Nebraska Public Employees Retirement System

Actuarial Services

Solicitation Number: 120961 O5

March 21, 2025

Segal

Segal

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March 21, 2025

State Purchasing Bureau
Attention: Connie Heinrichs/Brook Taylor, Procurement Contract Officers
1526 K Street, Suite 130
Lincoln, Nebraska 68508

RE: Request for Proposal for Actuarial Services Solicitation Number: 120961 O5

Dear Ms. Heinrichs and Ms. Taylor:

Thank you for the opportunity to present our proposal to perform actuarial services for the Nebraska Public Employees Retirement System (NPERS). We understand the services include general consulting, valuation services, Governmental Accounting Standards Board (GASB) reporting, projections, and the performance of experience and benefit adequacy studies. Segal is well-qualified to perform the requested scope of services.

Segal has been assisting employers for over 85 years and public sector retirement plans for more than 70 years. Serving the public sector is a primary focus at Segal and for our senior consulting team proposed for NPERS. We are a recognized industry leader, sponsoring and participating in many service and professional organizations, including the National Association of State Retirement Administrators, the National Council on Teacher Retirement, the National Conference on Public Employee Retirement Systems, and the Public Sector HealthCare Roundtable.

Segal's longstanding mission is to provide "trusted advice that improves lives." We offer a team with the knowledge and experience to engage with NPERS when and where you need us, and a commitment to a common goal: to allow your members to thrive in their employment years as they look forward to a secure retirement. Our proposed team's deep experience with similar public sector defined benefit plans and our cost-effective, client-focused approach will serve NPERS well.

I am authorized to negotiate a contract with NPERS and look forward to discussing our proposal response with you in greater detail. If you have any questions, please feel free to contact me directly at 646.668.1425.

Sincerely,

Matthew A. Strom

Matthew Strom, FSA, MAAA, EA
Senior Vice President, Actuary

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Executive Summary

We appreciate the opportunity to present our proposal to the Nebraska Public Employees Retirement System (NPERS) in response to your Request for Proposal. We trust this proposal will demonstrate that Segal is best qualified to provide the services requested.

Our understanding

We understand that NPERS, under the direction of the Public Employees Retirement Board (PERB) is seeking proposals from qualified actuarial consulting firms to provide actuarial services for six retirement systems and one deferred compensation plan for the State of Nebraska. If retained for this important engagement, Segal will provide all required services in accordance with federal and state statutes and the contract between NPERS and Segal.

Segal works with a number of statewide plans and is very familiar with all services being requested for NPERS. We approach our work with public employee retirement systems with a deep understanding of the numerous intricacies and challenges involved. Some of our current clients have relatively straightforward plans with just one group and a single plan of benefit provisions whereas other plans are more complex with multiple tiers with inherently unique benefit provisions.

Team experience

Segal has established a team of retirement actuaries and consultants that functions as a center of excellence for public sector consulting. This team specializes in public sector systems, states, local governments and other public sector organizations and has extensive experience valuing the liabilities for all types of retirement benefits, as well as advising clients on managing the magnitude of their unfunded liabilities. Utilizing this experience, the team provides them insight into a wide range of circumstances, strategies and practices from various levels of governmental organizations; therefore, we are well positioned to provide NPERS with context, perspective and expert advice.

In addition to a robust actuarial consulting team, NPERS will have access to additional consultants as needs arise. Melanie Walker, Segal's Public Sector Compliance Practice leader, will keep NPERS staff up to date on tax and regulatory issues that affect public retirement systems and can provide advice and training on fiduciary rules and plan governance structure.

Experience with other large public employees' retirement systems

Segal is well versed in providing consulting services to large public pension plans like NPERS including annual actuarial valuations, periodic experience studies, and Board education sessions. In addition to these services, we provide consulting around model funding policy, legislative proposals and benefit adequacy. Following are recent examples of our experience:

- **Public Employees' Retirement Association of Colorado (PERA)**: Segal assisted with the application of a law that ties employer and member contributions, levels of post-retirement COLAs, and state assessments to plan funding levels. The law creates a direct link between actuarially calculated contributions and actual contributions in a systematic way, improving the plan's long-term funding outlook. PERA staff and the Segal team use Segal's dynamic online modeling tool Segal Pulse® to assess the impact of economic and demographic experience that differs from assumptions and evaluate PERA's projected funded level under difference scenarios.
- **Public Employees' Retirement System of Nevada**: Our consultants analyzed a proposed State bill that would have closed the defined benefit system and created a defined contribution plan for new members. Our work on this proposal included a detailed analysis of the short- and long-term costs, discussion of legal and compliance issues, meetings with legislative staff, committee testimony and Board education.
- **Vermont Retirement Systems**: Segal works with the Office of the State Treasurer and the Boards of Trustees of three pension systems that cover state and local workers as well as public school teachers and staff. Segal presented a detailed and comprehensive risk analysis to the Boards and stakeholders and worked with the legislature to assess the impact of additional funding sources to improve the funded status of the Systems over time. The team also evaluated the statutory contribution levels of subgroups within the Municipal Employees' System to advise the Board on potential changes in employer and member contribution rates that would balance equity between employer/employee cost-sharing and total contribution levels relative to the value of benefits provided in each subgroup.
- **Kern County Employees' Retirement Association in California (KCERA):** KCERA engaged with our consultants to build a robust risk report surrounding the funding and strategic outlook of its pension system. The report provided a deep dive into the history of funded status and contributions, detailing significant policies and events and illustrated how they affected the financial health of the system over time. We also worked with staff to understand the Board's key concerns going forward, and projected various investment return scenarios, the plan's maturity evolution based on employee turnover by tier, and stochastic modeling that focused on the likelihood of key funding and contribution parameters.

As one of the nation's leading independent consultants to the public sector, Segal has the knowledge, expertise and experience to understand the environment in which decisions are made by public plans. We understand what solutions will work for a public plan and help our public sector clients craft those solutions to their specific needs.

We are pleased to expand upon any issue at the level of detail you require and are available to meet with you to discuss our proposed approach. We are excited about the opportunity to partner with NPERS to provide actuarial services.

Contractual Agreement Form

CONTRACTUAL AGREEMENT FORM

BIDDER MUST COMPLETE THE FOLLOWING

By signing this Contractual Agreement Form, the bidder guarantees compliance with the provisions stated in this solicitation and agrees to the terms and conditions unless otherwise indicated in writing and certifies that bidder is not owned by the Chinese Communist Party.

Per Nebraska's Transparency in Government Procurement Act, Neb. Rev Stat § 73-603, DAS is required to collect statistical information regarding the number of contracts awarded to Nebraska Vendors. This information is for statistical purposes only and will not be considered for contract award purposes.

_____ NEBRASKA VENDOR AFFIDAVIT: Bidder hereby attests that bidder is a Nebraska Vendor. "Nebraska Vendor" shall mean any bidder who has maintained a bona fide place of business and at least one employee within this state for at least the six (6) months immediately preceding the posting date of this Solicitation. All vendors who are not a Nebraska Vendor are considered Foreign Vendors under Neb. Rev Stat § 73-603 (c).

____ I hereby certify that I am a Resident disabled veteran or business located in a designated enterprise zone in accordance with Neb. Rev. Stat. § 73-107 and wish to have preference, if applicable, considered in the award of this contract.

_____ I hereby certify that I am a blind person licensed by the Commission for the Blind & Visually Impaired in accordance with Neb. Rev. Stat. § 71-8611 and wish to have preference considered in the award of this contract.

THIS FORM MUST BE SIGNED MANUALLY IN INK OR BY DOCUSIGN

COMPANY:	The Segal Company (Midwest), Inc. d/b/a Segal
ADDRESS:	101 North Wacker Drive, Suite 500, Chicago, Illinois 60707
PHONE:	646.668.1425
EMAIL:	mstrom@segalco.com
BIDDER NAME & TITLE:	Matthew A. Strom, FSA, MAAA, EA / Senior Vice President, Actuary
SIGNATURE:	Matthew A. Strom
DATE:	March 21, 2025

VENDOR COMMUNICATION WITH THE STATE CONTACT INFORMATION (IF DIFFERENT FROM ABOVE)	
NAME:	Not applicable.
TITLE:	
PHONE:	
EMAIL:	

1. Corporate Overview

a. BIDDER IDENTIFICATION AND INFORMATION

The bidder should provide the full company or corporate name, address of the company's headquarters, entity organization (corporation, partnership, proprietorship), state in which the bidder is incorporated or otherwise organized to do business, year in which the bidder first organized to do business and whether the name and form of organization has changed since first organized.

Firm Information

Name of firm:	The Segal Company (Midwest), Inc. d/b/a Segal
Address of company headquarters:	333 West 34th Street New York, NY 10001-2402
Office providing services:	101 N. Wacker Drive Suite 500 Chicago, Illinois 60606-1724
Entity organization:	Corporation
State of incorporation	Illinois
First organized to do business:	The Chicago office first organized to do business in 1968.

Segal was founded as the Martin E. Segal Company in 1939, early in the development of employee benefit plans in American industry. From the beginning, Segal has been involved in developing health and retirement programs that meet the needs of employees and employers.

Through our history, we've built a group of brand names you've come to count on for truly personal actuarial, investment and human resources consulting expertise aimed at one mission: delivering trusted advice that improves lives. Today we formally operate under one name: Segal.

The following is a summary of changes in our company name over the years.

Changes in Company Names

1939	Segal was founded as the Martin E. Segal Company
1967	The Martin E. Segal Company became part of Wertheim & Co
1978	It again became independent when it was repurchased by company management and was again known as the Martin E. Segal Company
1991	The business began operating as Segal (no change in legal ownership, simply a rebranding of the name), and shortly thereafter as Segal Consulting
2020	We formally operate as Segal

Segal, Segal Benz and Segal Marco Advisors are all members of the Segal family. While company names and logos have evolved over the firm's 85-year history, we remain an employee-owned firm known for providing unbiased consulting based on the integrity, expertise, personal investment and trusted advice of our people.

Segal		Segal Benz	Segal Marco Advisors
Administration and Technology Consulting Benefit Audit Solutions Compensation and Career Strategies Compliance	Health and Welfare Benefits HR and Benefits Technology Insurance Organizational Effectiveness Retirement Benefits	Benefits Communication Communication Strategy Personalized Benefit Statements Surveys and Focus Groups Website and Portal Design	Corporate Governance and Proxy Voting Defined Contribution Consulting Discretionary Investment Management Intermediary/Advisor Solutions Investment Consulting OCIO

b. *FINANCIAL STATEMENTS*

The bidder should provide financial statements applicable to the firm. If publicly held, the bidder should provide a copy of the corporation's most recent audited financial reports and statements, and the name, address, and telephone number of the fiscally responsible representative of the bidder's financial or banking organization.

If the bidder is not a publicly held corporation, either the reports and statements required of a publicly held corporation, or a description of the organization, including size, longevity, client base, areas of specialization and expertise, and any other pertinent information, should be submitted in such a manner that solicitation evaluators may reasonably formulate a determination about the stability and financial strength of the organization. Additionally, a non-publicly held firm should provide a banking reference.

Segal is considered financially sound and has been profitable throughout its history. A copy of our audited financial statements have been included with our proposal response, as a separate password protected document. Upon submission of our proposal, our CFO will telephone the procurement contact with the password necessary to open the statements.

The financial statement cover letter with detailed information is attached to this proposal as *Appendix A.*

Our bank reference is attached to this proposal as *Appendix B*.

The bidder must disclose any and all judgments, pending or expected litigation, or other real or potential financial reversals, which might materially affect the viability or stability of the organization, or state that no such condition is known to exist.

Throughout our long history, Segal has occasionally been named as a party in litigation. No litigation has ever affected Segal's ability to provide services to its clients or materially affected Segal's financial position or operations.

The State may elect to use a third party to conduct credit checks as part of the corporate overview evaluation.

We acknowledge the State may elect to use a third party to conduct credit checks as part of the corporate overview evaluation.

c. CHANGE OF OWNERSHIP

If any change in ownership or control of the company is anticipated during the twelve (12) months following the solicitation response due date, the bidder should describe the circumstances of such change and indicate when the change will likely occur. Any change of ownership to an awarded bidder(s) will require notification to the State.

Segal is a privately held, employee-owned company, and as such, we do not anticipate any change in ownership or control of our company in the future.

d. OFFICE LOCATION

The bidder's office location responsible for performance pursuant to an award of a contract with the State of Nebraska should be identified.

