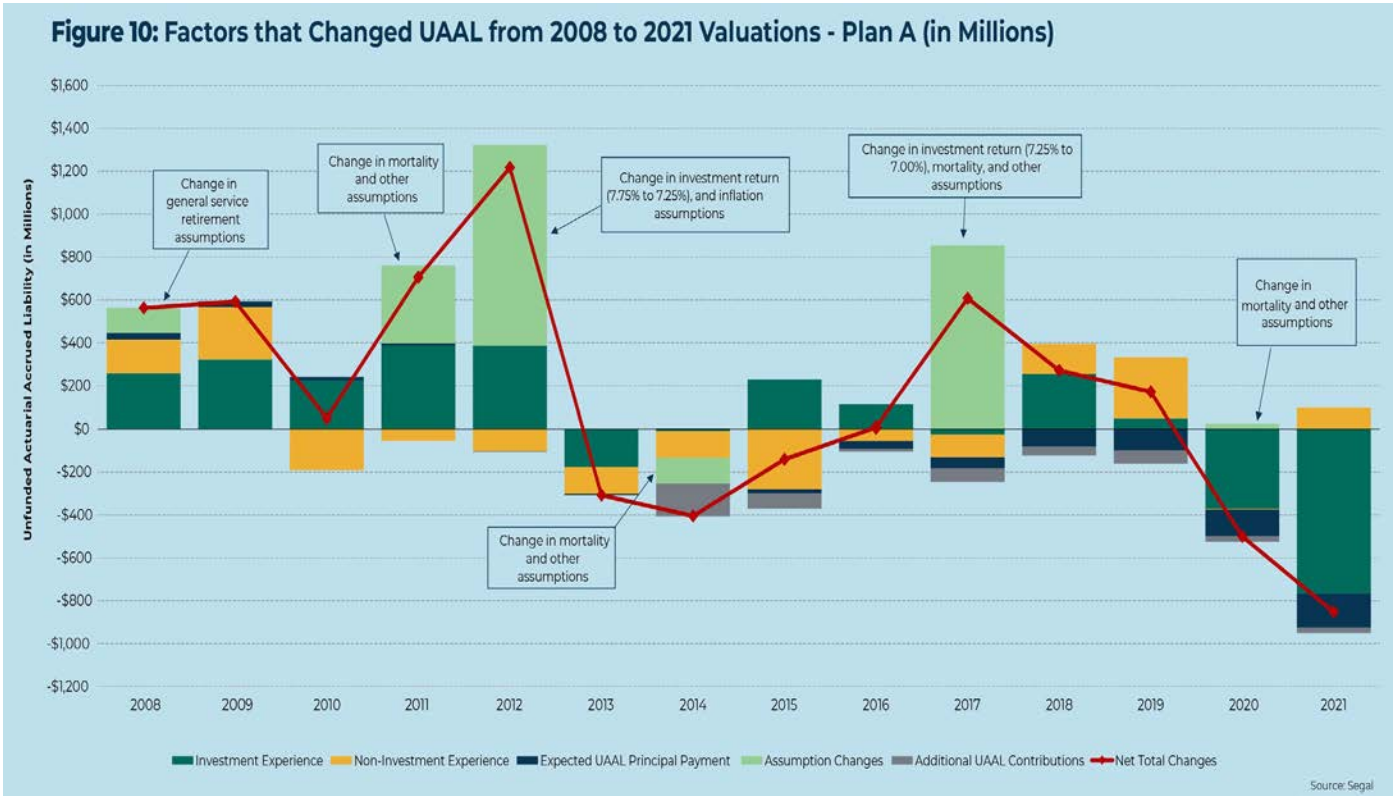
In fact, **Figure 11** shows that the cumulative impact of assumption changes on contributions dwarfs the other impacts, which mostly offset each other. In short, the combination of the contributions made and non-investment experience that reduced the UAAL was slightly greater than the impact of investment losses. That left assumption changes being responsible for more than the total increase in UAL during 2008-2021. And, this chart uses data starting just before the Great Recession, so it captures the full investment experience of the plan from the recession through the recovery.

In short, there is not a problem with how pension math works. Instead, this is what adopting more financially cautious assumptions looks like for pension plans: there is a greater likelihood of meeting or exceeding the assumed targets in the future, however, it creates the appearance that the plan is in a weaker position, and it requires more funding to reduce future risks. It is worth noting that paying to reduce risk is a very common trade-off in financial decision-making. Also, these assumption changes reflect the reality that retirement is becoming more expensive for all American workers, not just pension plan participants.

Another key takeaway is this: given the number of assumption changes made since 2009 and the fact that changes typically are amortized over long periods of time to keep costs stable, no one should expect public plans to have reached full funding under the new assumptions by this point in time. That is especially true if plans continue to reduce investment return assumptions.

Authors' note: we are not, in any way, arguing that these

Figure 9: Impact of Assumption Changes on Actuarial Liabilities - Plan C ($ in millions)



assumption changes are not appropriate or advisable. Plans should adopt assumptions that they believe are realistic. We are simply pointing out the impact of these decisions on the standard metrics that are commonly relied upon.

Of course, if unfunded liabilities are impacted, so are costs. **Figure 12** illustrates the employer contribution rate from the most recent valuation for another one of the sample plans. It has four components: normal cost, experience losses, pre-2008 assumption changes, and post-2008 assumption changes. Normal costs are expected to occur each year and represent new benefit accruals, and normal costs are also impacted by assumptions. However, it is instructive to look at the source of additional costs above the normal costs. For this plan, the cost of post-2008 assumption changes dwarf the other sources of UAAL. The unfunded liability contribution makes up nearly half of the total employer rate for this plan, and the main driver of that is assumption changes that occurred after the Great Recession.

Similarly, **Figure 13** shows the same breakdown for the third sample plan (Plan C). While the costs of this plan can attribute more to experience losses than the plan highlighted in Figure 12, the post-2008 assumption changes constitute the greatest portion of the employer rate, greater even than the normal cost.

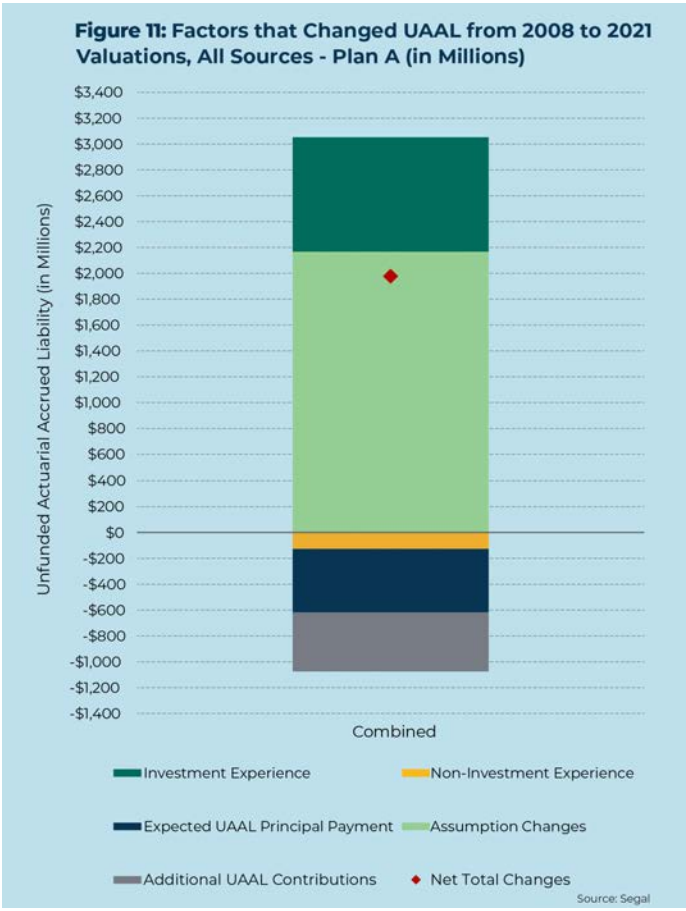


Figure 12: 2021 Valuation Employer Rate Breakdown - Plan B

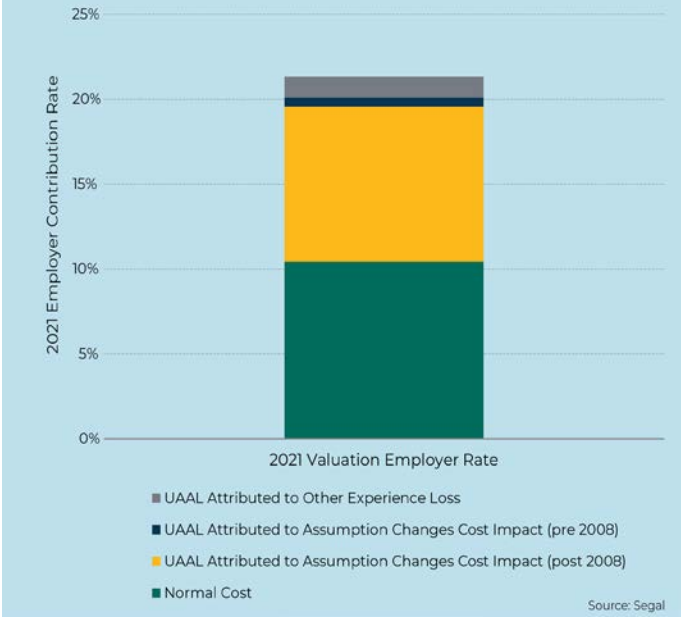
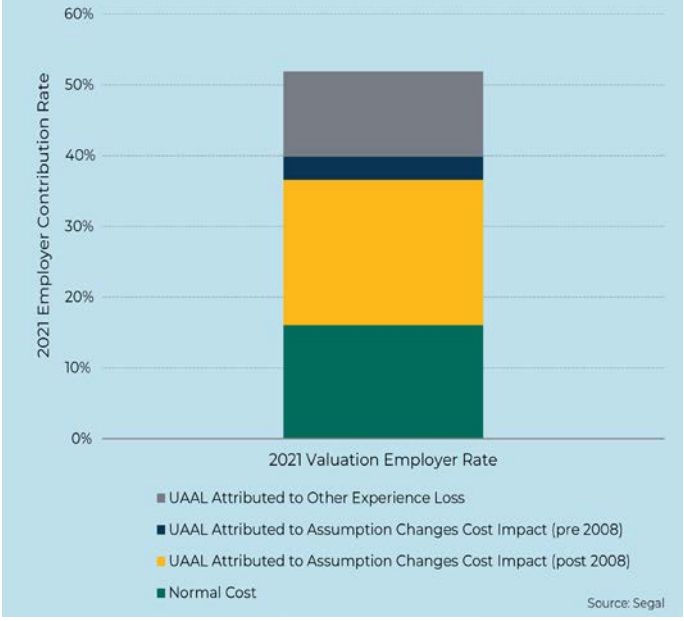


Figure 13: 2021 Valuation Employer Rate Breakdown - Plan C



V. EVOLVING FUNDING POLICIES GENERATING FASTER PAYOFF OF UNFUNDED LIABILITIES

During the Great Recession, many states faced the dual challenges of pension assets falling in value while tax revenues were declining. The result was that pension contributions were not always sufficient to make plans sustainable in the long run (without a future correction). Contributions that are not sufficient to stabilize unfunded pension obligations often are described as negative amortization.

Negative amortization can be acceptable, at times. If negative amortization occurs because payroll is projected to grow (and unfunded liabilities are being paid as a percentage of growing payroll), then an actuarially determined contribution can produce temporary negative amortization. However, if negative amortization is a persistent condition over long periods of time, one would expect unfunded liabilities to grow even if current assumptions are met. Sponsors could choose to have negative amortization during a period of fiscal distress to sustain public services, with shortfalls to be made up at a later date, but many pension professionals are hesitant to embrace this strategy, particularly in jurisdictions with weak economic growth, a history of underfunding, or other aggravating factors.

Actuarial organizations have looked closely at this issue in recent years and have provided more guidance on the appropriateness of various funding methods. This guidance has considered both the length of amortization periods and other issues, such as whether open or closed amortizations were being used, and whether amortization bases are layered or combined.

The Conference of Consulting Actuaries produced a paper, *Actuarial Funding Policies and Practices for Public Pension Plans* (also known as the "White Paper"), which notes some unacceptable practices including closed, layered periods exceeding 30 years and open amortization with periods using combined bases that amortize unfunded liabilities over periods exceeding 25 years. This guidance aims to further strengthen funding practices, as amortization

Figure 14: Remaining Amortization Periods of Public Plans in 2007 and 2020: Share of Participants

policies generally used longer periods of time before the Great Recession. Given that the funding of public plans was generally improving significantly from the 1970's through 2000, the common perception was that funding policies were working well. However, the extreme volatility of the Great Recession and the maturation of public plans, combined with other factors have caused the profession to reconsider its guidance.

Those changes are visible in the data available today. By comparing the remaining amortization periods of plans in the Public Plans Database, the participant-weighted results **(Figure 14)**, we see significant changes in the length of amortization periods since 2007. At that time, 72 percent of participants were in plans with amortization periods of 26 years or longer, and nearly half (47 percent) were in plans using a 30-year amortization. By 2020, 42 percent of participants were in plans using 26-30 year periods. Meanwhile, the share of participants in plans with remaining amortization periods between 11-25 years has more than doubled.

It is worth noting two things when considering these changes: first, this occurred during a difficult period of time, as public plans recovered from the Great Recession. Second, similar to lowering the discount rate, employing shorter amortization periods creates the appearance that costs are rising in the short run, though existing costs are simply being paid down more quickly, which is expected to save money in the long run. But, like assumption changes discussed above, the impression created by simply looking at high level data, like contribution (ADEC) trends, is that costs keep rising.

This tightening of funding practices follows the general trend that has been observed over many decades during which public plans have moved to strengthen prefunding of future benefits. In fact, before the 1970s, prefunding was uncommon.

The results of these changes–along with improved contribution discipline–are visible in other macro metrics, such as the contribution adequacy research that has been produced by the Pew Charitable Trusts. In their recent

report[11], they note:

> *"In 2019, states were on the cusp of meeting minimum contribution standards—measured using the net amortization benchmark—for the first time this century, and preliminary 2020 data suggests that this benchmark was met that year. Pew measures the adequacy of state pension contributions by comparing employer pension payments to a net amortization benchmark, calculated as the amount needed to keep pension debt from growing, assuming investment returns hit their target.* ***In 2014, when Pew first introduced this measure, only 17 states met or exceeded the benchmark; overall, states fell short of the metric by $28 billion. Five years later, the 2019 data reveals that 35 states achieved the minimum contribution standard, with the remaining 15 states accounting for a deficiency of less than $1 billion."***

Among industry leaders, it is commonly believed that being on a strong funding trajectory is a better indicator of future success than a simple funding ratio, which essentially provides a snapshot of a moment in time when markets might be significantly above or below longer term trends.[12]

This progress was hard-earned, particularly as it was coupled with the adoption of more conservative assumptions as described above. However, it will contribute to an increased probability that plans remain in a strong fiscal position to pay benefits in the future and with more stable costs.

Not all public plans started from the same funding position entering the recession and have not had the same funding experience since the crisis. This had an impact on how benefit reforms affected plan participants in the wake of the crisis. According to recent research from the National Bureau of Economic Research, Reductions in the Generosity of State and Local Employee Pensions: Comparison of Plans with and without Social Security Coverage, public plans that had a funding level of less than 75 percent experienced much larger benefit reductions (19.1 percent) than plans that were better funded (10.5 percent) during the period from 2000 to 2020.[13] While changes to discount rates, mortality assumptions, and amortization periods have been widespread, their impacts on plan members have not been.

VI. INVESTING AGAINST AN EVOLVING BACKDROP

Thus far, we have focused on the funding and liability side of public plans, but we have not discussed the actual investment decisions made by public plans. Nor have we discussed defined contribution plans, the most common alternative to defined benefit plans. In this section, we review the evolution of public plan asset allocation decisions and the institutional processes intended to ensure that plans adhere to a consistent long-term plan. We also review empirical data regarding the behavior of retail investors to illuminate the shortcomings of defined contribution plans that are often proposed as a replacement for defined benefit programs. While defined contribution plans can be a helpful supplement to defined benefit programs, the evidence continues to suggest that individuals are ill-equipped to bear the responsibility for a) saving enough during their working years, b) investing the savings appropriately, and c) withdrawing their savings at an optimal pace.

Investment Market Changes

Before diving into the actual investment decisions made by plans, it is important to understand the role played by different investments as part of a strategic asset allocation. Then, we can discuss how the changing market environment has affected the optimal allocation to each type of asset.

Several decades ago, asset allocation was a much simpler exercise for many public plans (and institutional investors more generally) with the choices being limited to public equities and fixed income.

Public equities were the core of public plans as they offered capital appreciation, dividend income, and an inflation hedge, as companies could pass through price increases to consumers in many cases. Fixed income served as the ballast in a portfolio by providing relatively low volatility, steady income, and defensive characteristics, as interest rates typically fall during periods when risk assets sell-off, leading to price appreciation for bonds. When equity market returns and yields on risk-free treasury bonds were in the high single digits, the combination was sufficient to deliver meaningful nominal and real (net of inflation) returns to public pension plans.

In the 1980s, for example, the average level of the U.S. 10-year Treasury yield was 10.57 percent[14] while inflation compounded at a ~5.1 percent rate as measured by the U.S. Consumer Price Index, implying that investors who bought

and held government bonds earned an attractive nominal and real return. In a time where returns of ~8 percent were typically projected for pension plans, investors didn't need to reach for risk.

Even better, however, were public equity returns. The total return of the S&P 500 Index was 17.54 percent per annum through the 1980s, despite the stock market crash of 1987 that wiped out 22 percent of the market value in a single day.

In the 1990s, the story was even better for public equities with the total return of the S&P 500 Index rising to 18.17 percent per annum with returns late in the decade inflated by the bubble in technology, media, and telecom (TMT) stocks. Bonds held their own with an average yield on the U.S. 10-year Treasury at 6.64 percent through the 1990s, a level that was still high compared to inflation that compounded at 2.9 percent per annum.

At the turn of the century, the story changed. From March of 2000 to October of 2002, the TMT-heavy NASDAQ Composite Index declined by 78 percent and the S&P 500 Index fell 50 percent as the TMT bubble burst. The Federal Reserve cut interest rates sharply during this time, taking the U.S. 10-year Treasury yield below 4 percent by late 2002. The need for new tools became evident to public pension plans. While investor appetite for alternative investments such as hedge funds and private equity had begun to increase in the 1980s and to "take off" in the 1990s, the 2000s were a watershed.

While the first hedge fund dates to the 1940s, it was only in the 1990s that hedge funds began to attract sizable asset flows. The appeal of hedge funds was that they could profit from investing in assets that were expected to appreciate while also selling short assets they expected to depreciate. The net effect of the long and short positions was to mitigate the sensitivity of the funds to the wider market volatility,

Figure 15: Public Plan Target Asset Allocations, 2001-2021

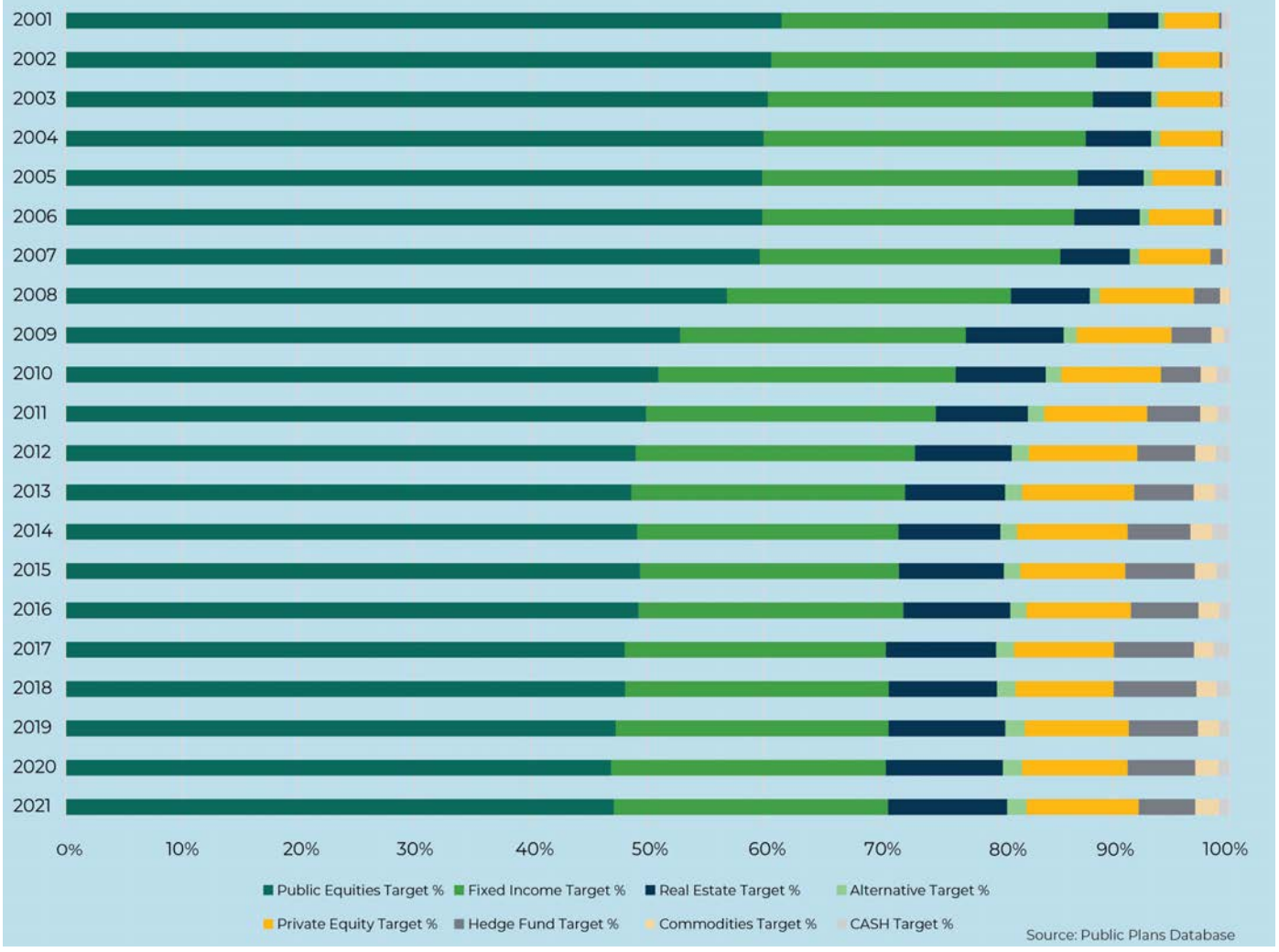
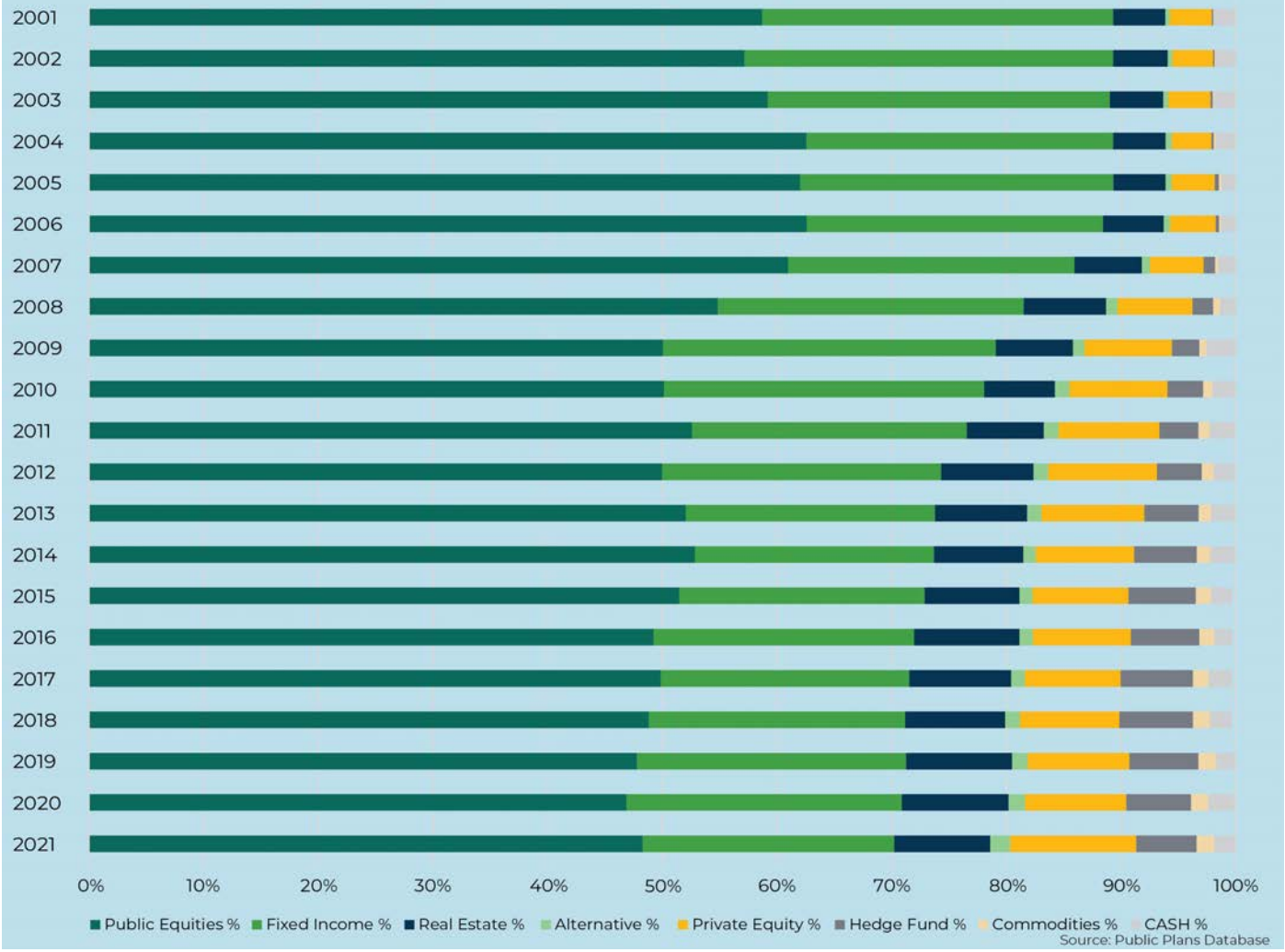


Figure 16: Public Plan Actual Asset Allocations, 2001-2021



hence reducing perceived risk, while purportedly not giving up potential rewards. Hedge funds were particularly appealing in periods of elevated market volatility, especially when there was high dispersion across sectors and securities that allowed for profitable trades on both the long and short side of the trading book. Hedge funds did not perform as well during strong bull market runs, as their short positions were a drag on performance, not to mention the very high fees typically charged for such strategies.

Many of the household names in private equity originated in the 1970s including KKR, Thomas H. Lee Partners, Clayton, Dubilier & Rice, among others. However, fundraising was counted in the single digit billions of dollars through the early 1980s and only began to take off late in the 1980s when the infamous leveraged buyout of RJR Nabisco occurred at a then record price of $25 billion (which would remain the largest take out until well after 2000).