The NPERS account will be managed out of Segal's Chicago office, located at 101 N. Wacker Drive, Suite 500, Chicago, Illinois 60606-1724.

e. RELATIONSHIPS WITH THE STATE

The bidder should describe any dealings with the State over the previous ten (10) years. If the organization, its predecessor, or any Party named in the bidder's solicitation response has contracted with the State, the bidder should identify the contract number(s) and/or any other information available to identify such contract(s). If no such contracts exist, so declare.

Since 2016, Segal has been the State's health consultant and actuary. The contract number is 120005 O5.

> Contract to supply and deliver professional health and welfare consulting services for the employee insurance benefits program which includes health, wellness, dental, vision, life, long term disability, flexible spending accounts, health savings account, and employee assistance program to the State of Nebraska as per the attached specifications for the contract period March 1, 2025 with a contract length of three years with two possible extensions.

f. BIDDER'S EMPLOYEE RELATIONS TO STATE

If any Party named in the bidder's solicitation response is or was an employee of the State within the past twelve (12) months, identify the individual(s) by name, State agency with whom employed, job title or position held with the State, and separation date. If no such relationship exists or has existed, so declare.

If any employee of any agency of the State of Nebraska is employed by the bidder or is a subcontractor to the bidder, as of the due date for solicitation response submission, identify all such persons by name, position held with the bidder, and position held with the State (including job title and agency). Describe the responsibilities of such persons within the proposing organization. If, after review of this information by the State, it is determined that a conflict of interest exists or may exist, the bidder may be disqualified from further consideration in this solicitation. If no such relationship exists, so declare.

To the best of our knowledge, there is no such current or past relationship.

g. CONTRACT PERFORMANCE

If the bidder or any proposed subcontractor has had a contract terminated for default during the past ten (10) years, all such instances must be described as required below. Termination for default is defined as a notice to stop performance delivery due to the bidder's non-performance or poor performance, and the issue was either not litigated due to inaction on the part of the bidder or litigated and such litigation determined the bidder to be in default.

Segal has not had a contract terminated for default.

It is mandatory that the bidder submit full details of all termination for default experienced during the past ten (10) years, including the other Party's name, address, and telephone number. The response to this section must present the bidder's position on the matter. The State will evaluate the facts and will score the bidder's solicitation response accordingly. If no such termination for default has been experienced by the bidder in the past ten (10) years, so declare.

Segal has not had a contract terminated for default.

If at any time during the past ten (10) years, the bidder has had a contract terminated for convenience, non-performance, non-allocation of funds, or any other reason, describe fully all circumstances surrounding such termination, including the name and address of the other contracting Party.

Segal has not had a contract terminated for convenience, non-performance, non-allocation of funds, or any other reason.

h. SUMMARY OF BIDDER'S CORPORATE EXPERIENCE

The bidder should provide a summary matrix listing the bidder's previous projects similar to this Solicitation in size, scope, and complexity. The State will use no more than three (3) narrative project descriptions submitted by the bidder during its evaluation of the solicitation response.

The bidder should address the following:

- *i. Provide narrative descriptions to highlight the similarities between the bidder's experience and this Solicitation. These descriptions should include:*
  - *a. The time period of the project,*
  - *b. The scheduled and actual completion dates,*
  - *c. The bidder's responsibilities,*
  - *d. For reference purposes, a customer name (including the name of a contact person, a current telephone number, a facsimile number, and e-mail address); and*
  - *e. Each project description should identify whether the work was performed as the prime Vendor or as a subcontractor. If a bidder performed as the prime Vendor, the description should provide the originally scheduled completion date and budget, as well as the actual (or currently planned) completion date and actual (or currently planned) budget.*
- *ii. Bidder and Subcontractor(s) experience should be listed separately. Narrative descriptions submitted for Subcontractors should be specifically identified as subcontractor projects.*
- *iii. If the work was performed as a subcontractor, the narrative description should identify the same information as requested for the bidders above. In addition, subcontractors should identify what share of contract costs, project responsibilities, and time period were performed as a subcontractor.*
- *iv. Additional corporate experience must be completed on Attachment C.*

As requested, Segal's corporate experience has been completed on *Attachment C*. Segal will not use subcontractors to perform the requested Scope of Services.

i. SUMMARY OF BIDDER'S PROPOSED PERSONNEL/MANAGEMENT APPROACH

The bidder should present a detailed description of its proposed approach to the management of the project.

Following is a sample work plan describing our approach to the project. Valuations are scheduled to finish within approximately four months of the close of the applicable fiscal year. The sample shown is for a July 30 fiscal year with results presented in early November.

Actuarial Work Plan/Calendar

Valuation Process – Preparation and Presentation of Valuation Report					
Key Task	**Team Members Assigned**	**Consultant Responsibilities**	**NPERS Responsibilities**	**Other Needed Resources**	**General Timeline**
Initial preparation: Set up files, including review of plan documents for all plans, previous valuations and any other relevant materials. Prepare data request, identifying all required information.	**Segal** Matt Strom (Client Relationship Manager and Primary Actuary) Dan Siblik (Secondary Actuary) Tanya Dybal (Senior Reviewing Actuary) David Nickerson (Reviewing Actuary) Jakob Nolan (Reviewing Actuary) Diana Yen (Senior Analyst) Laura Jeske (Analyst) Maria Manoukarakis (Analyst)	• Prepare files and data/information request • Review notes from prior year's valuation file	• Update consultant on any changes or relevant facts that occurred since the prior valuation	• N/A	July through mid-August
Gather and review participant data: Run the participant data through standard "edit and distribution" programs to verify completeness and reasonableness. Resolve any issues with NPERS staff. Financial data should also be provided when available.	**Segal** Dan Siblik David Nickerson Jakob Nolan Diana Yen Laura Jeske Maria Manoukarakis	• Scrub and reconcile participant census data • Prepare questions • Review financial information for completeness	• Provide census data files to Consultant • Assist with questions that arise during reconciliation process	• End of year market value of assets broken out by broad classification • Reconciliation of market value from beginning of year to end of year	August

Valuation Process – Preparation and Presentation of Valuation Report					
Key Task	Team Members Assigned	Consultant Responsibilities	NPERS Responsibilities	Other Needed Resources	General Timeline
Develop/ revise/ test all computer programs: Make programming adjustments as necessary to take into account changes in benefits, contributions and actuarial assumptions. Perform extensive testing of valuation applications before, during and after processing the actual valuations to ensure the programs perform as expected.	**Segal** David Nickerson Jakob Nolan Diana Yen Laura Jeske Maria Manoukarakis	• Update and test valuation programs • Prepare "test lives" suite • Three-level do, check and review	• N/A	• N/A	September and October
Review assumptions against experience: The team will assess developing trends and analyze actuarial gains and losses since the prior valuation. Discuss with NPERS staff, if necessary, to verify unusual results.	**Segal** Matt Strom Dan Siblik Tanya Dybal David Nickerson Jakob Nolan Diana Yen Laura Jeske Maria Manoukarakis	• Calculate actuarial assets • Generate and review detailed gain/loss analysis • Identify trends in experience and areas to investigate during next experience study	• Discuss observations with consultant • Explore possible external reasons for unusual liability gains or losses	• N/A	September and October
Complete the actuarial calculations: Run final versions of computer valuation programs. Prepare work sheets and tables. Submit all calculations to the reviewing actuary for verification of mathematical accuracy.	**Segal** Dan Siblik David Nickerson Jakob Nolan Diana Yen Laura Jeske Maria Manoukarakis	• Use final liabilities and final actuarial assets to develop valuation costs, contribution rates, and GASB calculations • Review for accuracy	• N/A	• N/A	Late September into October

Valuation Process – Preparation and Presentation of Valuation Report					
Key Task	**Team Members Assigned**	**Consultant Responsibilities**	**NPERS Responsibilities**	**Other Needed Resources**	**General Timeline**
Review the actuarial valuation: This review by the reviewing actuary encompasses the entire process including participant and financial data preparation, calculations and programs. Draft the report and presentation to be presented to the Board. Final review performed by Primary and Secondary Actuaries.	**Segal** Matt Strom Dan Siblik Tanya Dybal David Nickerson Jakob Nolan	• Prepare draft valuation report, GASB accounting schedules, and Board presentation materials • Senior actuaries review the entire valuation and report for technical accuracy • Identify key findings and develop consulting and communication approach • Prepare Problem Identification Report, if necessary	• Participation in process for developing Board communication strategy, as appropriate • Review and comment on Problem Identification Report, if necessary	• N/A	October into November
Present the report: Distribute draft report and discuss results and findings with NPERS staff. Incorporate final edits into report. Present results to the Board.	**Segal** Matt Strom Dan Siblik Tanya Dybal	• Distribute draft report and draft presentation • Compile final reports • Prepare and present to Board	• Review draft report and draft presentation	• Assistance with presentation logistics, if necessary	November

Experience Study Process: Analysis of Experience and Development of Recommended Assumptions					
Key Task	**Team Members Assigned**	**Consultant Responsibilities**	**NPERS Responsibilities**	**Other Needed Resources**	**General Timeline**
Data preparation: Run historical valuation data files through data utility to add current and prior status fields. Create five data files to be used in Segal's Experience Study Software (ESS) tool	**Segal** David Nickerson Jakob Nolan Diana Yen Laura Jeske Maria Manoukarakis	• Convert census data files to format compatible to use with ESS tool • Review notes from data section of historical valuation files	• N/A	• N/A	October 2025
Run data files through ESS utility: Set up ESS to analyze each demographic assumption. Review current assumption formats. Process ESS and develop expected versus actual experience, by decrement.	**Segal** David Nickerson Jakob Nolan Diana Yen Laura Jeske Maria Manoukarakis	• Run data files through ESS • Review output for anomalies and address in data files, if necessary • Develop exposures, expected decrements and actual decrements	• N/A	• N/A	October 2025
Analysis of demographic experience and economic assumptions: Use capital market data to evaluate investment return assumption and underlying inflation. Study actual demographic experience versus expected and develop proposed assumptions. Value impact of proposed assumptions on actuarial valuation results	**Segal** Dan Siblik David Nickerson Jakob Nolan Diana Yen Laura Jeske Maria Manoukarakis	• Evaluate available data and generate recommended inflation • Run stochastic projection of real rates of investment return by asset class and develop expected return recommendation • Develop recommended demographic assumptions • Evaluate impact on valuation results of proposed assumptions	• Provide input on external trends that might impact future experience or explain anomalous historical experience not expected to repeat in the future	• Receive copy of Investment Policy Statement and current target asset allocation	November 2025

Experience Study Process: Analysis of Experience and Development of Recommended Assumptions					
Key Task	Team Members Assigned	Consultant Responsibilities	NPERS Responsibilities	Other Needed Resources	General Timeline
Review the experience study: This review by the reviewing actuary encompasses the entire process including census data files, ESS calculations/analysis, and development of recommended assumptions. Draft the report and presentation to be presented to the Board. Final review performed by Primary and Secondary Actuaries.	**Segal** Matt Strom Dan Siblik Tanya Dybal David Nickerson Jakob Nolan	• Prepare draft experience study report and Board presentation materials • Senior actuaries review the entire experience study and report for technical accuracy • Identify key findings and develop consulting and communication approach	• Participation in process for developing Board communication strategy, as appropriate	• N/A	End of November into December 2025
Present the report: Distribute draft report and discuss results and findings with NPERS staff. Incorporate final edits into report. Present results to the Board.	**Segal** Matt Strom Dan Siblik Tanya Dybal	• Distribute draft report and draft presentation • Compile final report • Prepare and present to Board	• Review draft report and draft presentation	• Assistance with presentation logistics, if necessary	December 2025

The bidder should identify the specific professionals who will work on the State's project if their company is awarded the contract resulting from this Solicitation. The names and titles of the team proposed for assignment to the State project should be identified in full, with a description of the team leadership, interface, and support functions, and reporting relationships. The primary work assigned to each person should also be identified.

Matt Strom, FSA, MAAA, EA, will serve as Client Relationship Manager (CRM) for NPERS. As CRM, Matt will oversee the relationship by monitoring workflow, responding to client inquiries and needs, and communicating progress to you. Our approach to client satisfaction is proactive: we seek to understand client business issues and *anticipate* client needs, rather than react to them. Matt will also solicit feedback and keep you updated on issues that arise in the industry that may have an impact on your plans. In addition, Matt will ensure that the team delivers the highest quality work and meets all client objectives.