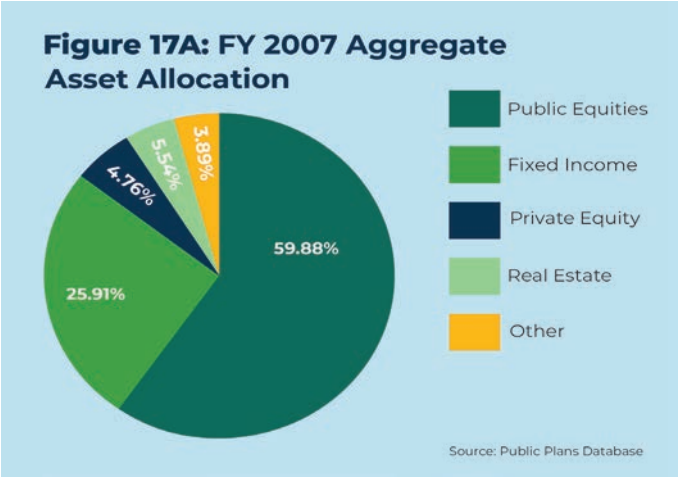
The original premise of private equity was that by buying and running an entire company, private equity managers could change the firm's strategy, manage operations more efficiently, and/or optimize the company's capital structure (often by applying significant amounts of leverage to the balance sheet). There was legitimate appeal to the structure as PE firms selectively acquired and worked to transform companies into higher performing entities. In many cases, over time returns increasingly relied more heavily on leverage with less of the upside driven by strategic or operational initiatives. In private equity, the leverage is on the target company's balance sheet, and the debt is nonrecourse to the private equity sponsor taking over the company. This structure creates a "Heads, I win; tails, you lose" scenario in which success leads to large returns for the PE firm and its investors while failed acquisitions that end in bankruptcy or restructuring create disproportionate losses for the lenders and other stakeholders in the company

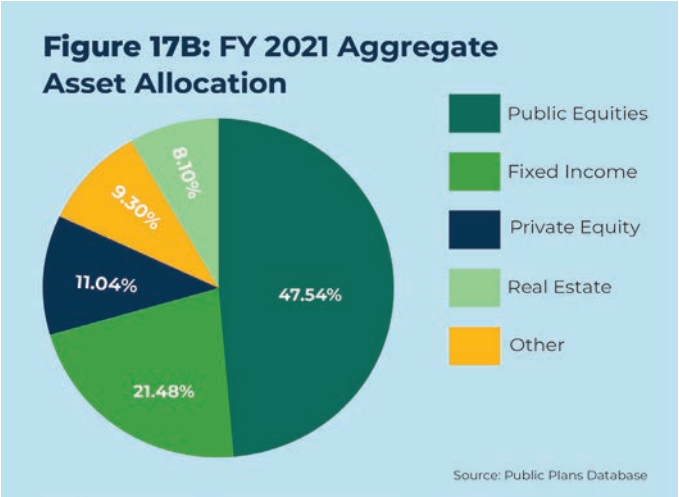
relative to the owners. As interest rates fell and credit terms eased, adding leverage to buyout targets became an even more appealing way to inflate returns. A rising public equity market added further to potential returns as exit valuations, i.e., the price at which a PE firm would sell the company back to the public or to another strategic or financial buyer, rose.

Looking at public fund investment decisions since the GFC, we see an ongoing reduction in exposure to public equities for both large (over $10bn of assets) and mid-size plans ($1-10bn). Interestingly, if we differentiate between target allocations and actual allocations, we can see that the decreases in allocations to public equities from 2007 to 2010 primarily reflected depreciation of existing assets, as the S&P 500 Index declined by over 55 percent from the market peak in October 2007 to the trough in March 2009. Since fiscal 2011 (for both June and December fiscal year plans), target allocations for public equities have been reduced by 300-500bps cumulatively over the ensuing decade for mid-size and large plans. Among large plans, the decrease in target allocation to public equities has been offset by an increased target allocation to real estate which is viewed as both an inflation hedge and a source of income. Contrary to popular opinion, target allocations for private equity have been relatively stable within a 100bps range through the last decade (for large plans with a June fiscal year).

Importantly, the 2010s were an extraordinarily difficult period for public plans in some regards. The average level of the U.S. 10-year Treasury was only 2.4 percent through the decade with CPI compounding at 1.8 percent. With an average allocation of 23 percent of assets to fixed income, public plans were effectively seeing their returns dragged lower by the asset that was supposed to reduce risk. True, fixed income assets reduced portfolio volatility, but the low absolute level of returns made achieving return targets more challenging. Through the decade, we saw a meaningful shift into real estate assets (~+250bps to actual allocations and target allocations for large June filers) as well as a ~250 – 300bps increase in allocations to hedge funds. During this time, the target fixed income allocation for large June filers declined by only 100bps, but the actual allocation fell by 550bps, funding the entirety of the increase in real estate and hedge funds.

The investment consulting firm Callan has studied this issue.[15] They found that to achieve a 7.5 percent return in 2015, an investor would need to take on three times as much risk as they did two decades before. An investor also would need to invest in a more complex and expensive mix of assets than they did before. This shift in the investment environment has led to changes in the asset allocations of public plans as explained below.





Target and actual asset allocation figures can tell us a lot about investment decisions when viewed alongside total return figures for each asset class in any given year. What becomes clear from viewing the last 15 years of data is that public pension plans have prudently implemented processes that lead to buying risky assets when prices are lower and selling them when prices are higher. For example, if we look at the more than 60 plans that have over $10 billion of assets and report on a June fiscal year, there are two periods of time that highlight the value of reallocating capital among asset classes.

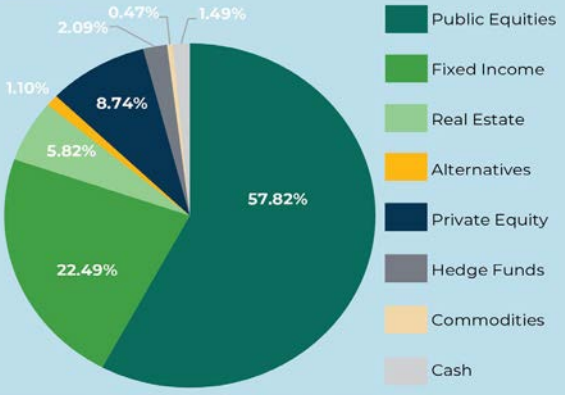
The first instructive phase is during the GFC. From the end of the 2007 fiscal year (6/30/2007) to the end of the 2010 fiscal year, plans endured a sharp decline in the value of riskier assets such as public equities, private equity, and real estate. If we simulate the asset allocation that would have resulted with no reallocations of capital and no inflows or outflows for plans, the fixed income allocation would have increased from 25 percent of assets to 35.7 percent in only three years.

This increase reflects the fact that bond yields declined during the GFC, raising the value of the bond portfolios owned by pension plans even while other assets declined in value. In contrast to this simulated level, however, fixed income assets did not rise to 35.7 percent. Instead, they rose to 27.9 percent, a difference of 7.8 percentage points. Interestingly, public equity allocations ended the period at levels implied by the simulation, but private equity, hedge fund, and real estate allocations were 327bps, 207bps, and 178bps higher than the simulation suggested, implying significant reallocations to riskier asset classes after they had underperformed.

Taking a different approach, if we assess the period after risk assets bottomed from 6/30/2009 to 6/30/2014, had the plans made zero allocation changes, we would have expected to see public equity balances grow from just over 50 percent of the asset allocation to 57.8 percent (**Figure 19**). This large increase would have been the result of a cumulative total return of 113 percent from public equities in the five-year period, which outpaced every other asset class handily. However, public plans did not allow the gains to accrue. Instead, they reallocated capital away from public equities into other assets that had appreciated less in order to remain more closely aligned with their target allocations. Doing so was advantageous as the following two years delivered a total public equity return of -0.3 percent versus a total return of over 26 percent for real estate, 16.6 percent for private equity, and 7.5 percent for fixed income.

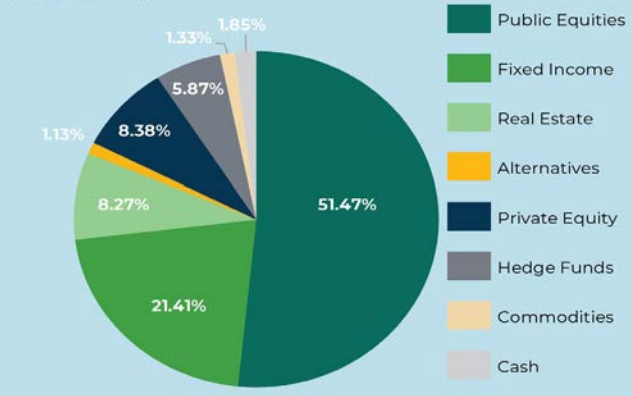
The key point here is not to isolate individual anecdotes. Our goal is to highlight that the ongoing process of professional management of public plans ensures that strategic asset allocation targets are established based on forecasted cash flows to satisfy liabilities and that managing assets to these targets avoids trading decisions based on prevailing market conditions (e.g., panic selling), which may result in suboptimal positioning. Our assessment indicates that professionally managed plans not only have access to more asset classes at a substantially lower cost than do individuals in defined contribution plans, but they also add sustained value to the plan assets through their methodical approach to rebalancing assets in response to major market moves and/or adjustments to plan structure or expectations.[16]

Figure 18A: FY 2015 Implied Asset Allocation



Source: authors' calculations using data from the Public Plans Database

Figure 18B: FY 2015 Actual Asset Allocation

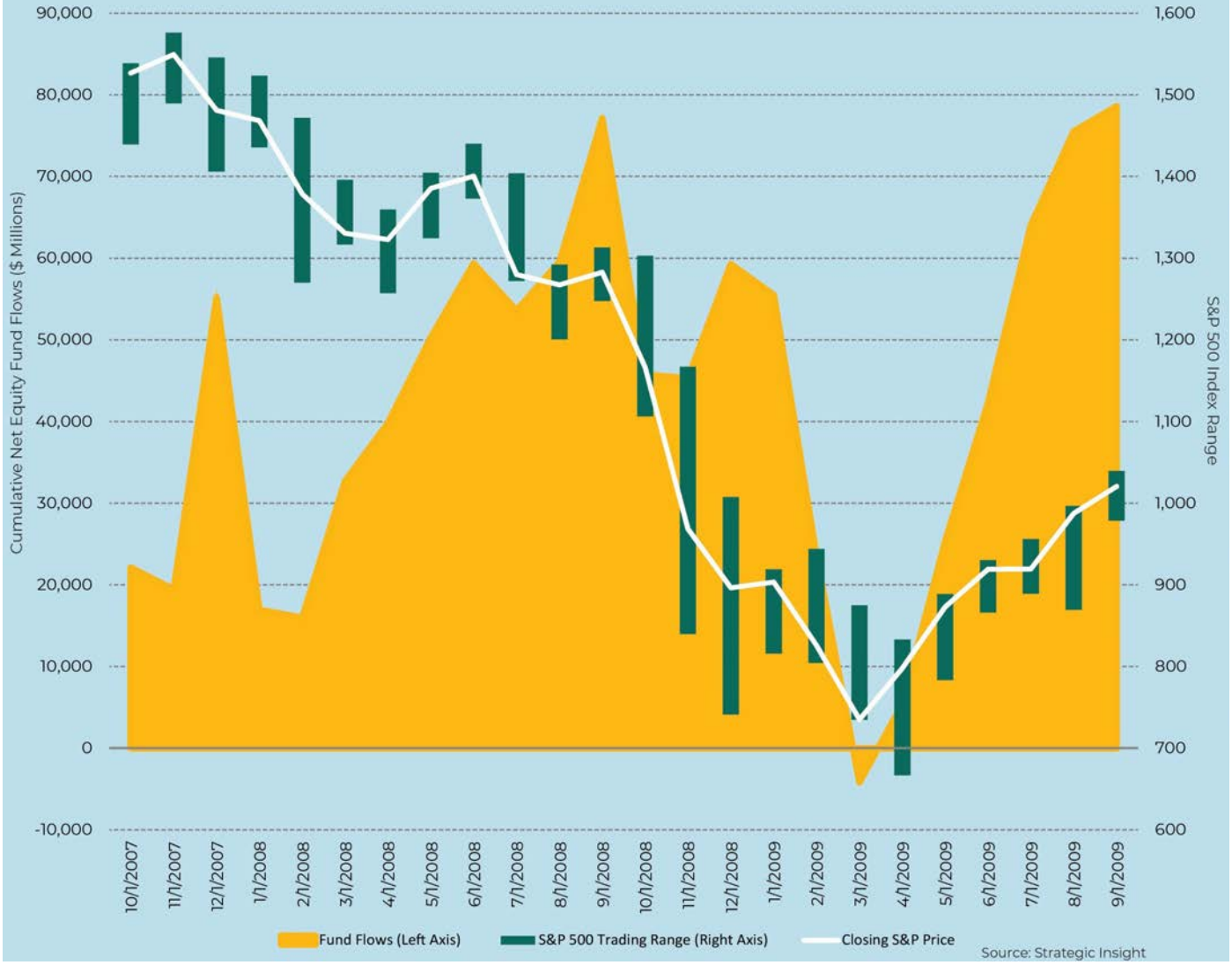


Source: Public Plans Database

VII. CONTRASTING PROFESSIONALLY MANAGED PUBLIC BENEFIT PLANS AGAINST RETAIL INVESTMENT DECISIONS

Previous studies have demonstrated the superior value add of professionally managed defined benefit plans over the alternative of defined contribution plans,[17] while others have shown that retail investors often sell when they should be buying and vice-versa.[18] We have attempted to examine the question of retail investment behavior in a different way.

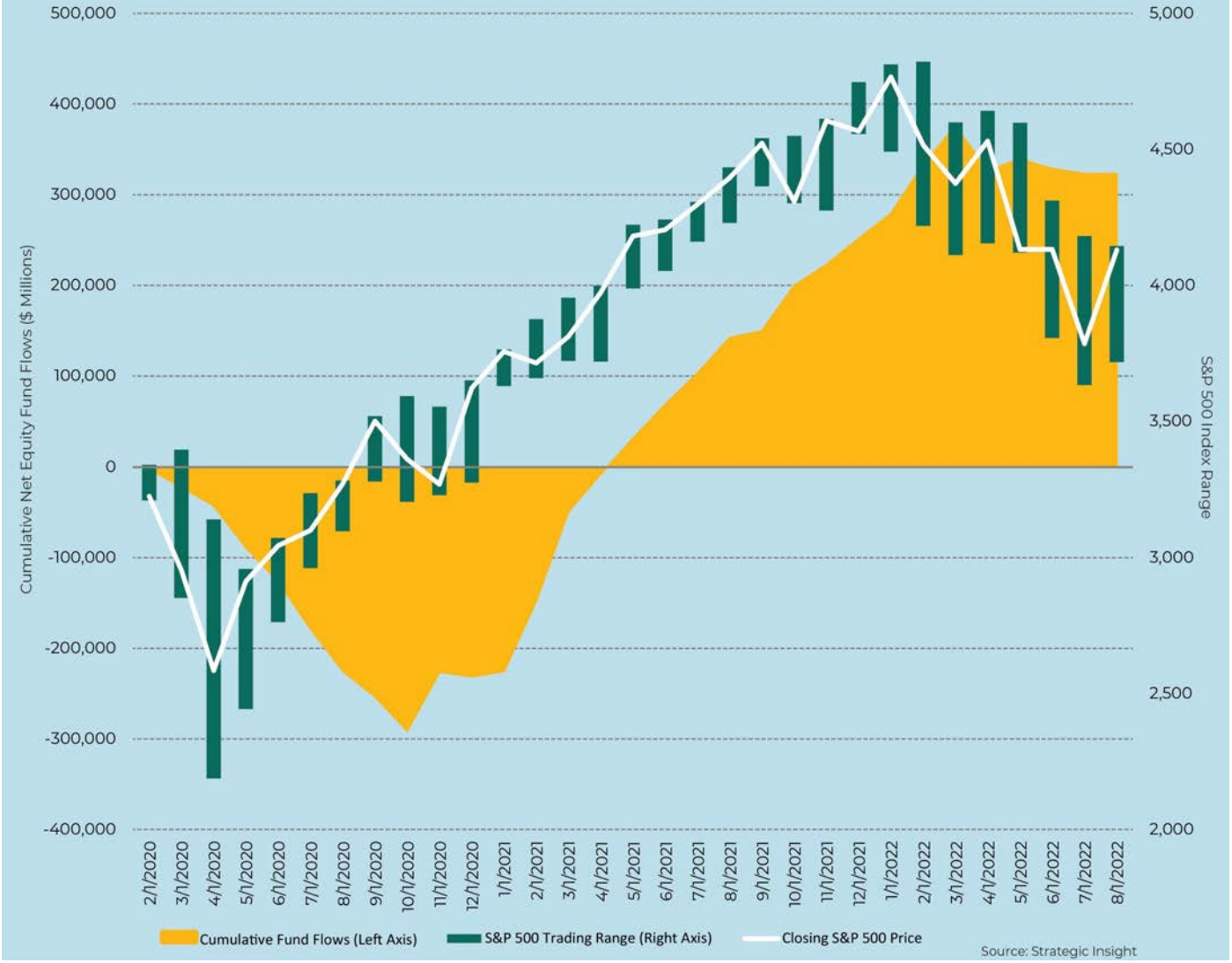
Figure 19: Cumulative Retail Fund Flows and S&P 500 Index Trading Range during the Global Financial Crisis



By examining equity mutual fund and exchange-traded fund (ETF) flows, we can gain a sense of when retail investors buy and sell different asset classes and the context in which they make such decisions. We acknowledge that mutual fund and ETF flow data also does include some institutional flows, but we would assert that aggregating flows at a monthly level should strip out much of the noise of fast money inflows and outflows. For example, we know that institutional asset managers will often use ETFs to gain exposure on a short-term basis to a sector or a theme. However, for longer-term investments, these managers typically prefer to select their own securities or develop custom baskets that would not skew this fund flow data. As such, we feel confident that the insights derived from examining monthly flows are predominantly reflective of retail activity.[19]

We examined monthly mutual fund and ETF flows back to 1993. Notably, the scale of flows has increased significantly over time as the balances invested in retail accounts (both defined contribution and all other investment accounts) have grown. Looking beyond scale, we found a consistent pattern of retail buying at market peaks and selling at or near market troughs. More recent years have seen this pattern become even more extreme, likely reflecting the dependence of retail investors on their own self-directed assets to fund retirement in the absence of defined benefit programs. Put simply, the assets involved have grown in scale and the retail investors responding to markets cannot afford to lose their nest eggs. Unfortunately, the reality is that the fear that leads investors to sell often means they are locking in the very losses they are trying to avoid and then

Figure 20: Cumulative Retail Fund Flows and S&P 500 Index Trading Range during the COVID-19 Pandemic



missing the recovery in share prices that follows.

Two specific experiences highlight this pattern: the Global Financial Crisis and the 2020 COVID-19 Pandemic. In the case of the GFC, as discussed above, the S&P 500 Index declined by over 57 percent from its October 2007 peak to the March 2009 low. In the 12 months from October 2007 to September 2008, retail investors bought $77 billion of equity mutual funds and ETFs at a dollar weighted average of the S&P 500 Index at 1416 (versus the then all-time high of 1576). One could argue that this behavior was reasonable as investors saw a buying opportunity after the market fell from record highs to more attractively valued territory. However, the subsequent six months undermine that argument, as investors pulled over $81 billion out of mutual funds and ETFs from October 2008 to March 2009, at an average S&P level of 846, effectively locking in a 40 percent loss, with net selling at levels not seen since 1996. It took six more months for investors to reinvest this $81 billion, at an average S&P 500 level of 929. Keep in mind, the purchases from April 2009 merely got investors back to the positions they had before they started locking in 40 percent losses in October 2008.

Once again, during the COVID-19 Pandemic, retail investors displayed a tendency to sell low and buy higher. From February to October of 2020, retail investors sold over $290 billion of equity mutual funds and ETFs at an average S&P 500 Index level of 3,150. From November of 2020 to early May of 2021, the investors then bought back an equivalent amount of equity mutual funds and ETFs at an average S&P

500 Index level of 3,850, 22 percent higher than the average sales only months earlier.

These two anecdotes are powerful on their own, but our analysis of equity fund flows indicates that over the last 25 years, investors have pulled money out of equity mutual funds and ETFs in 41 percent of the months in which the market fell and in 63 percent of the months in which they fell more than 5 percent. In other words, the sharper the sell-off, the more likely retail is to sell shares. Conversely, while it is clear that on average through the last 25 years, retail investors have been more likely to buy shares in a given month than sell (due to demographic trends and the need to accumulate retirement savings), we found that in months preceding a market decline of 5 percent or more, investors made net purchases of equities in 79 percent of cases while they were net purchasers in only 68 percent of the months that preceded a market rally of 5 percent or more. One could interpret this to be a signal of retail investors being afraid to invest just before sharp rallies that might follow previous market slides, but also being too optimistic about buying equities just before a market correction after a steep ascent. Both cases show that retail investors historically have not been particularly good at timing the market.

To be clear, we in no way intend to impugn the decisions of retail investors. Instead, the point of these observations about retail behavior is to contrast their decisions against those of professionally managed pension plans that typically have guidelines that prompt, if not require, them to add to assets when prices are down and reallocate away from assets when prices are up. Moreover, the disciplined process put in place for most public plans means there is ongoing monitoring and decision-making, while individuals managing their own retirement savings might only be aware of material changes in markets when they make headlines or when investors receive a quarterly statement, by which time it might be too late to act on a major sell-off or rally.

Investment decision making processes and outcomes are only part of a lengthy list of reasons why defined benefit plans lead to better outcomes for participants and society. It is clear that professionally managed plans benefit from economies of scale when negotiating fees for asset management services while defined contribution participants often pay "retail" for their mutual funds and ETFs. While 401(k) plans themselves have made significant progress on lowering investment fees assessed to participants, personally managed investments outside of employer plans (including throughout the post-retirement years when workers usually take their money out of their plans that have fiduciary protections) continue to be a weak spot for individually-managed retirement structures.

Over decades, the fee advantages alone compound out to material amounts of retirement wealth that is foregone for investors. As importantly, the asset allocation decisions of an individual are often dictated by the risk of outliving her retirement assets, or conversely the risk of losing too much money from investing in higher return assets that are more volatile. Participants in pooled retirement vehicles are much less susceptible to these risks as new participants who are younger allow older participants to remain invested in riskier, higher return asset classes like public and private equity and real estate. As they age, individuals typically need to sell-off these higher return asset classes and shift the funds into fixed income, at much lower returns, to manage the risk of capital losses in the short-term. Reducing short-term risk in these cases generally entails guarantying long-term opportunity costs.

Overall, the evidence from our analysis and multiple studies before it supports the view that defined benefit plans deliver superior outcomes to defined contribution. This is not to say that defined contribution plans are a bad idea. Rather, they are a great idea as a complement to defined benefit plans, as individuals can accrue additional retirement funds knowing they have a dependable stream of annuitized benefits from their pension. In the future, there are areas of further research that could be very valuable. For instance, are there ways to make DC plan decision-making more similar to that of DB plans? Also, are participants who invest in lifetime funds less likely to buy and sell due to short-term market changes, given that their funds hold different asset classes that would get rebalanced? Ways to professionalize the decision-making of DC investments and methods to pool risk to allow participants to optimize their asset allocation more effectively would be valuable additions, as would the purchasing power related to asset management fees that would come with larger sums of capital to be invested.

VIII. TAKEAWAYS

The Great Recession sparked a prolonged period of time when investment markets slumped, presenting a major challenge to retirement plans and individual investors alike. Looking back through this difficult period, and the years that followed, presents an opportunity to see how public pension plans dealt with the greatest economic challenge

since the Great Depression.

First, it took a number of years for asset levels to recover from the Great Recession. The median plan needed six years to return to the level of assets that were under management in 2007. Throughout the period of the downturn and recovery, roughly 2007-2013, public plans still made $1.4 trillion in benefit payments. Over the entire period from 2007 to 2021, public plans have paid out $3.8 trillion in benefits and another $89 billion in withdrawals.[20] Meanwhile, by the end of fiscal year 2021, public plan assets rose to levels that–on average–are 88 percent higher than in 2007. That public plans still were able to pay benefits while recovering and then growing their asset base demonstrates that these plans are built to weather the ups and downs of the market, while still providing retirement security to their members.

Second, public plans have been adopting a more fiscally cautious approach, including a more pessimistic outlook for future market returns, to develop their contribution levels. This strengthens a plan for the future, but causes the plan to look more poorly funded in the short term as this inflates liabilities. These assumption changes continue to have a material impact on stated funding levels and ratios today.

Among the three sample plans analyzed for this paper, assumption changes have moved the funding goal line by 13 to 21 percent, depending on the plan. For these plans, most of the increase in unfunded liabilities and contribution amounts that surfaced between 2008-2021 stems from the changes in plan assumptions, not investments falling short of targets.

Callan notes that over the past 46 years, public plans have done very well in achieving their investment goals.[21] They note that "The average fiscal year return between 1976 and 2021 was 9.7% and the median was 9.6%." And relevant to this paper, "the loss experienced during fiscal 2009 due to the Global Financial Crisis was greater than all the other fiscal year losses combined." A long-term perspective helps to assess the performance of public plans more accurately. Those who have allowed their views on public pensions to be shaped by one year of historically bad investment performance are missing the bigger picture that public plans have actually done remarkably well in the decades since the switch to prefunding of pension obligations.

Third, in addition to adopting generational mortality, which builds future mortality improvements into today's assumptions, and lowering discount rates, funding policies have evolved significantly to pay down outstanding liabilities more quickly in future years. This move towards stronger prefunding and shorter amortization periods continues a broader trend that started after 1970 when most plans still used pay-go funding and were just beginning the shift to prefunding.

In the last 10 years there's been a massive shift in the assessment of future mortality expectations for public plans, through adoption of generational mortality projections, public-specific tables, and benefit-weighted tables, all of which have increased the assessment of liability and cost to the plan in the near term. At the same time, these changes have led to more accurate and sometimes even conservative assessments of total liability, and are built in such a way that actuaries do not expect significant changes in the future like they used to 15 years ago. The strength of these assumptions has improved dramatically over that period. The experience studies actuaries are conducting today (for plans that have adopted these three changes) tend to have very little liability change due to mortality assumptions (only minor calibrations up or down), and it is expected that will continue going forward, despite the expectation that public plan members will continue to live longer as time goes on.

Even while plans changed assumptions, they also continued to deliver strong investment returns by rebalancing assets to stay aligned with strategy asset allocation targets. These reallocations typically involved moving capital out of asset classes that appreciated substantially into other asset classes that had underperformed. The net outcome was that public pension plans were selling high and buying low.

Since the Great Recession, public plans have reduced their exposure to fixed income and to a lesser degree to fixed income assets while increasing their holdings of real estate, hedge funds, and private equity. These decisions were sensible in a period of extraordinarily low inflation and interest rates and when equity valuations were rising at a double-digit pace year after year. In the environment facing investors in 2022 with multi-decade high levels of inflation and rising interest rates, the future course of asset allocation decisions could look materially different from what we have seen since the GFC.

The behavior of public pension plans stands in sharp contrast with the actions of retail investors who tend to react to sharp market sell-offs by selling near the lows and tend to become excessively optimistic when markets are near highs. While defined contribution plans are an excellent complement to defined benefit plans, the evidence suggests that shifting responsibility to individuals for retirement savings and asset allocation decisions is likely to lead to suboptimal outcomes for the individuals involved and society at large.