Matt has more than 25 years of experience consulting to sponsors of defined benefit pension plans. His responsibilities include presenting to boards of trustees, reviewing actuarial valuations, preparing actuarial cost studies and managing other special projects for public sector retirement plans. His expertise includes deterministic and stochastic cost and funding level projections, plan design analyses, experience studies, asset/liability modeling and actuarial audits. Additionally, Matt is a member of Segal's Public Sector Leadership Group.

Matt serves as actuary to a number of public sector retirement systems including:

- Colorado Public Employees' Retirement Association
- Vermont Retirement Systems
- Teachers' Retirement System of the State of Illinois
- Firemen's Annuity and Benefit Fund of Chicago
- Chicago Municipal Employees' Pension and Annuity Pension Fund
- Chicago Park Employees' Pension and Annuity Pension Fund
- Chicago Housing Authority Pension Plan
- Illinois Commission on Government Forecasting and Accountability

Matt will be supported by a team of experienced team of actuaries and a compliance professional. We utilize a consulting team approach requiring broad skill sets such as pension actuaries, retirement experts, compliance experts, communications experts and more. Our team approach ensures you will always have a Segal expert available to you.

Segal Team

Name	Role	Experience and Responsibilities
Matthew Strom, FSA, MAAA, EA *Senior Vice President and Actuary* 312.984.8534 mstrom@segalco.com	Client Relationship Manager (CRM) and Primary Actuary	Matt has more than 25 years of experience supporting the design and financing of retirement and other employee benefit programs for the public sector. Matt will review all correspondence and reports, present results to NPERS and manage the relationship. He will work closely with the team to ensure NPERS' needs are met.
Daniel Siblik, ASA, MAAA, FCA, EA *Vice President and Actuary* 630.414.2695 dsiblik@segalco.com	Secondary Actuary	Dan will serve as Secondary Actuary for NPERS. He has more than 25 years of experience, focusing primarily on public sector pension consulting. Dan will review all correspondence and reports and present the results to NPERS. He will manage the workflow of the team to ensure needs are met and deliverables are provided on a timely basis.
Tatsiana (Tanya) Dybal, FSA, MAAA, EA *Vice President and Actuary* 312.984.8671 tdybal@segalco.com	Senior Reviewing Actuary	Tanya will conduct valuation reviews, review the actuarial valuation replications, prepare actuarial cost studies and manage other special projects, as needed. Tanya will work closely with the actuarial team to ensure NPERS needs are met.
David Nickerson, ASA, EA *Actuary* 312.984.8555 dnickerson@segalco.com	Reviewing Actuary	David will conduct valuation reviews and review the actuarial valuation replications, including all levels of valuation production. David will be the lead Reviewing Actuary.
Jakob Nolan, ASA, MAAA, EA *Associate Actuarial Consultant* 312.984.8629 jnolan@segalco.com	Reviewing Actuary	Jakob will conduct valuation reviews and review the actuarial valuation replications and assist with plan design and experience study reviews under the direction and supervision of the actuarial consulting team.
Diana Yen, ASA, MAAA *Actuarial Associate* 312.984.8582 dyen@segalco.com	Senior Actuarial Analyst	Diana will perform and review valuation results and projections, prepare reports, and assist with plan design and experience study reviews under the direction and supervision of the actuarial consulting team.
Laura Jeske *Senior Actuarial Associate* 312.984.8663 ljeske@segalco.com	Actuarial Analyst	Laura will perform valuation replications and ongoing valuations along with projections, prepare reports, and assist with plan design and experience study reviews under the direction and supervision of the Senior Actuarial Analyst and the actuarial consulting team.
Maria Manoukarakis *Actuarial Associate* 312.984.8683 mmanoukarakis@segalco.com	Actuarial Analyst	Maria will prepare data, perform valuation replications and ongoing valuations along with projections, prepare reports, and assist with plan design and experience study reviews under the under the direction and supervision of the Senior Actuarial Analyst and the actuarial consulting team
Melanie Walker, JD *Senior Vice President, National Compliance Practice Leader* 303.714.9942 mwalker@segalco.com	Compliance Resource	Melanie will be available to assist with any national or state legislative developments with respect to the retirement system and compliance related matters.

The bidder should provide resumes for all personnel proposed by the bidder to work on the project. The State will consider the resumes as a key indicator of the bidder's understanding of the skill mixes required to carry out the requirements of the Solicitation in addition to assessing the experience of specific individuals.

Resumes should not be longer than three (3) pages. Resumes should include, at a minimum, academic background and degrees, professional certifications, understanding of the process, and at least three (3) references (name, address, and telephone number) who can attest to the competence and skill level of the individual. Any changes in proposed personnel shall only be implemented after written approval from the State.

Professional biographies for each of the above team members are attached to this proposal as *Appendix C*.

j. SUBCONTRACTORS

If the bidder intends to subcontract any part of its performance hereunder, the bidder should provide:

i. name, address, and telephone number of the subcontractor(s),

ii. specific tasks for each subcontractor(s),

iii. percentage of performance hours intended for each subcontract; and

iv. total percentage of subcontractor(s) performance hours.

Segal will not use subcontractors to perform the requested Scope of Services.

Section II. Terms and Conditions

The reviewed Terms and Conditions section begins on the following page.

I. TERMS AND CONDITIONS

Bidder should read the Terms and Conditions within this section and must initial either “Accept All Terms and Conditions Within Section as Written” or “Exceptions Taken to Terms and Conditions Within Section as Written” in the table below. If exception is not taken to a provision, it is deemed accepted as stated. If the bidder takes any exceptions, they must provide the following within the “Exceptions” field of the table below (Bidder may provide responses in separate attachment if multiple exceptions are taken):

1. The specific clause, including section reference, to which an exception has been taken;
2. An explanation of why the bidder took exception to the clause; and
3. Provide alternative language to the specific clause within the solicitation response.

By signing the solicitation, bidder agrees to be legally bound by all the accepted terms and conditions, and any proposed alternative terms and conditions submitted with the solicitation response. The State reserves the right to negotiate rejected or proposed alternative language. If the State and bidder fail to agree on the final Terms and Conditions, the State reserves the right to reject the solicitation response. The State reserves the right to reject solicitation responses that attempt to substitute the bidder’s commercial contracts and/or documents for this solicitation.

Accept All Terms and Conditions Within Section as Written (Initial)	**Exceptions Taken to Terms and Conditions Within Section as Written (Initial)**	**Exceptions:** (Bidder must note the specific clause, including section reference, to which an exception has been taken, an explanation of why the bidder took exception to the clause, and provide alternative language to the specific clause within the solicitation response.)
	MS	Segal currently provides services to DAS. Accordingly, if Segal is determined to be the winning bidder, Segal proposes to continue providing services pursuant to contract terms and conditions that are substantively similar to the previously negotiated contract. Please note that our form contract has changed but we are willing to discuss any changes and tailor the agreement as appropriate under the circumstances.

The bidders should submit with their solicitation response any license, user agreement, service level agreement, or similar documents that the bidder wants incorporated in the Contract. The State will not consider incorporation of any document not submitted with the solicitation response as the document will not have been included in the evaluation process. These documents shall be subject to negotiation and will be incorporated as addendums if agreed to by the Parties.

If a conflict or ambiguity arises after the Addendum to Contract Award has been negotiated and agreed to, the Addendum to Contract Award shall be interpreted as follows:

1. If only one (1) Party has a particular clause, then that clause shall control,
2. If both Parties have a similar clause, but the clauses do not conflict, the clauses shall be read together,
3. If both Parties have a similar clause, but the clauses conflict, the State’s clause shall control.

A. GENERAL

1. The contract resulting from this Solicitation shall incorporate the following documents:

   a. Solicitation, including any attachments and addenda;
   b. Questions and Answers;
   c. Bidder’s properly submitted solicitation response, including any terms and conditions or agreements submitted by the bidder;
   d. Addendum to Contract Award (if applicable); and
   e. Amendments to the Contract. (if applicable)

These documents constitute the entirety of the contract.

Unless otherwise specifically stated in a future contract amendment, in case of any conflict between the incorporated documents, the documents shall govern in the following order of preference with number one (1) receiving preference over all other documents and with each lower numbered document having preference over any higher numbered document: 1) Amendment to the executed Contract with the most recent dated amendment having the highest priority, 2) Executed Contract and any attached Addenda 3) Addendums to the solicitation and any Questions and Answers, 4) the original solicitation document and any Addenda or attachments, and 5) the Vendor’s submitted solicitation response, including any terms and conditions or agreements that are accepted by the State.

Unless otherwise specifically agreed to in writing by the State, the State's standard terms and conditions, as executed by the State, shall always control over any terms and conditions or agreements submitted or included by the Vendor.

Any ambiguity or conflict in the contract discovered after its execution, not otherwise addressed herein, shall be resolved in accordance with the rules of contract interpretation as established in the State of Nebraska.

B. NOTIFICATION

Bidder and State shall identify the contract manager who shall serve as the point of contact for the executed contract.

Communications regarding the executed contract shall be in writing and shall be deemed to have been given if delivered personally; electronically, return receipt requested; or mailed, return receipt requested. All notices, requests, or communications shall be deemed effective upon receipt.

Either party may change its address for notification purposes by giving notice of the change and setting forth the new address and an effective date.

C. BUYER'S REPRESENTATIVE

The State reserves the right to appoint a Buyer's Representative to manage or assist the Buyer in managing the contract on behalf of the State. The Buyer's Representative will be appointed in writing, and the appointment document will specify the extent of the Buyer's Representative authority and responsibilities. If a Buyer's Representative is appointed, the bidder will be provided a copy of the appointment document and is expected to cooperate accordingly with the Buyer's Representative. The Buyer's Representative has no authority to bind the State to a contract, amendment, addendum, or other change or addition to the contract.

D. GOVERNING LAW (Nonnegotiable)

Notwithstanding any other provision of this contract, or any amendment or addendum(s) entered into contemporaneously or at a later time, the parties understand and agree that, (1) the State of Nebraska is a sovereign state and its authority to contract is therefore subject to limitation by the State's Constitution, statutes, common law, and regulation; (2) this contract will be interpreted and enforced under the laws of the State of Nebraska; (3) any action to enforce the provisions of this agreement must be brought in the State of Nebraska per state law; (4) the person signing this contract on behalf of the State of Nebraska does not have the authority to waive the State's sovereign immunity, statutes, common law, or regulations; (5) the indemnity, limitation of liability, remedy, and other similar provisions of the final contract, if any, are entered into subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity; and, (6) all terms and conditions of the final contract, including but not limited to the clauses concerning third party use, licenses, warranties, limitations of liability, governing law and venue, usage verification, indemnity, liability, remedy or other similar provisions of the final contract are entered into specifically subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity.

The Parties must comply with all applicable local, state, and federal laws, ordinances, rules, orders, and regulations.

E. BEGINNING OF WORK & SUSPENSION OF SERVICES

The bidder shall not commence any billable work until a valid contract has been fully executed by the State and the successful Vendor. The Vendor will be notified in writing when work may begin.

The State may, at any time and without advance notice, require the Vendor to suspend any or all performance or deliverables provided under this Contract. In the event of such suspension, the Contract Manager or POC, or their designee, will issue a written order to stop work. The written order will specify which activities are to be immediately suspended and the reason(s) for the suspension. Upon receipt of such order, the Vendor shall immediately comply with its terms and take all necessary steps to mitigate and eliminate the incurrence of costs allocable to the work affected by the order during the period of suspension. The suspended performance or deliverables may only resume when the State provides the Vendor with written notice that such performance or deliverables may resume, in whole or in part.

F. AMENDMENT

This Contract may be amended in writing, within scope, upon the agreement of both parties.

G. CHANGE ORDERS OR SUBSTITUTIONS

The State and the Vendor, upon the written agreement, may make changes to the contract within the general scope of the solicitation. Changes may involve specifications, the quantity of work, or such other items as the State may find necessary or desirable. Corrections of any deliverable, service, or work required pursuant to the contract shall not be deemed a change. The Vendor may not claim forfeiture of the contract by reasons of such changes.

The Vendor shall prepare a written description of the work required due to the change and an itemized cost sheet for the change. Changes in work and the amount of compensation to be paid to the Vendor shall be determined in accordance with applicable unit prices if any, a pro-rated value, or through negotiations. The State shall not incur a price increase for changes that should have been included in the Vendor's solicitation response, were foreseeable, or result from difficulties with or failure of the Vendor's solicitation response or performance.

No change shall be implemented by the Vendor until approved by the State, and the Contract is amended to reflect the change and associated costs, if any. If there is a dispute regarding the cost, but both parties agree that immediate implementation is necessary, the change may be implemented, and cost negotiations may continue with both Parties retaining all remedies under the contract and law.

In the event any good or service is discontinued or replaced upon mutual consent during the contract period or prior to delivery, the State reserves the right to amend the contract to include the alternate product at the same price.

*****Vendor will not substitute any item that has been awarded without prior written approval of SPB*****

H. RECORD OF VENDOR PERFORMANCE

The State may document the vendor's performance, which may include, but is not limited to, the customer service provided by the vendor, the ability of the vendor, the skill of the vendor, and any instance(s) of products or services delivered or performed which fail to meet the terms of the purchase order, contract, and/or specifications. In addition to other remedies and options available to the State, the State may issue one or more notices to the vendor outlining any issues the State has regarding the vendor's performance for a specific contract ("Contract Compliance Request"). The State may also document the Vendor's performance in a report, which may or may not be provided to the vendor ("Contract Non-Compliance Notice"). The Vendor shall respond to any Contract Compliance Request or Contract Non-Compliance Notice in accordance with such notice or request. At the sole discretion of the State, such Contract Compliance Requests and Contract Non-Compliance Notices may be placed in the State's records regarding the vendor and may be considered by the State and held against the vendor in any future contract or award opportunity. The record of vendor performance will be considered in any suspension or debarment action.

I. NOTICE OF POTENTIAL VENDOR BREACH

If Vendor breaches the contract or anticipates breaching the contract, the Vendor shall immediately give written notice to the State. The notice shall explain the breach or potential breach, a proposed cure, and may include a request for a waiver of the breach if so desired. The State may, in its discretion, temporarily or permanently waive the breach. By granting a waiver, the State does not forfeit any rights or remedies to which the State is entitled by law or equity, or pursuant to the provisions of the contract. Failure to give immediate notice, however, may be grounds for denial of any request for a waiver of a breach.

J. BREACH

Either Party may terminate the contract, in whole or in part, if the other Party breaches its duty to perform its obligations under the contract in a timely and proper manner. Termination requires written notice of default and a thirty (30) calendar day (or longer at the non-breaching Party's discretion considering the gravity and nature of the default) cure period. Said notice shall be delivered by email, delivery receipt requested; certified mail, return receipt requested; or in person with proof of delivery. Allowing time to cure a failure or breach of contract does not waive the right to immediately terminate the contract for the same or different contract breach which may occur at a different time.

The State's failure to make payment shall not be a breach, and the Vendor shall retain all available statutory remedies.

K. NON-WAIVER OF BREACH

The acceptance of late performance with or without objection or reservation by a Party shall not waive any rights of the Party nor constitute a waiver of the requirement of timely performance of any obligations remaining to be performed.

L. SEVERABILITY

If any term or condition of the contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and conditions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the provision held to be invalid or illegal.

M. INDEMNIFICATION

1. GENERAL

The Vendor agrees to defend, indemnify, and hold harmless the State and its employees, volunteers, agents, and its elected and appointed officials ("the indemnified parties") from and against any and all third party claims, liens, demands, damages, liability, actions, causes of action, losses, judgments, costs, and expenses ~~of every nature,~~ including investigation costs and expenses, settlement costs, and reasonable attorney fees and expenses ("the claims"), sustained or asserted against the State for personal injury, death, or property loss or damage, ~~arising out of,~~ resulting from, ~~or attributable to~~ the willful misconduct, negligence, error, or omission of the Vendor, its employees, Subcontractors, consultants, representatives, and agents, resulting from this contract, except to the extent such Vendor liability is attenuated by any action of the State which directly and proximately contributed to the claims.

2. INTELLECTUAL PROPERTY

The Vendor agrees it will, at its sole cost and expense, defend, indemnify, and hold harmless the indemnified parties from and against any and all claims, to the extent such claims~~ arise out of~~, result from~~, or are attributable to,~~ the actual or alleged infringement or misappropriation of any patent, copyright, trade secret, trademark, or confidential information of any third party by the Vendor or its employees, Subcontractors, consultants, representatives, and agents; provided, however, the State gives the Vendor prompt notice in writing of the claim. The Vendor may not settle any infringement claim that will affect the State's use of the Licensed Software without the State's prior written consent, which consent may be withheld for any reason.

If a judgment or settlement is obtained or reasonably anticipated against the State's use of any intellectual property for which the Vendor has indemnified the State, the Vendor shall, at the Vendor's sole cost and expense, promptly modify the item or items which were determined to be infringing, acquire a license or licenses on the State's behalf to provide the necessary rights to the State to eliminate the infringement, or provide the State with a non-infringing substitute that provides the State the same functionality. At the State's election, the actual or anticipated judgment may be treated as a breach of warranty by the Vendor, and the State may receive the remedies provided under this Solicitation.

3. PERSONNEL

The Vendor shall, at its expense, indemnify and hold harmless the indemnified parties from and against any claim with respect to withholding taxes, worker's compensation, employee benefits, or any other claim, demand, liability, damage, or loss of any nature relating to any of the personnel, including subcontractor's and their employees, provided by the Vendor.

4. SELF-INSURANCE

The State of Nebraska is self-insured for any loss and purchases excess insurance coverage pursuant to Neb. Rev. Stat. § 81-8,239.01. If there is a presumed loss under the provisions of this agreement, Vendor may file a claim with the Office of Risk Management pursuant to Neb. Rev. Stat. §§ 81-8,239.01 to 81-8,306 for review by the State Claims Board. The State retains all rights and immunities under the State Miscellaneous (Neb. Rev. Stat. § 81-8,294), Tort (Neb. Rev. Stat. § 81-8,209), and Contract Claim Acts (Neb. Rev. Stat. § 81-8,302), as outlined in state law and accepts liability under this agreement only to the extent provided by law.

5. The Parties acknowledge that Attorney General for the State of Nebraska is required by statute to represent the legal interests of the State, and that any provision of this indemnity clause is subject to the statutory authority of the Attorney General.

N. ATTORNEY'S FEES

In the event of any litigation, appeal, or other legal action to enforce any provision of the contract, the Parties agree to pay all expenses of such action, as permitted by law and if ordered by the court, including attorney's fees and costs, if the other Party prevails.

Should Contractor be the prevailing party in such action, the State agrees to pay all expenses of such action, as permitted by law, including attorney's fees and costs.

O. ASSIGNMENT, SALE, OR MERGER

Either Party may assign the contract upon mutual written agreement of the other Party. Such agreement shall not be unreasonably withheld.

The Vendor retains the right to enter into a sale, merger, acquisition, internal reorganization, or similar transaction involving Vendor's business. Vendor agrees to cooperate with the State in executing amendments to the contract to allow for the transaction. If a third party or entity is involved in the transaction, the Vendor will remain responsible for performance of the contract until such time as the person or entity involved in the transaction agrees in writing to be contractually bound by this contract and perform all obligations of the contract.

P. CONTRACTING WITH OTHER NEBRASKA POLITICAL SUBDIVISIONS OF THE STATE OR ANOTHER STATE

The Vendor may, but shall not be required to, allow agencies, as defined in Neb. Rev. Stat. § 81-145(2), to use this contract. The terms and conditions, including price, of the contract may not be amended. The State shall not be contractually obligated or liable for any contract entered into pursuant to this clause. A listing of Nebraska political subdivisions may be found at the website of the Nebraska Auditor of Public Accounts.

The Vendor may, but shall not be required to, allow other states, agencies or divisions of other states, or political subdivisions of other states to use this contract. The terms and conditions, including price, of this contract shall apply to any such contract, but may be amended upon mutual consent of the Parties. The State of Nebraska shall not be contractually or otherwise obligated or liable under any contract entered into pursuant to this clause. The State shall be notified if a contract is executed based upon this contract.

Q. FORCE MAJEURE

Neither Party shall be liable for any costs or damages, or for default resulting from its inability to perform any of its obligations under the contract due to a natural or manmade event outside the control and not the fault of the affected Party ("Force Majeure Event") that was not foreseeable at the time the Contract was executed. The Party so affected shall immediately make a written request for relief to the other Party and shall have the burden of proof to justify the request. The other Party may grant the relief requested; relief may not be unreasonably withheld. Labor disputes with the impacted Party's own employees will not be considered a Force Majeure Event.

R. CONFIDENTIALITY

All materials and information provided by the Parties or acquired by a Party on behalf of the other Party shall be regarded as confidential information. All materials and information provided or acquired shall be handled in accordance with federal and state law, and ethical standards. Should said confidentiality be breached by a Party, the Party shall notify the other Party ~~immediately~~ as soon as practical of said breach and take immediate corrective action.

It is incumbent upon the Parties to inform their officers and employees of the penalties for improper disclosure imposed by the Privacy Act of 1974, 5 U.S.C. 552a. Specifically, 5 U.S.C. 552a (i)(1), which is made applicable by 5 U.S.C. 552a (m)(1), provides that any officer or employee, who by virtue of his/her employment or official position has possession of or access to agency records which contain individually identifiable information, the disclosure of which is prohibited by the Privacy Act or regulations established thereunder, and who knowing that disclosure of the specific material is prohibited, willfully discloses the material in any manner to any person or agency not entitled to receive it, shall be guilty of a misdemeanor and fined not more than $5,000.

S. EARLY TERMINATION

The contract may be terminated as follows:

1. The State and the Vendor, by mutual written agreement, may terminate the contract, in whole or in part, at any time.
2. The State, in its sole discretion, may terminate the contract, in whole or in part, for any reason upon thirty (30) calendar day's written notice shall be delivered by email, delivery receipt requested; certified mail, return receipt requested; or in person with proof of delivery to the Vendor. Such termination shall not relieve the Vendor of warranty or other service obligations incurred under the terms of the contract. In the event of termination, the Vendor shall be entitled to payment, determined on a pro rata basis, for products or services satisfactorily performed or provided.
3. The State may terminate the contract, in whole or in part, immediately for the following reasons:

a. if directed to do so by statute,
b. Vendor has made an assignment for the benefit of creditors, has admitted in writing its inability to pay debts as they mature, or has ceased operating in the normal course of business,
c. a trustee or receiver of the Vendor or of any substantial part of the Vendor's assets has been appointed by a court,
d. fraud, misappropriation, embezzlement, malfeasance, misfeasance, or illegal conduct pertaining to performance under the contract by its Vendor, its employees, officers, directors, or shareholders,
e. an involuntary proceeding has been commenced by any Party against the Vendor under any one of the chapters of Title 11 of the United States Code and (i) the proceeding has been pending for at least sixty (60) calendar days; or (ii) the Vendor has consented, either expressly or by operation of law, to the entry of an order for relief; or (iii) the Vendor has been decreed or adjudged a debtor,
f. a voluntary petition has been filed by the Vendor under any of the chapters of Title 11 of the United States Code,
g. Vendor intentionally discloses confidential information,
h. Vendor has or announces it will discontinue support of the deliverable; and,
i. In the event funding is no longer available.

4. Contractor may terminate this contract upon no less than thirty (30) days' written notice in the event of either (1) the State's failure to pay any undisputed invoices in a timely manner or (2) the State's directing or requiring the Contractor to act in a manner that would violate applicable law or regulation.

T. CONTRACT CLOSEOUT

Upon termination of the contract for any reason the Vendor shall within thirty (30) days, unless stated otherwise herein:

1. Transfer all completed or partially completed deliverables to the State,
2. Transfer ownership and title to all completed or partially completed deliverables to the State,
3. Return to the State all information and data unless the Vendor is permitted to keep the information or data by contract or rule of law. Vendor may retain one copy of any information or data as required to comply with applicable work product documentation standards or as are automatically retained in the course of Vendor's routine back up procedures,
4. Cooperate with any successor Contactor, person, or entity in the assumption of any or all of the obligations of this contract,
5. Cooperate with any successor Contactor, person, or entity with the transfer of information or data related to this contract,
6. Return or vacate any state owned real or personal property; and,
7. Return all data in a mutually acceptable format and manner.

Nothing in this section should be construed to require the Vendor to surrender intellectual property, real or personal property, or information or data owned by the Vendor for which the State has no legal claim.

U. AMERICANS WITH DISABILITIES ACT

Vendor shall comply with all applicable provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12131–12134), as amended by the ADA Amendments Act of 2008 (ADA Amendments Act) (Pub.L. 110–325, 122 Stat. 3553 (2008)), which prohibits discrimination on the basis of disability by public entities.

Section III. Vendor Duties

The reviewed Vendor Duties section begins on the following page.