IX. CONCLUSION

The devastating effects of the Great Recession lingered over the American economy for years after the official end of the recession. Public pension plans in particular have felt the impact of the crisis reverberate for years, especially as the period of the recession seemed to color many people's views regarding public pensions. A more balanced and nuanced view with the perspective of more than a decade since the recession's end shows that public plans actually managed the crisis as well as could be expected and have used the period of the recovery and the years that followed to strengthen their underlying position in preparation for a future crisis on the scale of the Great Recession.

Plans have adopted a number of strategies to fortify their funding basis, so they will be better equipped to weather future shocks. Nearly every plan has lowered its discount rate (the assumed rate of return on investments) and the median assumed rate has moved from eight percent to seven percent. This reflects signals from financial markets that returns will not be as high as in years past. Most plans also have made the move to generational mortality tables, which assumes that people will live longer in the future, and have built the costs of that increased longevity into their contribution rates. Finally, many plans have adopted shorter amortization periods to pay down any unfunded liability more quickly.

The investing environment for public plans, as well as other institutional and individual investors, has become more complex and expensive in the years following the Great Recession. Plans today have to carry more risk in order to achieve the same returns that they could with safer assets three decades ago. This has led to marked changes in the asset allocations of public plans over the past fifteen years; however, the professional management of public plan assets does lead to positive outcomes as investment staffs actively work to rebalance portfolios and take advantage of moves in the market.

The Great Recession was a significant event for nearly everyone involved in the American economy and public pension plans were no exception. The Great Recession ended more than thirteen years ago and it is clear now that public plans have taken what they learned from the recession and made adjustments to better prepare for future economic downturns. The remarkable growth in public plan assets over the past decade, coupled with a series of major assumption changes, attest to the strength and longevity of these plans.

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August 2022, Number 22-13

PUBLIC PENSIONS CONTEND WITH FALLING MARKETS AND RISING INFLATION

By Jean-Pierre Aubry*

Introduction

Fiscal year 2022 has been difficult for state and local pension plans – with record investment losses and rising pension outlays due to inflation. This experience is in sharp contrast to 2021, when pension funds enjoyed higher investment returns, as well as increased contributions from sponsoring governments.[1]

This *brief* updates the status of state and local plans as of 2021 and uses what we know about 2022 to estimate their current condition.

The discussion is organized as follows. The first section shows that, over the two-year period of 2021 and 2022, the funded ratio for public plans first rose and has since fallen back to about 74 percent. The second section explores how the recent rise in inflation affects pension outlays, arguing that limits to cost-of-living adjustments (COLAs) mute the impact of inflation on pension fund finances. The flip side, of course, is that the limited COLAs also erode the purchasing power of retiree pension benefits, which is especially harmful to those not covered by Social Security. The final section concludes that pension funds continue to muddle along, with the recent rise in inflation impacting the finances of retirees more than the pension funds themselves.

Funded Status of Public Plans

As of July 2022, just over half of the roughly 200 major state and local pension plans in the *Public Plans Database* (PPD) had reported their 2021 funded levels.[2] None had reported 2022 levels. To describe the current status of public plans, this analysis makes plan-by-plan projections using data provided in each plan's most recently released reports.[3] Based on the 2021 data and projections for 2022, the aggregate actuarial funded ratio rose by 4 percentage points in 2021 and decreased by 3 percentage points in 2022 (see Figure 1 on the next page).[4] Thus, despite the recent decline in the stock market, pension funded ratios have increased slightly over the last two-year period.[5]

The actuarially determined contribution rate – the rate required to keep the plan on a steady path toward full funding – dropped about 2 percentage points of payroll in 2021 from 27.9 to 26.0 percent of payroll (see Figure 2 on the next page).[6] But, it is estimated to return to 27.9 percentage points in 2022.[7] Virtually all of the increase in contribution rates over the past decade has stemmed from an increase in the amortization payments to cover rising unfunded liabilities.[8] Today, the portion of the required contri-

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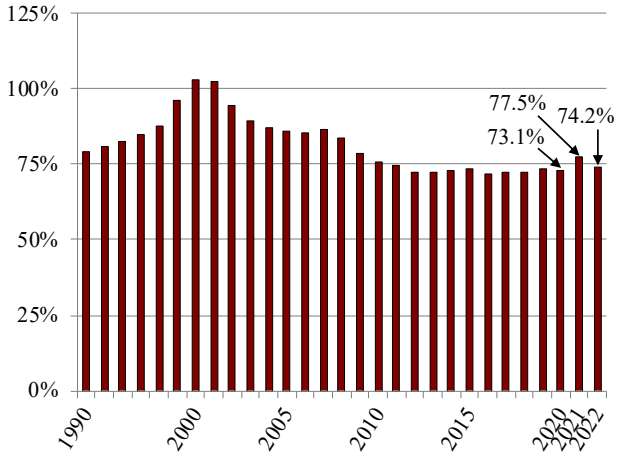
The author thanks Oliver Shih, Christine Manuelo, and Victor Brashears for excellent assistance in data and research.

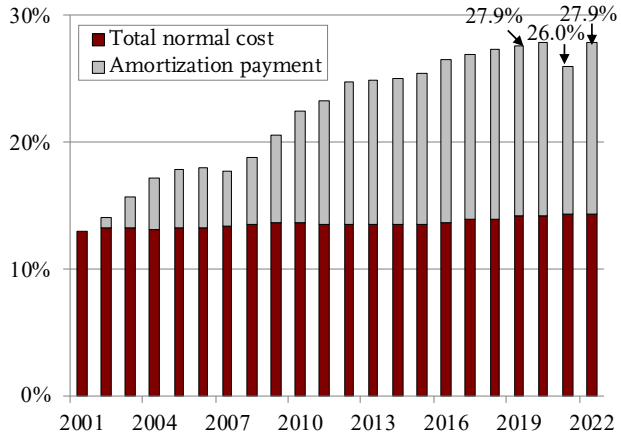
Figure 1. Aggregate Funded Ratio for State and Local Pension Plans, FY 1990-2022



Sources: Author's estimates based on various plan financial reports; and *Public Plans Database* (PPD) (2001-2021).

bution dedicated to paying down unfunded liabilities is about 14 percent of payroll (see the gray bars in Figure 2).[9]

Figure 2. Required Annual Contribution as a Percentage of Payrolls, FY 2000-2022



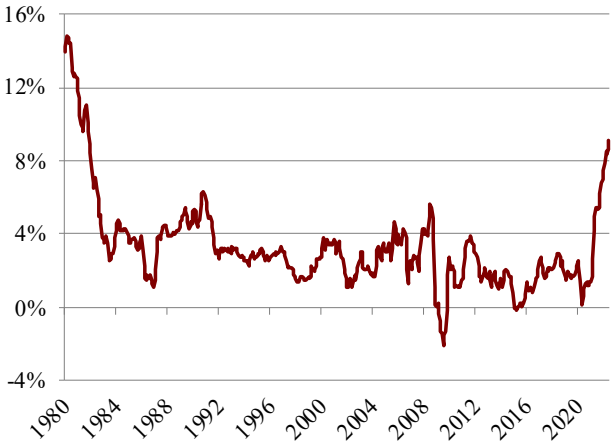
Sources: Author's estimates based on various plan financial reports; and PPD (2001-2021).

Importantly, many pension researchers (and some practitioners) question the adequacy of actuarially determined contributions as they are typically calculated – highlighting the use of overly optimistic investment return assumptions and relatively lax methods for amortizing the unfunded liability by backloading payments. If investment return assumptions more closely reflected actual performance since 2001, and plans adopted more stringent approaches to amortizing their unfunded liabilities (by using level dollar instead of level percent of pay), the average actuarial contribution in 2022 would rise from 27.9 to 39.2 percent of payroll.[10]

Rising Inflation and Public Plan Finances

In addition to the recent stock market decline, public plans face the challenge of higher future outlays due to inflation. In June 2022, the Consumer Price Index for All Urban Consumers rose at a 12-month pace of 9.1 percent – a rate not seen in four decades (see Figure 3).

Figure 3. Monthly Year-over-Year Increase in the CPI-U, June 1980 to June 2022



Source: U.S. Bureau of Labor Statistics (2022).

Inflation puts direct pressure on public pension finances because, unlike defined benefit plans in the private sector, these plans provide some form of COLA. While these adjustments are far from straightforward, they can be grouped into four main categories as summarized below.

Fixed rate: an automatic annual adjustment that is a constant percentage or dollar amount not directly tied to the CPI. For example, Hawaii ERS provides a 1.5-percent annual increase for those hired after 2012 and a 2.5-percent annual increase for those hired prior.

Ad-hoc: an adjustment made at the discretion of the retirement system board or the legislature. These adjustments often occur intermittently and do not necessarily reflect current inflation. For example, the North Carolina legislature approved one-time COLAs in 2016 (1 percent), 2018 (1 percent), 2021 (2 percent), and 2022 (3 percent).

Investment-based: an adjustment that is tied to some financial metric, generally the plan's overall funded level, investment return, or level of assets in a special COLA fund. For example, the COLA for members of Arizona SRS who were hired before 2013 is contingent on SRS earning more than an 8-percent investment return on its actuarial assets.

CPI-linked: an automatic annual adjustment tied to the CPI. Even this seemingly straightforward approach, however, appears with limits and caps.

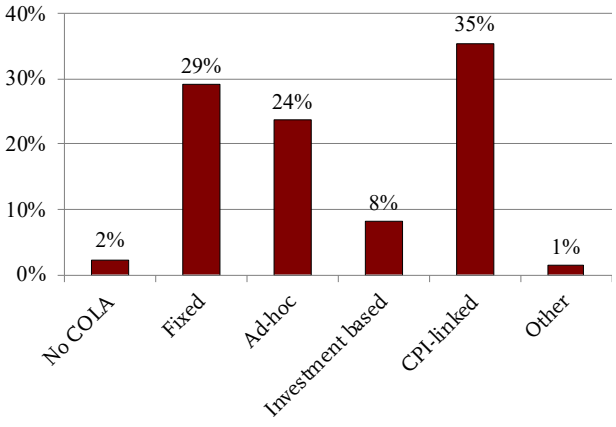
While rising inflation could lead to higher payments for plans with all COLA types (e.g., pressure from retirees struggling with high inflation could convince boards and legislatures to grant ad hoc benefit increases), it should – almost by definition – impact plans that have an automatic CPI-linked COLA.[11] The questions are how prevalent are these types of COLAs and how big an increase in costs are we likely to see.

The Impact of CPI-Linked COLAs

Currently, just over a third of major state and local public plans provide CPI-linked COLAs to their current retirees (see Figure 4).[12] A closer look at these plans reveals that they are larger (in terms of assets), better funded, more likely to be locally administered, and more likely to be public safety (i.e., police and/or fire) plans.

The vast majority of plans with CPI-linked COLAs cover only a portion of annual inflation increases and/or place caps on the maximum COLA (see Table 1).[13] On average, CPI-linked plans guarantee about 85 percent of the CPI increase up to a maximum of 3.5 percent. As a result, the impact of higher-than-expected inflation on the benefit payouts will be somewhat muted.

Figure 4. Distribution of State and Local Plans, by COLA for Currently Retired Members



Sources: Author's estimates based on various plan financial reports; NASRA (2022); and PPD (2001-2021).

Table 1. Breakdown of CPI-Linked COLAs, by Indexation and Cap

COLA type	Share of CPI-linked plans
Fully-indexed, no cap	6.4%
Fully-indexed, cap	62.8
Partially-indexed, no cap	3.8
Partially-indexed, cap	26.9
Total	100.0%

Sources: Author's estimates based on various plan financial reports; Brainard and Brown (2022); and PPD (2001-2021).

One way to illustrate the impact that high rates of inflation have on CPI-linked plans is to calculate the increase in the present value of future benefits (i.e., the pension liability) for a hypothetical retiree covered by various CPI-linked COLA policies under two inflation scenarios.[14] The first scenario presumes inflation matches plans' average assumptions, holding steady at 2.5 percent each year.[15] The second scenario presumes that inflation is 8 percent for two years, then steadily falls back to 2.5 percent over the following two years and holds steady thereafter.[16]

This simple calculation suggests that, with 100 percent adjustment and no cap, outlays would be 14.8 percent higher under the second scenario with high inflation. But, as noted, most COLAs are capped and involve partial indexing, so that high inflation for the next few years would increase retiree liabilities between 1.8 and 5.7 percent for most CPI-linked plans (see shaded area in Table 2 on the next page). In turn, this would increase amortization payments between 0.4 and 1.6 percent of payroll – a relatively modest increase given the 27.9-percent contribution rate estimated for 2022.[17]

Table 2. Impact of Brief High-Inflation Period on the Present Value of Lifetime Benefits

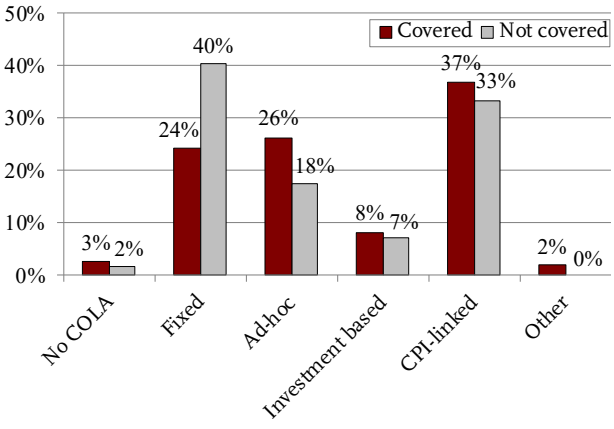
CPI-index	COLA cap			
	2.5%	3.0%	3.5%	No cap
50%	3.5%	4.7%	5.7%	7.2%
75%	1.8	3.2	4.6	11.0
100%	0.0	1.4	2.8	14.8

Note: Shaded area = partially indexed or capped COLAs.
Source: Author's estimates.