II. VENDOR DUTIES

Bidder should read the Vendor Duties within this section and must initial either "Accept All Terms and Conditions Within Section as Written" or "Exceptions Taken to Vendor Duties Within Section as Written" in the table below. If exception is not taken to a provision, it is deemed accepted as stated. If the bidder takes any exceptions, they must provide the following within the "Exceptions" field of the table below (Bidder may provide responses in separate attachment if multiple exceptions are taken):

1. The specific clause, including section reference, to which an exception has been taken;
2. An explanation of why the bidder took exception to the clause; and
3. Provide alternative language to the specific clause within the solicitation response.

By signing the solicitation, bidder agrees to be legally bound by all the accepted terms and conditions, and any proposed alternative terms and conditions submitted with the solicitation response. The State reserves the right to negotiate rejected or proposed alternative language. If the State and bidder fail to agree on the final Terms and Conditions, the State reserves the right to reject the solicitation response. The State reserves the right to reject solicitation responses that attempt to substitute the bidder's commercial contracts and/or documents for this solicitation.

Accept All Vendor Duties Within Section as Written (Initial)	**Exceptions Taken to Vendor Duties Within Section as Written (Initial)**	**Exceptions:** (Bidder must note the specific clause, including section reference, to which an exception has been taken, an explanation of why the bidder took exception to the clause, and provide alternative language to the specific clause within the solicitation response.)
	MS	Segal currently provides services to DAS. Accordingly, if Segal is determined to be the winning bidder, Segal proposes to continue providing services pursuant to contract terms and conditions that are substantively similar to the previously negotiated contract. Please note that our form contract has changed but we are willing to discuss any changes and tailor the agreement as appropriate under the circumstances.

A. INDEPENDENT VENDOR / OBLIGATIONS

It is agreed that the Vendor is an independent Vendor and that nothing contained herein is intended or should be construed as creating or establishing a relationship of employment, agency, or a partnership.

The Vendor is solely responsible for fulfilling the contract. The Vendor or the Vendor's representative shall be the sole point of contact regarding all contractual matters.

The Vendor shall secure, at its own expense, all personnel required to perform the services under the contract. The personnel the Vendor uses to fulfill the contract shall have no contractual or other legal relationship with the State; they shall not be considered employees of the State and shall not be entitled to any compensation, rights or benefits from the State, including but not limited to, tenure rights, medical and hospital care, sick and vacation leave, severance pay, or retirement benefits.

By-name personnel commitments made in the bidder's solicitation response shall not be changed without the prior written approval of the State. Replacement of these personnel, if approved by the State, shall be with personnel of equal or greater ability and qualifications.

All personnel assigned by the Vendor to the contract shall be employees of the Vendor or a subcontractor and shall be fully qualified to perform the work required herein. Personnel employed by the Vendor or a subcontractor to fulfill the terms of the contract shall remain under the sole direction and control of the Vendor or the subcontractor respectively.

With respect to its employees, the Vendor agrees to be solely responsible for the following:

1. Any and all pay, benefits, and employment taxes and/or other payroll withholding,
2. Any and all vehicles used by the Vendor's employees, including all insurance required by state law,
3. Damages incurred by Vendor's employees within the scope of their duties under the contract,
4. Maintaining Workers' Compensation and health insurance that complies with state and federal law and submitting any reports on such insurance to the extent required by governing law,
5. Determining the hours to be worked and the duties to be performed by the Vendor's employees; and,
6. All claims on behalf of any person arising out of employment or alleged employment (including without limit claims of discrimination alleged against the Vendor, its officers, agents, or subcontractors or subcontractor's employees).

If the Vendor intends to utilize any subcontractor, the subcontractor's level of effort, tasks, and time allocation should be clearly defined in the solicitation response. The Vendor shall agree that it will not utilize any subcontractors not specifically included in its solicitation response in the performance of the contract without the prior written authorization of the State. If the Vendor subcontracts any of the work, the Vendor agrees to pay any and all subcontractors in accordance with the Vendor's agreement with the respective subcontractor(s).

The State reserves the right to require the Vendor to reassign or remove from the project any Vendor or subcontractor employee.

Vendor shall insure that the terms and conditions contained in any contract with a subcontractor does not conflict with the terms and conditions of this contract.

The Vendor shall include a similar provision, for the protection of the State, in the contract with any Subcontractor engaged to perform work on this contract.

B. FOREIGN ADVERSARY CONTRACTING PROHIBITION ACT CERTIFICATION (Nonnegotiable)

The Vendor certifies that it is not a scrutinized company as defined under the Foreign Adversary Contracting Prohibition Act, Neb. Rev. Stat. Sec. § 73-903 (5); that it will not subcontract with any scrutinized company for any aspect of performance of the contemplated contract; and that any products or services to be provided do not originate with a scrutinized company.

C. EMPLOYEE WORK ELIGIBILITY STATUS

The Vendor is required and hereby agrees to use a federal immigration verification system to determine the work eligibility status of employees physically performing services within the State of Nebraska. A federal immigration verification system means the electronic verification of the work authorization program authorized by the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324a, known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of an employee.

If the Vendor is an individual or sole proprietorship, the following applies:

1. The Vendor must complete the United States Citizenship Attestation Form, available on the Department of Administrative Services website at https://das.nebraska.gov/materiel/docs/pdf/Individual%20or%20Sole%20Proprietor%20United%20States%20Attestation%20Form%20English%20and%20Spanish.pdf
2. The completed United States Attestation Form should be submitted with the Solicitation response.
3. If the Vendor indicates on such attestation form that he or she is a qualified alien, the Vendor agrees to provide the US Citizenship and Immigration Services documentation required to verify the Vendor's lawful presence in the United States using the Systematic Alien Verification for Entitlements (SAVE) Program.
4. The Vendor understands and agrees that lawful presence in the United States is required, and the Vendor may be disqualified or the contract terminated if such lawful presence cannot be verified as required by Neb. Rev. Stat. § 4-108.

D. COMPLIANCE WITH CIVIL RIGHTS LAWS AND EQUAL OPPORTUNITY EMPLOYMENT / NONDISCRIMINATION (Nonnegotiable)

The Vendor shall comply with all applicable local, state, and federal statutes and regulations regarding civil rights laws and equal opportunity employment. The Nebraska Fair Employment Practice Act prohibits Vendors of the State of Nebraska, and their Subcontractors, from discriminating against any employee or applicant for employment, with respect to hire, tenure, terms, conditions, compensation, or privileges of employment because of race, color, religion, sex, disability, marital status, or national origin (Neb. Rev. Stat. §§ 48-1101 to 48-1125). The Vendor guarantees compliance with the Nebraska Fair Employment Practice Act, and breach of this provision shall be regarded as a material breach of contract. The Vendor shall insert a similar provision in all Subcontracts for goods and services to be covered by any contract resulting from this Solicitation.

E. COOPERATION WITH OTHER VENDORS

Vendor may be required to work with or in close proximity to other Vendors or individuals that may be working on same or different projects. The Vendor shall agree to cooperate with such other Vendors or individuals and shall not commit or permit any act which may interfere with the performance of work by any other Vendor or individual. Vendor is not required to compromise Vendor's intellectual property or proprietary information unless expressly required to do so by this contract.

F. DISCOUNTS

Prices quoted shall be inclusive of ALL trade discounts. Cash discount terms of less than thirty (30) days will not be considered as part of the solicitation response. Cash discount periods will be computed from the date of receipt of a properly executed claim voucher or the date of completion of delivery of all items in a satisfactory condition, whichever is later.

G. PRICES

Prices quoted shall be net, including transportation and delivery charges fully prepaid by the bidder, F.O.B. destination named in the Solicitation. No additional charges will be allowed for packing, packages, or partial delivery costs. When an arithmetic error has been made in the extended total, the unit price will govern.

Prices submitted on the cost sheet shall remain fixed for the first three (3) years of the contract. Any request for a price increase subsequent to the first three (3) years of the contract shall not exceed three percent (3 %) of the previous Contract period. Increases will be cumulative across the remaining periods of the contract. Requests for an increase must be submitted in writing to the State Purchasing Bureau a minimum of 180 days prior to the end of the current contract period. Documentation may be required by the State to support the price increase.

The State reserves the right to deny any requested price increase. No price increases are to be billed to any State Agencies prior to written amendment of the contract by the parties.

The State will be given full proportionate benefit of any decreases for the term of the contract.

H. PERMITS, REGULATIONS, LAWS

The contract price shall include the cost of all royalties, licenses, permits, and approvals, whether arising from patents, trademarks, copyrights or otherwise, that are in any way involved in the contract. The Vendor shall obtain and pay for all royalties, licenses, and permits, and approvals necessary for the execution of the contract. The Vendor must guarantee that it has the full legal right to the materials, supplies, equipment, software, and other items used to execute this contract.

I. OWNERSHIP OF INFORMATION AND DATA / DELIVERABLES

~~The State shall have the unlimited right to publish, duplicate, use, and disclose all information and data developed or obtained by the Vendor on behalf of the State pursuant to this contract.~~

Except to the extent that they incorporate Contractor's proprietary software, know-how, techniques, methodologies and report formats (collectively, "Contractor's Proprietary Information"), all documents, data, and other tangible materials authored or prepared and delivered by Contractor to the State of Nebraska under the terms of this Agreement (collectively, the "Deliverables"), are the sole and exclusive property of the State of Nebraska, once paid for by the State. To the extent Contractor's Proprietary Information is incorporated into such Deliverables, the State of Nebraska shall have a perpetual, nonexclusive, worldwide, royalty-free license to use, copy, and modify Contractor's Proprietary Information as part of the Deliverables internally and for their intended purpose.

The State shall own and hold exclusive title to any deliverable developed as a result of this contract. Vendor shall have no ownership interest or title, and shall not patent, license, or copyright, duplicate, transfer, sell, or exchange, the design, specifications, concept, or deliverable.

J. INSURANCE REQUIREMENTS

The Vendor shall throughout the term of the contract maintain insurance as specified herein and provide the State a current Certificate of Insurance/Acord Form (COI) verifying the coverage. The Vendor shall not commence work on the contract until the insurance is in place. If Vendor subcontracts any portion of the Contract the Vendor must, throughout the term of the contract, either:

1. Provide equivalent insurance for each subcontractor and provide a COI verifying the coverage for the subcontractor,
2. Require each subcontractor to have equivalent insurance and provide written notice to the State that the Vendor has verified that each subcontractor has the required coverage; or,
3. Provide the State with copies of each subcontractor's Certificate of Insurance evidencing the required coverage.

The Vendor shall not allow any Subcontractor to commence work until the Subcontractor has equivalent insurance. The failure of the State to require a COI, or the failure of the Vendor to provide a COI or require subcontractor insurance shall not limit, relieve, or decrease the liability of the Vendor hereunder.

In the event that any policy written on a claims-made basis terminates or is canceled during the term of the contract or within five (5) years of termination or expiration of the contract, the Vendor shall obtain an extended discovery or reporting period, or a new insurance policy, providing coverage required by this contract for the term of the contract and five (5) years following termination or expiration of the contract.

If by the terms of any insurance a mandatory deductible is required, or if the Vendor elects to increase the mandatory deductible amount, the Vendor shall be responsible for payment of the amount of the deductible in the event of a paid claim.

Notwithstanding any other clause in this Contract, the State may recover up to the liability limits of the insurance policies required herein.

As edited below: Products and Completed Operations are included in the general aggregate. We also have an umbrella of $20M that will cover anything over the $2 aggregate; Segal does not own any vehicles; Segal does not have the coverage deleted below.

1. WORKERS' COMPENSATION INSURANCE

The Vendor shall take out and maintain during the life of this contract the statutory Workers' Compensation and Employer's Liability Insurance for all of the contactors' employees to be engaged in work on the project under this contract and, in case any such work is sublet, the Vendor shall require the Subcontractor similarly to provide Worker's Compensation and Employer's Liability Insurance for all of the Subcontractor's employees to be engaged in such work. This policy shall be written to meet the statutory requirements for the state in which the work is to be performed, including Occupational Disease. **The policy shall include a waiver of subrogation in favor of the State. The COI shall contain the mandatory COI subrogation waiver language found hereinafter**. The amounts of such insurance shall not be less than the limits stated hereinafter. For employees working in the State of Nebraska, the policy must be written by an entity authorized by the State of Nebraska Department of Insurance to write Workers' Compensation and Employer's Liability Insurance for Nebraska employees.