Impact on Retirees

The flip side of inflation's muted impact on pension fund finances due to limited COLAs is, of course, the eroding of purchasing power of retiree pension benefits. This impact is especially harmful to the 25 percent of state and local workers not covered by Social Security, which provides fully-indexed retirement benefits.[18] Looking at the COLAs by whether a plan is covered by Social Security reveals some interesting differences. First, noncovered plans are more likely to have fixed-rate COLAs and less likely to have ad-hoc provisions – they are only slightly less likely to have CPI-linked COLAs (see Figure 5).

Figure 5. Distribution of State and Local Plans, by COLA for Currently Retired Members



Sources: Author's estimates based on various plan financial reports; NASRA (2022); and PPD (2001-2021).

Second, the average fixed-rate COLA for noncovered plans is only 3 percent – so these types of COLAs do not fully protect retirees during periods of very high inflation. Finally, the CPI-linked COLAs for noncovered plans are less likely to be capped then those for covered plans, but the overwhelming majority still cap their CPI-linked COLAs (see Table 3). So, the real value of benefits provided by most noncovered plans is likely to erode during periods of high inflation.

Table 3. Breakdown of CPI-Linked COLAs, by Indexation, Cap, and Social Security Coverage

COLA type	SS covered	Not SS covered
Fully-indexed, no cap	3.4%	15.8%
Fully-indexed, cap	61.0	68.4
Partially-indexed, no cap	5.1	0.0
Partially-indexed, cap	30.5	15.8
Total	100.0%	100.0%

Source: Author's estimates based on various plan financial reports; NASRA (2022); and PPD (2001-2021).

Conclusion

In 2021, pension funds enjoyed higher investment returns and sponsoring governments were able to make their required pension contributions due to the fiscal windfalls stemming from federal COVID relief and increased tax revenue. Unfortunately, 2022 has been a very different story – with record investment losses and rising pension outlays due to inflation.

Overall, this update finds that, over the two-year period of 2021 and 2022, the funded ratio for public plans first rose and has since fallen back to about 74 percent. Additionally, limits to the COLAs provided by plans mute the impact that rising inflation will have on public pension finances. The flip side is that the limited COLAs also erode the purchasing power of retiree pension benefits, which is especially harmful to those not covered by Social Security. The big unknown, of course, is whether such high inflation will result in changes to current COLA policies to provide greater inflation protection for retirees – which would cost plans more.

Endnotes

1 Aubry and Wandrei (2021).

2 The PPD contains financial data from 2001 to the present (based on the latest available data) for 215 of the largest state and local plans in the United States. This sample covers over 95 percent of state and local pension members and assets.

3 Investment performance is based on each plan's asset allocation and the performance of selected indices – Russell 3000 for equites; S&P U.S. Aggregate Bond Index for fixed income; S&P Treasury Bill 3-6 Month Index for cash; S&P Listed Private Equity Index for private equity; HFRI 500 Fund Weighted Composite Index for hedge funds; S&P GSCI for commodities; and S&P U.S. Real Estate Index for real estate. For cash flows, contributions and benefits grow based on each plan's annualized growth over the most recent for a five-year period. The change in market assets is estimated using the simplified formula: Asset(t+1) = (Asset(t) * investment return) + (½ * cash flows * investment return) + (½ * cash flows). Actuarial assets are calculated using the smoothing methods reported in each plan's most recent actuarial valuation. Liability growth is based on interest on the prior year's liability plus normal cost net of benefit payments.

4 Aggregate data can obscure the heterogeneity among public plans. See Appendix A for data on the current distribution of plan funded status and how it has changed over time. For the most recent funded ratios reported by individual plans, access the PPD's Interactive Data Browser.

5 The ups and downs of the market have a muted impact on the funded ratio because of the actuarial smoothing techniques used when reporting actuarial assets. But, even using market assets, current funded ratios are similar to 2020. See Appendix B for a discussion of actuarial versus market assets.

6 The PPD sample includes plans that are covered by Social Security and those that are not. For covered plans, the average contribution rate is estimated to be 26.5 percent of payroll in 2022, while the average rate for non-covered plans is estimated to be 31.8 percent.

7 See Appendix C for a discussion on the percentage of required contributions that pension funds actually receive from sponsoring state and local governments.

8 In addition to rising unfunded liabilities, low payroll growth has also contributed somewhat to rising contribution rates by lowering the base over which amortization costs are expressed.

9 Some plans share rising costs with employees through some form of risk-sharing. For example, Wisconsin RS and Arizona Public Safety define employee and employer contributions as a share of the total required contribution of the plan, so employee and employer costs rise proportionally if unfunded liabilities rise.

10 Currently, the majority of plans use an assumed return of just over 7 percent (a decline from the average 8-percent rate plans used in 2001) and backload the amortization of their unfunded liabilities by using a level percent of payroll method to calculate their actuarially determined contribution. However, the average annualized investment return for public plans over the past 10 years (including this most recent downturn) has been closer to 5.5 percent. Further, the more stringent approach to amortizing unfunded liabilities is to use the level dollar method that pays down a larger portion of unfunded liabilities in earlier years.

11 The COLA for some non-CPI-linked plans might also be *automatically* altered by a significant increase in the CPI. For example, some fixed-rate COLAs stipulate automatic increases in the fixed rate once certain CPI thresholds are breached. Additionally, some plans have semi-automated decision-making processes for determining ad-hoc COLAs that tend to result in annual COLAs that closely follow CPI.

12 While many plans altered their COLAs in the wake of the global financial crisis, the changes often impacted new hires only. This *brief* focuses on the COLA benefits currently being offered to the majority of retired plan members, because it is their COLAs that will be directly affected by the recent rise in inflation rates. In addition, inflation would also have some impact on wages, which would ultimately increase long-term costs for pension funds.

13 Of the uncapped CPI-linked plans, only one – Jersey City Municipal – has a funded ratio below 72 percent. In fact, five of the six plans have funded ratios above 80 percent.

14 For this analysis, future benefits are discounted at 7.1 percent – the average discount rate used by major state and local pension plans. With lower discount rates, the difference in benefits scheduled in later years – due to greater COLA increases in the earlier years – would be more valuable and the difference in liabilities greater.

15 The average inflation assumption for public pensions has steadily declined since 2001 – from 4 percent to about 2.5 percent. See Aubry, Munnell, and Wandrei (2018) for more on how the inflation assumption impacts public pension finances.

16 As of June 2022, the University of Michigan reports the U.S. Inflation Expectations for the next 12 months to be 5.3 percent. As of July 11, 2022, the Federal Reserve Bank of St. Louis reports the 5-year breakeven inflation rate (the difference between the interest rate on 5-year Treasury Bonds and 5-year TIPS) as 2.56 percent.

17 Based on the fact that retiree liabilities make up about half of total pension liabilities, a 1.8- and 5.7-percent increase in retiree liabilities translates to a 1- and 3-percent increase – respectively – in the total liability (.018/.5=.009 and .057/.5=.0285). Based on the 74-percent funded ratio in 2022, a 1- and 3-percent increase in the total liability translates to a 3- and 11-percent increase – respectively – in the total unfunded liability (.009/.26=.03 and .0285/.26=.11). Based on the 14-percent amortization rate in 2022, this would increase the contribution rate between 0.4 and 1.6 percent of payroll (.141*.03=.004 and .141*.11=.016).

18 For more on how public pension retirement benefits for noncovered workers compare to those provided by Social Security, see Aubry et al. (2022).

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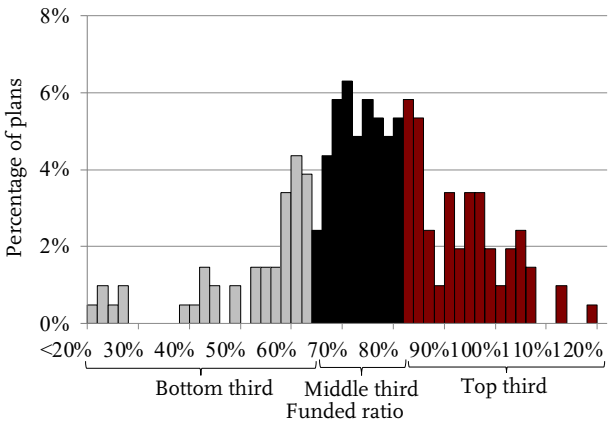
APPENDIX

Appendix A. Distribution of Plans' Actuarial Funded Ratio

While the aggregate funded ratio provides a useful measure of the public pension landscape at large, it also can obscure variations in funding at the plan level. Figure A1 shows the distribution of 2022 funded ratios for the 220 plans in the PPD. This figure separates PPD plans into thirds based on their current actuarial funded status. The funded-ratio boundaries for the three groups were 15-67 percent for the bottom third, 68-81 percent for the middle third, and 82-117 percent for the top third. The average 2022 funded ratio for each group was 54 percent for the bottom third, 75.3 percent for the middle third, and 88.4 percent for the top third.

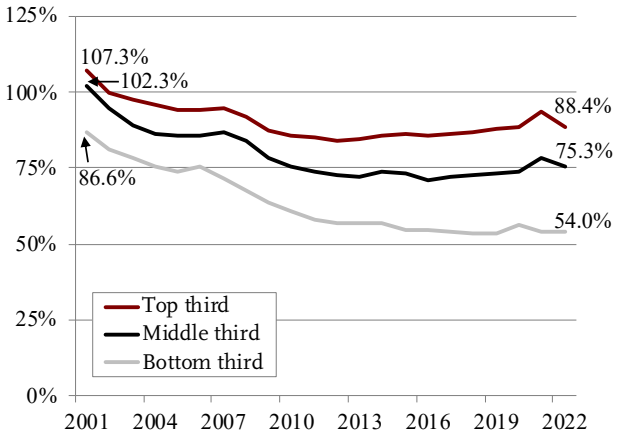
Figure A1. Distribution of Plans by Funded Ratio, FY 2022



Sources: Author's estimates based on various plan financial reports; and PPD (2001-2021).

Figure A2 tracks the average funded status for each third from 2001-2022. While the bottom third has been consistently less funded throughout the period, the average funded ratios for all groups were above 85 percent in 2001. However, over time, the funded status of the three groups has grown apart. Much of this divergence has occurred since the 2008-2009 financial crisis as the worst-funded group has continued to deteriorate while the other two groups have stabilized. As a result, the gap between the top and bottom groups in 2022 was 34.4 percentage points – much larger than in 2001.

Figure A2. Average Funded Ratios for Plans Grouped by 2022 Funded Status, FY 2001-2022

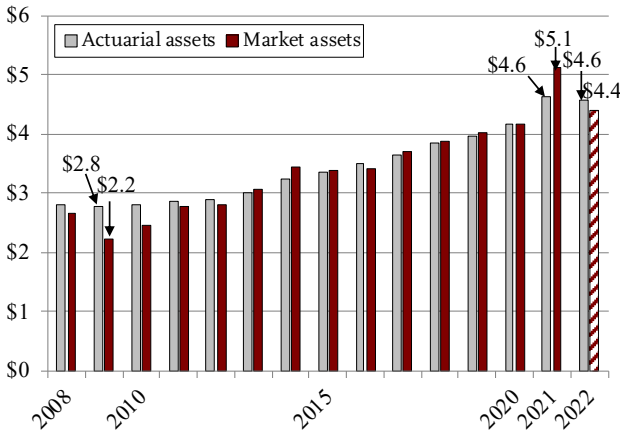


Sources: Author's estimates based on various plan financial reports; and PPD (2001-2021).

Appendix B. Changes in Actuarial and Market Assets

Actuarial asset smoothing limits volatility in the funded status by incrementally recognizing – typically, over five years – market gains and losses. As a result, actuarial asset values are projected to decrease much less than market values in 2022 (see Figure B1).

Figure B1. Actuarial vs. Market Value of State and Local Pension Assets, FY 2008-2022, Trillions of Dollars



Sources: Author's estimates based on various plan financial reports; and PPD (2001-2021).

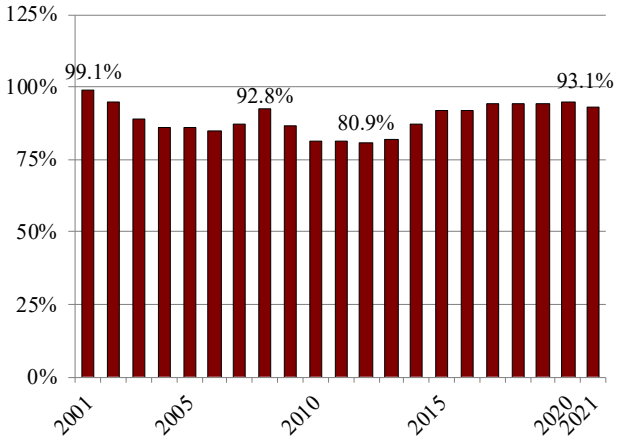
This approach limits the decline in funded levels in 2022 – as during the 2008-2009 financial crisis – but it will also reduce the increase in funded status when markets rebound because portions of the 2022 market loss will continue to be recognized incrementally in actuarial asset values.

Appendix C. Percentage of Actuarially Determined Contribution Paid

Because financial and economic downturns often coincide, increases in required contributions tend to occur during periods when states and localities see a dramatic decline in their revenues. As a result, governments have historically paid a lower percentage of the required contribution immediately following major downturns as they struggle to find additional funds, but they do eventually increase their payments to meet the actuarial requirements.

Figure C1 shows how the percentage of the actuarially determined contribution paid fell in the wake of the dot.com crash of the early 2000s and the financial crisis of 2008-2009. As budgets recovered and the funded ratios stabilized as a result of stock market gains, the required contributions also stabilized and the percentage of required contribution paid increased.