2. COMMERCIAL GENERAL LIABILITY INSURANCE AND COMMERCIAL AUTOMOBILE LIABILITY INSURANCE

The Vendor shall take out and maintain during the life of this contract such Commercial General Liability Insurance and Commercial Automobile Liability Insurance as shall protect Vendor and any Subcontractor performing work covered by this contract from claims for damages for bodily injury, including death, as well as from claims for property damage, which may arise from operations under this contract, whether such operation be by the Vendor or by any Subcontractor or by anyone directly or indirectly employed by either of them, and the amounts of such insurance shall not be less than limits stated hereinafter.

The Commercial General Liability Insurance shall be written on an **occurrence basis**, and provide Premises/Operations, Products/Completed Operations, Independent Vendors, Personal Injury, and Contractual Liability coverage. **The policy shall include the State, and others as required by the contract documents, as Additional Insured(s). This policy shall be primary, and any insurance or self-insurance carried by the State shall be considered secondary and non-contributory**. **The COI shall contain the mandatory COI liability waiver language found hereinafter.** The Commercial Automobile Liability Insurance shall be written to cover all Owned, Non-owned, and Hired vehicles.

REQUIRED INSURANCE COVERAGE	
COMMERCIAL GENERAL LIABILITY	
General Aggregate	$2,000,000
Products/Completed Operations Aggregate	~~$2,000,000~~ included in the general aggregate
Personal/Advertising Injury	$1,000,000 per occurrence
Bodily Injury/Property Damage	$1,000,000 per occurrence
Medical Payments	$10,000 any one person
Damage to Rented Premises (Fire)	$300,000 each occurrence
Contractual	Included
~~XCU Liability (Explosion, Collapse, and Underground Damage)~~	~~Included~~
~~Independent Vendors~~	~~Included~~
If higher limits are required, the Umbrella/Excess Liability limits are allowed to satisfy the higher limit.	
WORKER'S COMPENSATION	
Employers Liability Limits	$500K/$500K/$500K
Statutory Limits- All States	Statutory - State of Nebraska
Voluntary Compensation	Statutory
COMMERCIAL AUTOMOBILE LIABILITY	
Bodily Injury/Property Damage	$1,000,000 combined single limit
Include All ~~Owned,~~ Hired & Non-Owned Automobile liability	Included
Motor Carrier Act Endorsement	Where Applicable
UMBRELLA/EXCESS LIABILITY	
Over Primary Insurance	$5,000,000 per occurrence
PROFESSIONAL LIABILITY	
Professional liability (Medical Malpractice)	Limits consistent with Nebraska Medical Malpractice Cap
Qualification Under Nebraska Excess Fund	
All Other Professional Liability (Errors & Omissions)	$10,000,000 Per Claim / Aggregate
COMMERCIAL CRIME	
Crime/Employee Dishonesty Including 3rd Party Fidelity	$1,000,000
CYBER LIABILITY	
Breach of Privacy, Security Breach, Denial of Service, Remediation, Fines and Penalties	$5,000,000
MANDATORY COI SUBROGATION WAIVER LANGUAGE	
"Workers' Compensation policy shall include a waiver of subrogation in favor of the State of Nebraska."	
MANDATORY COI LIABILITY WAIVER LANGUAGE	
"Commercial General Liability & Commercial Automobile Liability policies shall name the State of Nebraska as an Additional Insured and the policies shall be primary and any insurance or self-insurance carried by the State shall be considered secondary and non-contributory as additionally insured."	

3. EVIDENCE OF COVERAGE

The Vendor shall furnish the Contract Manager, via email, with a certificate of insurance coverage complying with the above requirements prior to beginning work at:

120961 O5

Nebraska Public Employees Retirement Systems
Attn: Controller
1526 K Street, Suite 400
Lincoln, NE 68508
Teresa.zulauf@nebraska.gov

These certificates or the cover sheet shall reference the solicitation number, and the certificates shall include the name of the company, policy numbers, effective dates, dates of expiration, and amounts and types of coverage afforded. If the State is damaged by the failure of the Vendor to maintain such insurance, then the Vendor shall be responsible for all reasonable costs properly attributable thereto.

Reasonable notice of cancellation of any required insurance policy must be submitted to the contract manager as listed above when issued and a new coverage binder shall be submitted immediately to ensure no break in coverage.

4. DEVIATIONS

The insurance requirements are subject to limited negotiation. Negotiation typically includes, but is not necessarily limited to, the correct type of coverage, necessity for Workers' Compensation, and the type of automobile coverage carried by the Vendor.

K. ANTITRUST

The Vendor hereby assigns to the State any and all claims for overcharges as to goods and/or services provided in connection with this contract resulting from antitrust violations which arise under antitrust laws of the United States and the antitrust laws of the State.

L. CONFLICT OF INTEREST

By submitting a solicitation response, vendor certifies that no relationship exists between the vendor and any person or entity which either is, or gives the appearance of, a conflict of interest related to this solicitation or project.

Vendor further certifies that vendor will not employ any individual known by vendor to have a conflict of interest nor shall vendor take any action or acquire any interest, either directly or indirectly, which will conflict in any manner or degree with the performance of its contractual obligations hereunder or which creates an actual or appearance of conflict of interest.

If there is an actual or perceived conflict of interest, vendor shall provide with its solicitation response a full disclosure of the facts describing such actual or perceived conflict of interest and a proposed mitigation plan for consideration. The State will then consider such disclosure and proposed mitigation plan and either approve or reject as part of the overall solicitation response evaluation.

M. STATE PROPERTY

The Vendor shall be responsible for the proper care and custody of any State-owned property which is furnished for the Vendor's use during the performance of the contract. The Vendor shall reimburse the State for any loss or damage of such property; normal wear and tear is expected.

N. SITE RULES AND REGULATIONS

The Vendor shall use its best efforts to ensure that its employees, agents, and Subcontractors comply with site rules and regulations while on State premises. If the Vendor must perform on-site work outside of the daily operational hours set forth by the State, it must make arrangements with the State to ensure access to the facility and the equipment has been arranged. No additional payment will be made by the State on the basis of lack of access, unless the State fails to provide access as agreed to in writing between the State and the Vendor.

O. ADVERTISING

The Vendor agrees not to refer to the contract award in advertising in such a manner as to state or imply that the company or its goods or services are endorsed or preferred by the State. Any publicity releases pertaining to the project shall not be issued without prior written approval from the State.

P. NEBRASKA TECHNOLOGY ACCESS STANDARDS (Nonnegotiable)

1. The State of Nebraska is committed to ensuring that all information and communication technology (ICT), developed, leased, or owned by the State of Nebraska, affords equivalent access to employees, program participants and members of the public with disabilities, as it affords to employees, program participants and members of the public who are not persons with disabilities.

2. By entering into this Contract, Vendor understands and agrees that if the Vendor is providing a product or service that contains ICT, as defined in subsection 3 below and such ICT is intended to be directly interacted with by the user or is public facing, such ICT must provide equivalent access, or be modified during implementation to afford equivalent access, to employees, program participants, and members of the public who have and who do not have disabilities. The Vendor may comply with this section by complying with Section 508 of the Rehabilitation Act of 1973, as amended, and its implementing standards adopted and promulgated by the U.S. Access Board.

3. ICT means information technology and other equipment, systems, technologies, or processes, for which the principal function is the creation, manipulation, storage, display, receipt, or transmission of electronic data and information, as well as any associated content. Vendor hereby agrees ICT includes computers and peripheral equipment, information kiosks and transaction machines, telecommunications equipment, customer premises equipment, multifunction office machines, software, applications, web sites, videos, and electronic documents. For the purposes of these assurances, ICT does not include ICT that is used exclusively by a Vendor.

Q. DISASTER RECOVERY/BACK UP PLAN

The Vendor shall have a disaster recovery and back-up plan, of which a copy should be provided upon request to the State, which includes, but is not limited to equipment, personnel, facilities, and transportation, in order to continue delivery of goods and services as specified under the specifications in the contract in the event of a disaster.

R. DRUG POLICY

Vendor certifies it maintains a drug free workplace environment to ensure worker safety and workplace integrity. Vendor agrees to provide a copy of its drug free workplace policy at any time upon request by the State.

S. WARRANTY

Despite any clause to the contrary, the Vendor represents and warrants that its services hereunder shall be performed by competent personnel and shall be of professional quality consistent with generally accepted industry standards for the performance of such services and shall comply in all respects with the requirements of this Agreement. For any breach of this warranty, the Vendor shall, for a period of ninety (90) days from performance of the service, perform the services again, at no cost to the State, or if Vendor is unable to perform the services as warranted, Vendor shall reimburse the State all fees paid to Vendor for the unsatisfactory services. The rights and remedies of the parties under this warranty are in addition to any other rights and remedies of the parties provided by law or equity, including, without limitation actual damages, and, as applicable and awarded under the law, to a prevailing party, reasonable attorneys' fees and costs.

T. TIME IS OF THE ESSENCE

Time is of the essence with respect to Vendor's performance and deliverables pursuant to this Contract.

Section IV. Payment

The reviewed Payment section begins on the following page.

III. PAYMENT

Bidder should read the Payment clauses within this section and must initial either “Accept All Terms and Conditions Within Section as Written” or “Exceptions Taken to Payment clauses Within Section as Written” in the table below. If exception is not taken to a provision, it is deemed accepted as stated. If the bidder takes any exceptions, they must provide the following within the “Exceptions” field of the table below (Bidder may provide responses in separate attachment if multiple exceptions are taken):

1. The specific clause, including section reference, to which an exception has been taken;
2. An explanation of why the bidder took exception to the clause; and
3. Provide alternative language to the specific clause within the solicitation response.

By signing the solicitation, bidder agrees to be legally bound by all the accepted terms and conditions, and any proposed alternative terms and conditions submitted with the solicitation response. The State reserves the right to negotiate rejected or proposed alternative language. If the State and bidder fail to agree on the final Terms and Conditions, the State reserves the right to reject the solicitation response. The State reserves the right to reject solicitation responses that attempt to substitute the bidder’s commercial contracts and/or documents for this solicitation.

Accept All Payment Clauses Within Section as Written (Initial)	Exceptions Taken to Payment Clauses Within Section as Written (Initial)	**Exceptions:** (Bidder must note the specific clause, including section reference, to which an exception has been taken, an explanation of why the bidder took exception to the clause, and provide alternative language to the specific clause within the solicitation response.)
MS		

A. PROHIBITION AGAINST ADVANCE PAYMENT (Nonnegotiable)

Pursuant to Neb. Rev. Stat. § 81-2403, “[n]o goods or services shall be deemed to be received by an agency until all such goods or services are completely delivered and finally accepted by the agency.”

B. TAXES (Nonnegotiable)

The State is not required to pay taxes and assumes no such liability as a result of this Solicitation. The Vendor may request a copy of the Nebraska Department of Revenue, Nebraska Resale or Exempt Sale Certificate for Sales Tax Exemption, Form 13 for their records. Any property tax payable on the Vendor's equipment which may be installed in a state-owned facility is the responsibility of the Vendor.

C. INVOICES

Invoices for payments must be submitted by the Vendor to the agency requesting the services with sufficient detail to support payment. Invoices detailed as shown on the cost proposal should be emailed to the Nebraska Public Employees Retirement Systems, Teresa.zulauf@nebraska.gov The terms and conditions included in the Vendor’s invoice shall be deemed to be solely for the convenience of the parties. No terms or conditions of any such invoice shall be binding upon the State, and no action by the State, including without limitation the payment of any such invoice in whole or in part, shall be construed as binding or estopping the State with respect to any such term or condition, unless the invoice term or condition has been previously agreed to by the State as an amendment to the contract. **The State shall have forty-five (45) calendar days to pay after a valid and accurate invoice is received by the State.**

D. INSPECTION AND APPROVAL

Final inspection and approval of all work required under the contract shall be performed by the designated State officials.

E. PAYMENT (Nonnegotiable)

Payment will be made by the responsible agency in compliance with the State of Nebraska Prompt Payment Act (See Neb. Rev. Stat. § 81-2403). The State may require the Vendor to accept payment by electronic means such as ACH deposit. In no event shall the State be responsible or liable to pay for any goods and services provided by the Vendor prior to the Effective Date of the contract, and the Vendor hereby waives any claim or cause of action for any such goods or services.

F. LATE PAYMENT (Nonnegotiable)

The Vendor may charge the responsible agency interest for late payment in compliance with the State of Nebraska Prompt Payment Act (See Neb. Rev. Stat. §§ 81-2401 through 81-2408).