Figure C1. Aggregate Percentage of Actuarially Determined Contribution Paid, FY 2001-2021

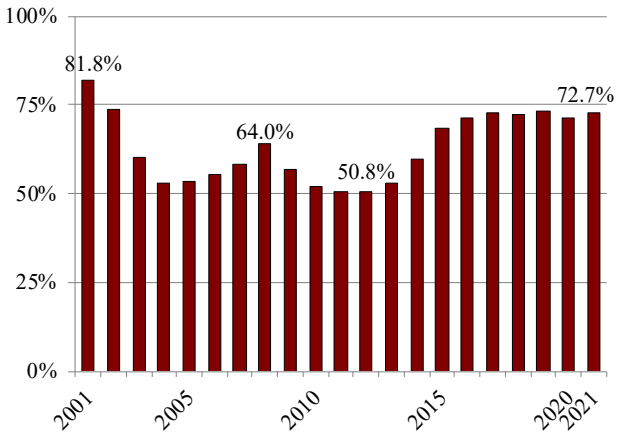


Note: 2021 data include about 60 percent of PPD plans, which also represent about half of total members in PPD plans.
Sources:: Various actuarial valuations and financial reports; and PPD (2001-2021).

Interestingly, the share of plans that receive their required contributions in full also fluctuates over time but never drops below 50 percent (see Figure C2 on the next page). This pattern suggests two types of

sponsoring governments – one that is committed to full contributions and another that rarely pays in full with fluctuating levels of underpayment dependent on fiscal circumstances.

Figure C2. Share of Plans Paying the Full Actuarially Determined Contribution, FY 2001-2021



Note: 2021 data include about 60 percent of PPD plans, which also represent about half of total members in PPD plans.
Sources: Various actuarial valuations and financial reports; and PPD (2001-2021).

CENTER *for*
RETIREMENT
RESEARCH
at BOSTON COLLEGE

About the Center

The mission of the Center for Retirement Research at Boston College is to produce first-class research and educational tools and forge a strong link between the academic community and decision-makers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center conducts a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception in 1998, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

Affiliated Institutions

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Mathematica – Center for Studying Disability Policy
Syracuse University
Urban Institute

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The Center for Retirement Research thanks AARP, Bank of America, Capital Group, First Eagle Investments, State Street Global Advisors, TIAA Institute, and Transamerica Institute for support of this project.

The research reported herein was supported by the Center's Partnership Program. The findings and conclusions expressed are solely those of the author and do not represent the views or policy of the partners, Boston College, or the Center for Retirement Research.

Markets

Public Pensions Face Worst Funding Decline Since Great Recession

- Funding ratio to drop to 77.9%, losing half of 2021 gains
- Calpers, the biggest pension, lost 6.1% in latest fiscal year

Photographer: David Paul Morris/Bloomberg

By Mackenzie Hawkins
July 22, 2022 at 2:47 PM CDT

US public pension funds are on pace for their deepest financial setback since the Great Recession as turmoil in global markets this year threaten to leave taxpayers and government workers on the hook.

Steep stock and bond losses are set to leave state and local pensions this year with enough to cover 77.9% of all the benefits that have been promised, down from 84.8% in 2021, according to the New York-based nonprofit Equable Institute. That reflects almost a half trillion dollar increase in the gap between assets and what's owed to retirees. The biggest US fund, the California Public Employees' Retirement System, said this week it lost 6.1%, its worst performance since 2009.

Public funds lost about 10.4% on average in 2022, according to Equable Institute, as surging inflation and growing fears of a recession hammered the bond market and drove stocks to their steepest quarterly decline since the first wave of Covid-19 in early 2020. The losses pared about half of the outsized 25% gain funds saw on average last year as monetary stimulus helped markets rally during the pandemic.

“The threat to states is not the investment losses,” said Equable executive director Anthony Randazzo. “The threat is the contribution rates that are going to have to go up because of the investment losses.”

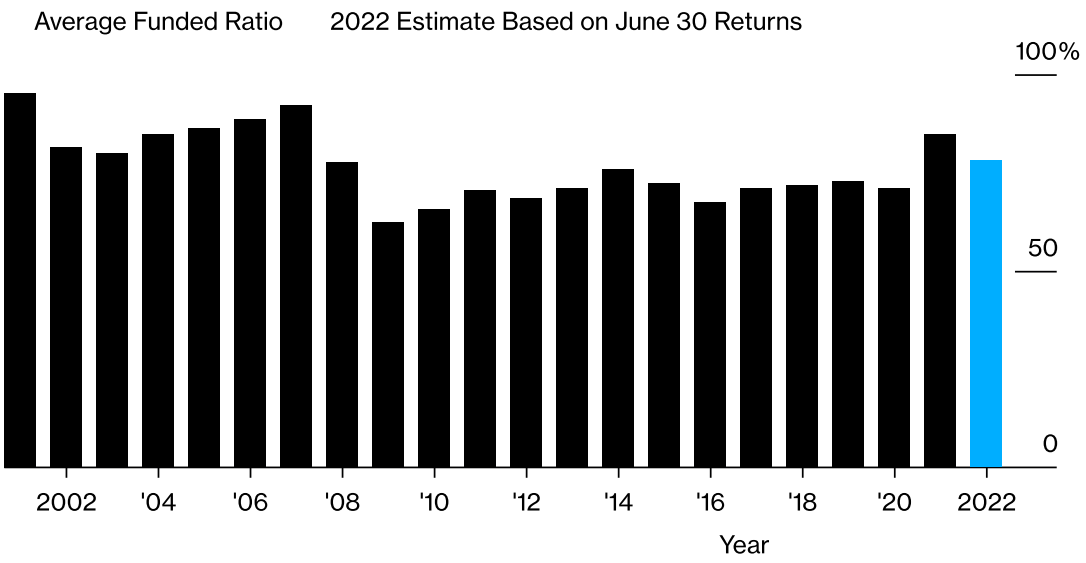
When pensions miss their assumed annual return targets -- about 7% on average -- states and local governments have to increase funding or cut costs by raising employee contributions or freezing cost-of-living increases. To dampen the impact of market gyrations, most government pensions phase in additional contributions when returns fall short of targets.

Randazzo estimates that payroll contributions, currently around 30%, will climb to 35% in the next five to eight years.

The unfunded liability of public pensions had fallen to $933 billion in 2021 from $1.7 trillion a year earlier, according to Equable Institute. It’s projected to climb back to $1.4 trillion in 2022.

Pension Woes

State and local pensions projected to lose half of 2021 gains



Source: Equable Institute

Wilshire Associates, a consultant to pension funds, earlier this month said losses in the second quarter left state retirement systems with assets sufficient to cover 70.1% of promised benefits, down from 81.4% the quarter prior.

Public pensions, which count on annual gains to cover benefits promised to retirees, have increased their allocations to riskier investments in stocks, private equity and high-yield bonds to meet long-term targets. A land war in Europe, inflation, tightening monetary policy and fear of recession of have led to widespread losses in some of those markets. Private equity now makes up more than 10% of state pension portfolios, according to Equable Institute.

The Public Employee Retirement System of Idaho lost 9.5% for the fiscal year ending June 30, the fourth-worst return in its history. The San Francisco Employees’ Retirement System -- which was 112% funded in 2021 -- fared comparatively well, losing a more modest 2.8%.

There is a silver lining, says Jean-Pierre Aubry, the associate director of state and local research at the Center for Retirement Research at Boston College. State and local governments have slowed liability growth by about half since 2000 by boosting contribution payments and narrowing benefits.

“This type of market of volatility results in higher contribution rates,” Aubry said. “But it doesn’t put the pension funds’ overall finances at real risk or the benefits being paid at any real risk.”

Related: Pension Funding Woes Are Back as 2021 Returns Vanish: Joe Mysak

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How the Market Downturn Could Affect Public Pension Funds

States and cities face a host of short- and long-term challenges

ARTICLE

April 23, 2020

By: Greg Mennis

Read time: 4 min

Projects: Public Sector Retirement Systems

Getty Images

State and local governments are playing a critical role in managing the COVID-19 pandemic and their top priorities right now are leading and supporting public health and safety efforts. But over the next several months, policymakers will have to examine the impact of current economic conditions on the budgets they oversee, particularly dramatically reduced revenues and the effect of financial market volatility on public pensions.

Nationwide, state pensions hold 75% of their assets in stocks and alternative investments, the vehicles most correlated with swings in the financial markets. As a result of the stock market's recent decline and economic conditions more generally, most public pension funds are on pace for their first fiscal year loss since 2009. In the aggregate, they are currently short of annual return targets by 10 to 15 percent. Absent positive returns in the next three months, overall state pension debt, currently $1.2 trillion, could increase by $500 billion, reaching an all-time high.

It's impossible to forecast precisely the magnitude of the coming recession, and every state will face unique issues managing its pension funds at a time of economic turmoil and in the aftermath of the pandemic. But every jurisdiction can expect to be challenged with how to best meet funding obligations and effectively manage plan health going forward.

Most public pension systems will have to grapple with these four key issues:

Difficulty making required contributions

The most pressing issue for policymakers will be meeting expected annual payments to their funds in light of projected declines in revenue for the upcoming fiscal year.

Although recent investment shortfalls will require increased contributions to make up the losses over time, most state and local governments have already set or proposed annual contributions for the next fiscal year. That means this effect will not be immediate. Still, if revenues decline as expected, efforts to meet even these funding requirements—which are expected to increase by an average of 6% over current levels—would have the effect of crowding out spending for other government services as spending for health and safety net programs are likely to increase. As a result, states will have tough choices to make in terms of balancing their plans to reduce pension debt with preserving core services.

The pressure to meet pension funding targets will be most acute in jurisdictions that had severely underfunded pension systems before the pandemic took hold. In Illinois, for example, nearly 1 in 5 state tax dollars is already going to pay for pensions before factoring in any revenue declines. And in New Jersey, the state's current pension funding schedule calls for an increase of more than $800 million in state contributions next year, 20 percent above this year's requirement.

Municipalities and school districts in California face similar challenges, as many were already anticipating double-digit contribution increases. And while the risk of pension plan insolvency is generally low, there are exceptions: Chicago's system, for example, is only 23% funded and was already struggling to keep assets from becoming depleted.

Although the need to make difficult decisions to preserve critical services is understandable, reductions in required contributions will increase pension costs over the long term and may also present challenges for funds in meeting their investment policies and goals in the short term. State contributions are the largest source of funds used to make benefit payments to retirees. That means any reductions or delays may require plans to sell additional assets to meet payment requirements. Doing so could necessitate additional rebalancing of portfolio funds to align with asset allocation targets, which could then hinder their ability to meet performance goals.

Lower assumed rates of return

As plans manage the short-term effects of market volatility and revenue pressures, they will likely also need to consider continued downward adjustments to assumed rates of return on investments. Pension funds are long-term investors that base return targets on long-term expectations, rather than a single year of gains or losses. Projections were already resulting in downward revisions of return assumptions before the outbreak. Many lowered expectations based on predictions of slower long-term economic growth in the aftermath of the long recovery that followed the Great Recession.

Although the timing and shape of a new recession is uncertain, long-term macro projections are unlikely to improve, and so we anticipate this downward trend to continue. These reductions would continue the three-year trend, which already saw assumed annual return rates decline from 7.5% to 7.2%. However, Pew and other experts had estimated that long-term returns would be closer to 6.5% for current portfolios—before factoring in the potential impact of the pandemic.

A need for stress testing

The scenarios examined in pension stress tests, the simulations that build on existing actuarial projections to help budget decision-makers examine and plan responses to economic downturns, typically include sharp stock market drops followed by a recession. The tests are designed to help policymakers develop effective long-term approaches that can withstand real-world conditions.

Scenario modeling starts with a standard framework to capture the economic and financial market variables that drive outcomes. This provides a foundation to incorporate state-specific pension policies as well as revenue projections and budget impact to account for possible recession scenarios. This approach can help ensure that short-term decisions on

pensions are informed by a longer-term perspective and better prepare state and local budgets for periods of economic uncertainty.

States with existing methods in place—10 now have statutes that require pension stress testing—are well positioned to update projections based on the expected impact of COVID-19. They can serve as models for other states looking to adopt similar practices.

Monitoring effectiveness of cost sharing

Although the impact of the pandemic on asset prices and government revenue will hit all state and local pension plans, the severity is expected to vary, with some jurisdictions likely to remain relatively stable because of policies put in place before the downturn. Wisconsin and South Dakota in particular may weather the current downtown better than many others, in large part because of variable benefit features known as cost sharing.

These mechanisms distribute risk among employers, employees, and retirees to protect plan fiscal health and stabilize employer costs. The outcomes for Wisconsin and South Dakota, as well as states that recently adopted cost-sharing policies, may influence whether similar provisions are considered in other jurisdictions in the years ahead.

Greg Mennis directs The Pew Charitable Trusts' public sector retirement systems project.

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EMPLOYER NEWSLETTER

TFFR Mission Statement:

To administer a comprehensive retirement program that provides North Dakota public educators with a foundation for retirement security.

NORTH Dakota Be Legendary. | Teachers' Fund For Retirement
RETIREMENT & INVESTMENT

Briefly

OCTOBER 2022

Employing Retirees in Critical Shortage Areas

In addition to the "General Rule," retired teachers may also return to TFFR covered employment in an approved "Critical Shortage Area" (CSA) without losing retirement benefits. If retired prior to January 1, 2001, no waiting period is required. However, if the TFFR retirement date is after January 1, 2001, a one year waiting period is required. Only non-contracted substitute teaching may be performed during the waiting period. The CSA exception must be requested each year by completing a Retired Member Employment Notification form.

The critical shortage areas are determined each year by the Education Standards and Practices Board (ESPB). For the 2022-23 school year, ESPB has declared all teacher content areas as critical shortage, except for Administrator positions.

What's Inside

Questions on TFFR reporting? Join the TFFR Info Mixers!

TFFR staff will be providing you with opportunities to receive information about employer reporting and other procedures as it relates to TFFR. These sessions will be 45 minutes and will cover a variety of TFFR topics. There will be two offerings per topic. Below is the schedule for this fall. We hope you can join us!

Topics	**Date and Time (CDT)**
New Employees and Forms	Wednesday, October 12 - 2:00 pm Thursday, October 13 - 2:00 pm
TFFR Reportable Salary	Tuesday, November 15 - 2:00 pm Wednesday, November 16 – 2:00 pm
Corrections and Round Table	Tuesday, December 13 - 10:00 pm Wednesday, December 14 – 2:00 pm

New Business Manager Workshop

We are once again offering our virtual New Business Manager Workshop on Wednesday, November 2, 2022, from 2:00-3:30 pm CDT.

Topics will include:

- Business Manager TFFR Responsibilities
- Employer Payment Plan Models
- Reporting of Salary and Contributions
- Employing Retired Teachers
- Year End Reporting

Please use the link below to register for the workshop:

https://www.surveymonkey.com/r/XJB3YGD

Once registered, we will send you a Microsoft Teams invite for the workshop.

If you have any questions, please email us at rio@nd.gov and we will be glad to help you.

Connections

A little bit about me . . .

My name is Paulette Elder. I grew up in Hebron & graduated from Hebron Public School. I just started my thirty-first year as Business Manager for Hebron Public School. I am a member of the Broken Arrow Saddle Club & American Legion Auxiliary. I love accounting, working with people and watching students grow into young adults.

What is your favorite (book, author, tv show, or movie?)

I enjoy watching TV, some of my favorites are Chicago Med, Fire and PD, Law & Order SVU, Cooking Shows, Rodeos & Bull Riding. Movies I enjoy are, westerns, true stories, comedy or a little romance never hurts! I like County Music. I love animals, especially horses.

What is your favorite hobby?

I enjoy Crocheting, Embroidering, Quilting & Diamond Art.

What advice/tips would you offer other Business Managers?

My advice to my fellow Business Managers, don't get frustrated & give up, just pick up the phone. There is always someone that can answer your questions and help you solve problems. STAY STRONG & NEVER GIVE UP & always remember:

A #2 pencil and a dream can take you anywhere"

ACH Monthly Payment Option

You can send your TFFR monthly payment by ACH. Please let us know if you are interested in switching to this fast and efficient payment method and eliminate the need to mail a check each month.

Employing a TFFR Retired Teacher?

Retired TFFR members may return to TFFR covered employment under employment hourly limitations after they have satisfied the required waiting period.

The hourly limits apply to TFFR covered employment which includes teaching, supervisory, and administrative services. Extra-curricular duties and professional development hours DO NOT count towards the hourly limit; however, the salary for those two duties, as well as duties for need to be reported and the contributions need to be paid.

Duty	Hours to Report	Salary to Report and Contributions to be paid
Teaching	Yes	Yes
Supervisory	Yes	Yes
Administration	Yes	Yes
Extra-curricular	No	Yes
Professional Development	No	Yes

The ***Working After Retirement*** brochure details the hour limits and waiting periods. Below is a summary of the three Return to Work Options:

1) General Rule - Annual Hour Limit
    a. 9-month contract = 700 hours
    b. 10-month contract = 800 hours
    c. 11-month contract = 900 hours
    d. 12-month contract = 1000 hours
    e. **Waiting period is 30 days** from Retirement Date (assuming the retiree has been paid their first TFFR benefit)
    f. TFFR employer and employee contributions need to be paid.

2) Exception A: Critical Shortage Area determined by ESPB (working more than the Annual Hour Limit)
    a. **Waiting period is one year** from retirement date.
    b. TFFR employer and employee contributions need to be paid.

3) Exception B: Benefit Suspension and Recalculation
    a. **Waiting period is 30 days** from TFFR retirement date.
    b. TFFR employer and employee contributions need to be paid.

A ***TFFR RETIRED MEMBER EMPLOYMENT NOTIFICATION (330)*** **form** is required to be completed and sent to our office within 30 days of the retiree's employment. All fields in each section need to be completed and signed by the retiree and a school representative. If you have questions on any section of the form, please contact our office.

Model 2 Partial Review

The accurate reporting of member and employer contributions is vital to the administration of the retirement program. The TFFR Board has developed four models as authorized under NDCC 15-39.1-09 and NDAC 82-04.01 for employers to collect member and employer contributions for TFFR. Employers must select the employer payment plan model under which they will pay member contributions. The model selected by the employer can only be changed once each year at the beginning of the fiscal year and must file a new employer payment plan form. Internal Audit will be reviewing **all** Model 2 Partial employers to ensure compliance for the 2020-21 fiscal year. Internal Audit has randomly selected a member account from each employer who has elected to use the Model 2 Partial payment plan. This review will be verifying retirement salary, contributions paid, and the employer's model.

Reporting errors identified during the Model 2 Partial Review will be forwarded to Retirement Services. Retirement Services will then contact the employer if any changes to the accounts are needed.

Internal Audit staff includes Supervisor of Internal Audit Sara Sauter and Internal Auditor Dottie Thorsen.

TFFR Staffing Update

TFFR has had some exciting staffing changes in the past few months. During the special legislative session of the North Dakota Legislature this past spring, the Retirement and Investment Office was awarded several new budgeted positions.

Among them are three which have direct impact on the TFFR division.

First, the Retirement and Investment Office received funding for a new position of Communications and Outreach Director. That position is anticipated to be filled this fall. The Communications and Outreach Director will be developing member and employer outreach initiatives to help educate and inform in a timelier and more user-friendly manner. RIO also received funding for a Retirement Compliance Specialist and a Retirement Accountant. These two positions will be dedicated to making sure the financial and record keeping processes used by RIO and TFFR staff to maintain the fund are accurate and efficient. Both of those positions are also expected to be filled this fall.

Not newly funded, but recently vacated due to a retirement, the vacancy in the position of Deputy Executive Director and Chief Retirement Officer has been filled. Chad Roberts was hired as the Deputy Executive Director and Chief Retirement Officer of RIO. Mr. Roberts started on July 11th and is responsible for the daily operations and direction of the TFFR division as well as assisting in the overall administration of the Retirement and Investment Office.

New Member Reporting Requirements

A Member Action form must be completed when a participating employer hires a new teacher. The form is also required if you rehire a teacher after a break in employment with your school district of one year or more. The Member Action form should also be used to notify TFFR when a teacher is taking or returning from a leave of absence. This form provides TFFR with important information including the member's legal name, social security number, birth date, and current mailing address.

If the employee is a new TFFR member, also have them complete a Designation of Beneficiary form. Designating a beneficiary allows the member to direct payment of survivor benefits in the event of the member's death.

We ask that all Member Action and Designation of Beneficiary forms be sent to TFFR electronically.

When you are ready to send these forms, please send an email to rio@nd.gov to request a secure link that you can use to send the documents. You will receive an email with a link that will take you to the State of North Dakota Secure File Transfer System. You will be able to upload the file from your computer. We ask that you scan all of the forms as one PDF document. Please scan only the front side of the forms. Once you upload your PDF and click on submit, we will have access to these forms and be able to process them promptly.

If TFFR does not receive the Member Action form within thirty days from the date the member is first reported to TFFR, the employer may be assessed a $250 penalty for late reporting.

Don't Forget to Review Your Employer Summary Report!

A 2021-2022 Employer Summary Report was mailed to each school district at the end of August. Please review this report and verify that the reported salaries and service hours are correct.

Let us know if you find any discrepancies and the accounts will be corrected. Also, if you find any salary that should have been reported in the prior fiscal year, please let us know, and we can move it to the correct year. The salary should be reported in the year it was earned.

Also, hang on to this report for future reference for your auditors. They will request it for their documentation.

TFFR Employee Profile

Deputy Executive Director/ Chief Retirement Officer

Tell us about life before you joined the Retirement and Investment Office team?

Prior to joining the RIO team in July of this year, I was the Deputy County Administrator for a county in Wisconsin just across the border from Minneapolis. Before that role I served in law enforcement for almost 25 years, the last four as a Chief of two different agencies.

What is your educational background?

I attended the University of Alabama at Birmingham for both my undergrad and graduate work in accounting. I also attended Northwestern University for a graduate certificate in organizational change and management.

Why did you choose to work for the North Dakota Retirement and Investment Office?

Service to community is the main motivator in my career choices. While I have chosen career opportunities that advanced my personal growth, I have also chosen those which satisfy the desire to serve others. Serving in government has been my life's choice and as a beneficiary of a defined benefit plan from another state I know how important that financial security is for public servants. I wanted to be a part of the RIO mission of being a good financial steward of public monies so public servants can be secure in their retirements after dedicating their lives to others.

What aspects of your job do you find the most challenging?

Right now, all aspects! Coming in new to RIO and TFFR, I have a huge learning curve. I am absorbing all the information I can and relying on my team to teach me so that I can add value to the program.

What do you enjoy doing in your free time away from work?

I have three daughters who are very active in various sports and extracurriculars. My wife and I spend a lot of our time shepherding them to events and hanging out with the other parents. In addition, I love to golf and bird hunt. During the fall, my true Southerner comes out and I consume as much college football as I can, attending at least a few college games in person every season.

Watch for more of our Info Mixers this Fall.

Send us an email if there are any topics you would like us to cover.

Update on Pension Administration Project

TFFR is well underway with the development of the new pension administration software. This initiative was funded by the state legislature in the 2021-2022 biennial budget to the tune of $9 million and is intended to improve both the user experience and the security of pension records. TFFR has partnered with Sagitec Solutions out of St. Paul, Minnesota to develop the platform.

Sagitec Solutions is an industry leader in the pension administration field and not only has designed systems for other teacher retirement systems, an unique market segment; but also has specific experience in North Dakota, having designed the system presently in use by NDPERS.

Presently, the new pension administration system is anticipated to be in use by fourth quarter of 2024. Yes, it seems a long way off, but it will be here before we know it and this system will not only be an improvement for all users but also a change. With change comes learning and TFFR will be partnering with employers and participants to help in this transition as that date draws nearer. TFFR will be providing education and outreach for the transition.

This new system offers many exciting upgrades from the current system both employers and participants have grown used to. Here are a few examples: First, security upgrades elevate the new system to cutting edge standards needed in today's connected world. With so much vital personal and financial information in the system protecting that data is one of our very top priorities here at TFFR. Second, both users and employers will be able to run reports to get an up-to-date snapshot of their accounts on their own without the need to contact TFFR representatives. Third, the new website will be completely mobile friendly, offering the same functionality on personal devices such as iPads, cellular phones, and Kindles as those offered on a traditional computer.

TFFR will continue to provide updates and information on this new and exciting platform as we continue the development, we are excited about this addition to our services and the improvements it will deliver to the experience for all of our partners and customers.

School Life

E	S	K	O	O	B	I	J	O	U	R	N	A	L
P	E	N	C	I	L	C	A	S	E	W	P	E	K
G	R	S	R	O	S	S	I	C	S	L	H	N	K
R	E	E	N	O	T	E	B	O	O	K	S	L	S
S	K	D	N	S	C	S	N	O	Y	A	R	C	O
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P	A	O	U	A	E	R	C	R	A	O	K	E	M
K	C	B	E	D	O	S	A	N	B	B	O	P	P
E	K	K	S	S	B	I	S	H	E	A	C	N	A
I	P	C	T	B	N	G	C	R	S	P	K	L	S
P	A	A	I	B	T	N	M	A	R	K	E	R	S
S	C	L	C	N	U	E	R	A	S	E	R	O	I
O	K	B	K	L	K	R	O	W	E	M	O	H	N

LUNCH BOX
GLITTER
SCISSORS
BLACKBOARD
ERASER
PENS
SHARPENER
COMPASS
GLUE STICK
JOURNAL
NOTEBOOK
PENCIL CASE
PENCILS
CRAYONS
MARKERS
BACKPACK
HOMEWORK
BOOKS

Play this puzzle online at : https://thewordsearch.com/puzzle/37/

Employer Demographics and Payment Plan Model

For the 2022-2023 school year, we are requiring all employers to complete and return the Employer Demographics and Payment Plan Model form to us.

Thanks to everyone who has completed the form! And for those of you who have not, please do it as soon as possible!

A reminder to please use the most current forms which are located on our website under TFFR Employers / Forms and TFFR Members / Forms.

TFFR Forms

- If you are employing a new teacher, TFFR will need a new Member Action form and a Designation of Beneficiary form. Please note: Only ND licensed teachers are eligible to become members of TFFR. If you employee a teacher who has a permit or sub-license only, they should NOT be reported to TFFR.
- If the teacher has a change of address or name, they need to fill out and sign a Change of Name or Address form.
- If you have employed a TFFR retiree, please make sure to complete the TFFR Retired Member Employment Notification form. This form must be completed each year a retiree is employed and submitted to TFFR no later than 30 days after employment begins.
- These forms and other ones you may need are also found on our website: https://www.rio.nd.gov/teachers-fund-retirement-employers

NORTH Dakota Be Legendary. | Teachers' Fund For Retirement
RETIREMENT & INVESTMENT

Employer Newsletter

ND Teachers' Fund for Retirement
1600 East Century Ave, Suite 3
PO Box 7100
Bismarck, ND 58507-7100
Phone: 701.328.9885
Toll-Free: 1.800.952.2970
Website: www.rio.nd.gov

TFFR Vision Statement:

To be a trusted leader in the administration of a financially sound retirement program for North Dakota educators by providing exceptional customer service, professional plan management, and organizational effectiveness by adhering to the principles of good governance, transparency, and accountability.