G. SUBJECT TO FUNDING / FUNDING OUT CLAUSE FOR LOSS OF APPROPRIATIONS (Nonnegotiable)

The State's obligation to pay amounts due on the Contract for fiscal years following the current fiscal year is contingent upon legislative appropriation of funds. Should said funds not be appropriated, the State may terminate the contract with respect to those payments for the fiscal year(s) for which such funds are not appropriated. The State will give the Vendor written notice thirty (30) calendar days prior to the effective date of termination. All obligations of the State to make payments after the termination date will cease. The Vendor shall be entitled to receive just and equitable compensation for any authorized work which has been satisfactorily completed as of the termination date. In no event shall the Vendor be paid for a loss of anticipated profit.

H. RIGHT TO AUDIT (First Paragraph is Nonnegotiable)

The State shall have the right to audit the Vendor's performance of this contract upon a thirty (30) days' written notice. Vendor shall utilize generally accepted accounting principles, and shall maintain the accounting records, and other records and information relevant to the contract (Information) to enable the State to audit the contract. (Neb. Rev. Stat. § 84-304 et seq.) The State may audit, and the Vendor shall maintain, the Information during the term of the contract and for a period of five (5) years after the completion of this contract or until all issues or litigation are resolved, whichever is later. The Vendor shall make the Information available to the State at Vendor's place of business or a location acceptable to both Parties during normal business hours. If this is not practical or the Vendor so elects, the Vendor may provide electronic or paper copies of the Information. The State reserves the right to examine, make copies of, and take notes on any Information relevant to this contract, regardless of the form or the Information, how it is stored, or who possesses the Information. Under no circumstance will the Vendor be required to create or maintain documents not kept in the ordinary course of Vendor's business operations, nor will Vendor be required to disclose any information, including but not limited to product cost data, which is confidential or proprietary to Vendor.

The Parties shall pay their own costs of the audit unless the audit finds a previously undisclosed overpayment by the State. If a previously undisclosed overpayment exceeds one-half of one percent (.5%) of the total contract billings, or if fraud, material misrepresentations, or non-performance is discovered on the part of the Vendor, the Vendor shall reimburse the State for the total costs of the audit. Overpayments and audit costs owed to the State shall be paid within ninety (90) days of written notice of the claim. The Vendor agrees to correct any material weaknesses or condition found as a result of the audit.

CONTRACTUAL AGREEMENT FORM

BIDDER MUST COMPLETE THE FOLLOWING

By signing this Contractual Agreement Form, the bidder guarantees compliance with the provisions stated in this solicitation and agrees to the terms and conditions unless otherwise indicated in writing and certifies that bidder is not owned by the Chinese Communist Party.

Per Nebraska's Transparency in Government Procurement Act, Neb. Rev Stat § 73-603, DAS is required to collect statistical information regarding the number of contracts awarded to Nebraska Vendors. This information is for statistical purposes only and will not be considered for contract award purposes.

_____ NEBRASKA VENDOR AFFIDAVIT: Bidder hereby attests that bidder is a Nebraska Vendor. "Nebraska Vendor" shall mean any bidder who has maintained a bona fide place of business and at least one employee within this state for at least the six (6) months immediately preceding the posting date of this Solicitation. All vendors who are not a Nebraska Vendor are considered Foreign Vendors under Neb. Rev Stat § 73-603 (c).

_____ I hereby certify that I am a Resident disabled veteran or business located in a designated enterprise zone in accordance with Neb. Rev. Stat. § 73-107 and wish to have preference, if applicable, considered in the award of this contract.

_____ I hereby certify that I am a blind person licensed by the Commission for the Blind & Visually Impaired in accordance with Neb. Rev. Stat. § 71-8611 and wish to have preference considered in the award of this contract.

THIS FORM MUST BE SIGNED MANUALLY IN INK OR BY DOCUSIGN

COMPANY:	**The Segal Company (Midwest), Inc. d/b/a Segal**
ADDRESS:	**101 North Wacker Drive Suite 500 Chicago, Illinois 60606-1724**
PHONE:	**312.984.8534**
EMAIL:	**mstrom@segalco.com**
BIDDER NAME & TITLE:	**Matthew Strom, Senior Vice President and Actuary**
SIGNATURE:	Matthew A. Strom
DATE:	**March 21, 2025**

VENDOR COMMUNICATION WITH THE STATE CONTACT INFORMATION (IF DIFFERENT FROM ABOVE)	
NAME:	**Same as above**
TITLE:	
PHONE:	
EMAIL:	

2. Technical Response

The Technical Response section of the solicitation response should consist of the following subsections:

a. Understanding of the project requirements

b. Attachment A: Mandatory Qualifications

c. Attachment B: Proposed Technical approach

d. Attachment C: Additional Corporate Experience

e. Deliverables and due dates (Cost Proposal)

a. Understanding of the project requirements

Segal understands NPERS is seeking an actuarial consultant to perform actuarial consulting services, including general consulting services, actuarial valuation services, Governmental Accounting Standards Board (GASB) services, projection services, actuarial experience study services, benefit adequacy study services and any requested supplemental services for the four defined benefit plans, two defined contribution plans, two cash balance plans and one deferred compensation plan administered by NPERS, as follows:

- Four defined benefit plans
  - **Nebraska School Employees Retirement System** (School Employees Retirement Act, Neb. Rev.Stat. §§ 79-901 to 79-977.03). The School Plan has approximately 101,771 members (active, inactive and retired)
  - **Omaha School Employees Retirement System** (Class V School Employees Retirement Act, Neb.Rev. Stat. §§ 79-978 to 79-9,124). The Omaha Plan has approximately 15,409 members (active, inactive and retired)
  - **Nebraska Judges Retirement System** (Judges Retirement Act, Neb. Rev. Stat. §§ 24-701 to 24-714). The Judges Plan has approximately 356 members (active, inactive, and retired).
  - **Nebraska State Patrol Retirement System** (Nebraska State Patrol Retirement Act, Neb. Rev. Stat.§§ 81-2014 to 81-2041). The State Patrol Plan has approximately 985 members (active, inactive and retired)
- Two defined contribution plans
  - **State Employees Retirement System** (State Employees Retirement Act, Neb. Rev. Stat. §§ 84-1301 to 84-1333). The State DC Plan has approximately 2,548 members (active and inactive)
  - **County Employees Retirement System** (County Employees Retirement Act, Neb. Rev. Stat. §§ 23-2301 to 23-2334). The County DC Plan has approximately 1,061 members (active and inactive)

- Two cash balance plans
  - **State Employees Retirement System** (State Employees Retirement Act, Neb. Rev. Stat. § 84-1301 to 84-1333). The State CB plan has approximately 29,589 members (active, inactive and retired)
  - **County Employees Retirement System** (County Employees Retirement Act, Neb. Rev. Stat. § 23-2301 to 23-2334). The County CB plan has approximately 13,061 members (active, inactive and retired)
- Deferred compensation plan (DCP)
  - The DCP has approximately 6,276 members and is authorized by §§ 84-1504 through 84-1513. Also administered by NPERS is the Spousal Pension Rights Act Neb. Rev. Stat. §§ 42-1101 to 42-1113, which governs qualified domestic relations orders in the five NPERS administered pension plans

We further describe our understanding of the project in Section b*. Attachment B: Proposed technical approach*.

a. Attachment A: Mandatory qualifications

ATTACHMENT A

Mandatory Qualification Certification and Questionnaire

Request for Proposal Number 120961 O5

All bidders are required to complete this attachment.

The bidder hereby certifies that it meets all of the following mandatory qualifications:

1. As of December 31, 2024, the bidder has a minimum of three (3) public pension fund clients.

__X__ Yes. ______ No.

2. The bidder has a minimum of five (5) years of experience in providing actuarial consulting services to a public pension fund. This means that the bidder as an organization has been providing actuarial consulting services to a public pension fund for at least five (5) years. This requirement is not satisfied simply because its employees have at least five (5) years' experience in providing actuarial consulting services to a public pension fund.

__X__ Yes. ______ No.

3. The bidder's lead consultant on the account must have a minimum of ten (10) years of experience in providing actuarial consulting service to public pension funds. This experience shall include general consulting, experience analysis, and valuation assignments for such funds. This person shall also have experience in testifying before legislative and administrative bodies in support of actuarial positions and the principles used in valuing a public retirement system or pricing legislation, and an ability to discuss in laymen's terms the following: actuarial theory; basis for assumptions; and other actuarial matters. The lead consultant must be a member of the American Academy of Actuaries.

__X__ Yes. ______ No.

4. Professional staff assigned to the account shall have a minimum of five (5) years of experience in the field of actuarial science and will include persons with appropriate professional credentials such as Fellow or Associate of Society of Actuaries, and/or Fellow of the Conference of Actuaries in Public Practice, and/or Member of the American Academy of Actuaries, and/or meet standards of a qualified actuary under the provisions of the Employee Retirement Income Security Act of 1974.

__X__ Yes. ______ No.

5. All services to be provided on behalf of the account shall be in accordance with generally accepted actuarial principles.

__X__ Yes. ______ No.

6. The actuarial firm must carry liability insurance as set forth in this RFP for the duration the contract (Section III, J Insurance Requirements).

__X__ Yes. ______ No.

March 21, 2025	The Segal Company (Midwest), Inc. d/b/a Segal
Date	Name of Firm
Matthew A. Strom, FSA, MAAA, EA	Matthew A. Strom
Name and title of individual signing for the firm	Signed Manually in Ink or by DocuSign

b. Attachment B: Proposed technical approach

ATTACHMENT B

Technical Approach

Request for Proposal Number 120961 O5

Bidder Name: The Segal Company (Midwest), Inc. d/b/a Segal

Bidders shall complete and submit a Technical Approach Document to provide Actuarial Services for the Nebraska Public Employees Retirement Systems (NPERS). Bidders are required to describe in detail how their proposed solution meets the specifications outlined within each Requirement.

The Technical Approach Document must indicate how the bidder intends to comply with the requirement and the effort required to achieve that compliance. It is not sufficient for the bidder to simply state that it intends to meet the requirements of the RFP. The State will consider any such response to the requirements in this RFP to be non-responsive. The narrative should provide the State with sufficient information to differentiate the bidder's solution from other bidders' solutions.

TECHNICAL APPROACH
1. Describe bidder's understanding of the Scope of Work for this RFP.
Bidder response: Segal is prepared to perform the following Scope of Work for NPERS, as outlined in the RFP. **1. CONSULTING SERVICES** a. Provide actuarial consultation and advisory services on any technical, policy, legal, or administrative issues via meetings, telephone calls and written correspondence, as described more fully in the following sections. b. Make recommendations to the PERB on possible improvements for the financing and benefit structure of the retirement systems as new developments in the retirement industry occur. Keep the PERB apprised of current trends and progress within the actuarial profession and public pension plans. c. Review, consult on, and perform other actuarial functions in pricing proposed state and federal statutory changes or enactments; advise on any other implications such as administrative issues resulting from such proposed state and federal enactments. Consult and advise on the policy and administrative problems of implementing newly enacted legislation. d. Assist the PERB and NPERS with proposed changes to the governing retirement statutes and rules and regulations for all plans. e. Keep NPERS staff advised on anticipated and actual developments in federal statutes and rules and regulations regarding all aspects of pension and taxation law, such as financing, benefits, vesting, fiduciary responsibility, disclosure, and similar topics. This notification and advice shall include, but not be limited to, information on IRC § 415, 401(a) (in its entirety) and all other federal requirements necessary for the PERB to preserve the "qualified plan status" of the retirement plans within the PERB's administrative jurisdiction, and also the IRC § 457 DCP.

f. Develop, provide, and maintain the various actuarial assumptions, tables, rates, and factors needed by NPERS staff to administer the retirement systems. These may include, but are not limited to actuarial assumptions, mortality tables, present value and survivor benefits factors, factors for the purchases of permissive service credit, the asset valuation method, the amortization schedule for unfunded actuarial accrued liabilities, the required statutory payroll percentage contributions from employees and employers, estimated employer and state required actuarial contribution amount projections, and other similar actuarial information as specified by the staff of NPERS.

g. Appear before the PERB, the Governor of the State of Nebraska or the Governor's designee (Governor), and at hearings of the Legislature as necessary to discuss actuarial standards, principles, and other factors used in determining funding requirements, pricing of legislation, or effective administration of the retirement systems or other related topics. Appearances will be required as the Director of NPERS or the PERB Chairperson deems necessary. Estimated number of days per year spent in person in Lincoln for these appearances is fifteen (15) business days. The actual number of meetings may be more or less as required by the State. Segal is responsible for all costs even if the number of meetings per year exceeds the estimates. All travel costs must be included in the bid price.

h. Respond to requests from the Director of NPERS and other authorized NPERS staff for actuarial advice about the application of factors and tables in specific situations. This is anticipated to include review of specific questions raised by members, retirees, or beneficiaries concerning the actuarial aspects of specific benefit calculations or other actuarial questions.

i. Assure that technology implemented at NPERS will be compatible with technology used or maintained by Segal.

j. Assist in reviewing the form and content of records and data kept by NPERS as needed for the assessment of legislative proposals, actuarial studies, experience analysis, and other valuations. As requested, Segal will make suggestions and recommendations for the modification, additions, or deletions that will ensure the maintenance of the full range of data needed by Segal.

k. Assist the PERB in selecting the most appropriate method or approach for valuing system assets and suggesting how the valuation system can be improved. Assist the PERB in reviewing and recommending the most appropriate methods for calculating repayments and purchase of service benefits.

l. As requested, assist the Nebraska State Auditor's office with annual audits of all NPERS retirement plans. This may involve the explanation of actuarial principles and other information to educate and assist the auditors. Segal will be prepared to spend fifteen (15) to twenty (20) business days on this issue per year via written and / or oral communication.

2. VALUATION SERVICES

a. As of June 30th of each year, perform actuarial valuation of the assets, liabilities and reserves for the School Employees Retirement system, Judges Retirement system, and State Patrol Retirement system, commencing with the fiscal year ending June 30, 2025. Prior to the start of the valuation an analysis of needs associated with a valuation report will be done. This will include review of any plan changes resulting from legislation passed since the previous valuation and review of actuarial assumptions for continued reasonableness. Segal will determine the contributions required to discharge the liabilities and administrative costs as established by Nebraska statutes.

b. As of December 31st of each year, perform actuarial valuation of the assets, liabilities and reserves for the Omaha School Employees Retirement system, commencing with the calendar year ending December 31, 2025. Prior to the start of the valuation an analysis of needs associated with a valuation report will be done. This will include review of any plan changes resulting from legislation passed since the previous valuation and review of actuarial assumptions for continued reasonableness. Segal will determine the contributions required to discharge the liabilities and administrative costs as established by Nebraska statutes.

c. As of December 31st of each year, perform a valuation of the assets, liabilities, and reserves for the State and County CB plans and the Equal Retirement Benefit Funds (ERBF), commencing with the calendar year ending December 31, 2025. Segal will determine the contributions required to discharge the liabilities and administrative costs as established by Nebraska statutes.

d. Submit to NPERS staff a draft report on each completed actuarial valuation, to include the results of the valuation, the certification of contribution requirements and comments on the actuarial condition and progress of the six (6) retirement systems. These reporting requirements also include preparation of the required disclosure statements or information from which disclosure statements may be developed as required by Governmental Accounting Standards Board (GASB) principles or Actuarial Standards Board (ASB) principles. Upon NPERS approval of the draft report, up to fifty (50) final copies will be submitted to the NPERS office by November 10th of each year for the School, Judges and State Patrol plans, June 1st of each year for the Omaha School plan, and by May 10th of each year for the CB plans and the ERBF Funds.

e. The NPERS' staff shall furnish the awarded Segal the data requested on each member of the retirement systems that is required by Segal to make the actuarial valuation referred to in Section V, (B) Scope of Work, (1) a, b, and c. Data on each member shall be furnished to Segal as agreed between Segal and NPERS.

f. The data for all members of NPERS/PERB shall be protected with encryption and shall remain the property of the PERB. At the request of the PERB, Segal agrees that all data shall be forwarded via an agreed upon electronic media, to the NPERS Director's office or other location as directed by the PERB at no additional cost to the State. The confidential data maintained on behalf of the PERB by Segal shall not be released to anyone, nor shall the data be released without the prior written consent of the PERB.

3. GOVERNMENTAL ACCOUNTING STANDARDS BOARD (GASB) SERVICES

a. Assist NPERS in providing to covered plan employers the required supplementary information in accordance with GASB statement nos. 67 and 68 (or successor provisions). This applies to single and agent employers required to present supplementary information for the ten (10) most recent fiscal years, including: (1) sources of changes in the net pension liability, (2) the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percentage of covered-employee payroll.

b. Actuarially determine and assist NPERS in: (1) providing a schedule covering each of the ten (10) most recent fiscal years for each covered employer that includes information about the actuarially determined contribution, contributions to the pension plan, and related ratios; and (2) explaining factors that significantly affect trends in the amounts reported in the schedules, such as changes of benefit terms, changes in the size or composition of the population covered by the benefit terms, or the use of different assumptions.

c. Assist NPERS in addressing both current and proposed GASB changes in pension related accounting issues affecting the retirement plans.

4. PROJECTION SERVICES

a. Prepare an annual five (5) year projection of estimated employee, employer and State required contribution amounts and additional State contribution requirements for the School System, the Omaha School System, the State Patrol System, the Judges System, and the State and County CB benefit systems, and provide interim updates using actual fund rates of return provided by NPERS or the Nebraska Investment Council (NIC), as requested. The projections will be prepared as a separate report and presented with the annual actuarial valuations. The projections will be based on the latest actuarial valuation results rolled forward for each quarter. Under the School System, these projections will include contributions required to fund the Omaha Service Annuity, School System cost-of-living adjustments (COLAs), and percentage of salary State contributions for the School System. Under the Omaha School System, these projections will include contributions required to fund the Omaha Service Annuity, Omaha School System COLAs, and percentage of salary State contributions for the Omaha School System.

b. Prepare an annual thirty (30) year open group deterministic projection of estimated employee, employer and State required contribution amounts based on the results of the actuarial valuations, and additional State contribution requirements (if necessary) for the School Retirement System, Omaha School Retirement System, Judges Retirement System, and the State Patrol Retirement System. The projections will be prepared as a separate report and presented with the annual actuarial valuation of the plans. The projections will be based on the latest actuarial valuation results.

c. Provide an open group projection modeling software covering a thirty (30) year period. The model will show the following: a projection of the number of members and payroll growth over a thirty (30) year period, separated between current active members and future new hired members. New entrant profiles will be based on recent experience. Future active population will be assumed to remain stable or can include a membership growth assumption. All other future demographic experience will be assumed to match the actuarial assumptions. A projection of the actuarial liabilities, market and actuarial value of assets, expected cash flows, funded ratio, normal cost, contribution rates, and contribution amounts. Differences between current and proposed plan changes can be quantified for each year during the projection period to show the changes in employee, employer and State contributions. The modeling software shall be interactive and user friendly. It shall include the ability to modify a number of variables for scenario testing, including but not limited to the following: benefit formula multiplier, salary period, retirement age, vesting period, cost of living adjustments, employee contributions, employer contributions, State contributions, optional contributions, amortization methods, assumed rate of return, and annual interest rates. In addition, the modeling software shall have the following attributes: ability to project surpluses, ability to be updated as needed, printable charts, and ownership rights by NPERS.

5. ACTUARIAL EXPERIENCE STUDY

a. Segal will assist the PERB in an analysis of the demographic and financial experience of the Nebraska School Retirement System, the Omaha School Retirement System, the Nebraska State

Employee Retirement System, the Nebraska County Employees Retirement System, the Nebraska State Patrol Retirement System, and the Nebraska Judges Retirement System. The primary purpose of the analysis will be to determine the direction and magnitude of the various demographic and economic trends which affect the current and future liabilities of the retirement systems, to modify the actuarial assumptions to recognize these trends, and to obtain a more accurate determination of the systems' liabilities and the resulting costs.

b. The study will determine whether the actuarial assumptions and methods currently used in the DB and CB plans are reasonable (taking into account the experiences of the plan and reasonable expectations) and offer the actuary's best estimate of anticipated experience under the plans. [Although not subject to the Employee Retirement Security Income Act (ERISA), the experience study shall give due regard to the standards found in 29 U.S.C. § 1082(c)(3).] Factors examined shall include the experience of the plan, experience trends, external trends and external factors.

c. Segal shall present the findings of the experience study along with suggested changes to the actuarial assumptions and methods to the PERB.

d. Segal shall complete an Actuarial Experience Study for the Omaha School plan by December 31, 2025, using the four years ending December 31, 2024, and at a four-year interval thereafter or as required by the State Legislature.

e. If the contract is renewed for a second term, Segal shall complete an Actuarial Experience Study for the School, State Patrol, Judges, State Cash Balance, and County Cash Balance plans by December 31, 2028, using the four years ending June 30, 2027, or December 31, 2027, and at a four-year interval thereafter or as required by the State Legislature.

f. If the contract is renewed for a second term, Segal shall complete an Actuarial Experience Study for the Omaha School plan by December 31, 2029, using the four years ending December 31, 2028, and at a four-year interval thereafter or as required by the State Legislature.

g. If the contract is renewed for a third term, Segal shall complete an Actuarial Experience Study for the School, State Patrol, Judges, State Cash Balance, and County Cash Balance plans by December 31, 2032, using the four years ending June 30, 2031, or December 31, 2031, and at a four-year interval thereafter or as required by the State Legislature.

h. If the contract is renewed for a third term, Segal shall complete an Actuarial Experience Study for the Omaha School plan by December 31, 2033, using the four years ending December 31, 2032, and at a four-year interval thereafter or as required by the State Legislature.

6. BENEFIT ADEQUACY STUDY

a. Perform a review and analysis of the benefit, funding, and investment adequacy for the six (6) major public employee retirement systems of the State of Nebraska covering the Nebraska State Employees Retirement System (DC and CB plans); Nebraska School Employees Retirement System (DB plan); Omaha School Employees Retirement System (DB plan); Nebraska County Employees Retirement System (DC and CB plans); Nebraska Judges Retirement System (DB plan); and the Nebraska State Patrol Employees Retirement System (DB and deferred retirement option plans).

b. The benefit adequacy study shall include an analysis of the following system areas: income replacement needs; calculation of benefit adequacy achieved covering (1) value of the retirement benefit, (2) income replacement ratios, and (3) over/under target comparisons; competitiveness of the retirement systems; comparison with national average practices; contribution rate comparison for regional retirement systems; and recommendations to meet benefit adequacy and/or competitiveness needs.

c. This study shall include establishing benefit policy recommendations for retirement plans under the following three approaches: (1) Benefit Adequacy Approach – provide retirement income needed to maintain the same standard of living to an employee at and throughout retirement as was earned while the employee was working; (2) Competitiveness Approach – provide retirement benefits at a level competitive with other regional statewide retirement systems and local employers who are competing for employees with like skills; and, (3) Cost Approach – provide the best retirement benefit possible given a fixed contribution level and investment risk tolerance.

7. SUPPLEMENTAL SERVICES

a. The PERB or the Director of NPERS may require other services beyond those documented in subsections B1, B2, B3, B4, B5 and B6. Any supplemental charges resulting from these additional services must be at the hourly rate as set forth in the - Cost Proposal. The invoices must be itemized and billed to the appropriate system or systems in the month following the month when charges were incurred.

b. Services may be requested by entities other than the PERB (such as the Nebraska Unicameral Legislature, or groups representing retirement system participants) who will use the services of Segal to price benefit changes and improvements as provided by Neb. Rev. Stat. § 84-1503(2). When services are provided to other groups or entities, the charges resulting from these services are not a part of this RFP and must be billed and collected from the requesting entity or entities.

2. Describe bidder's approach for providing Actuarial Consulting Services for public pension funds.

Bidder response:

Our approach to account management and client satisfaction is to be truly customer centric — to understand client business issues and anticipate client needs, rather than react to them. We do not stop thinking about your issues when we get off the phone or leave the meeting. That is why you can expect to get emails from us frequently that convey our additional thinking with respect to the issues at hand.

As part of Segal's commitment to providing the greatest level of value to our clients, we staff projects with people of different levels of skill and experience as appropriate for the tasks. We staff project teams so that our clients benefit the most from our matrix structure. Our size (more than 1,100 employees) allows us a breadth and depth of expertise exceeding that of our competitors. We value direct client collaboration and consequently permit greater accessibility of our national practice leaders to personally consult with clients and to review special situations that may arise.

Segal assigns a team of actuaries and actuarial consultants to each client. In our view, the issues our clients face require our consultants to work together in developing sustainable solutions. We therefore place special emphasis on working collaboratively both internally with our people and externally with our clients. Collaboration is one of the critical measures we use as part of our performance management process.

For our public sector clients, our lead consultants are actuaries. They have the ability to communicate in a big-picture manner, but still have technical expertise to understand the details of the calculations. Additionally, credentialed actuaries complete the project team as reviewing actuaries and even technical analysts.

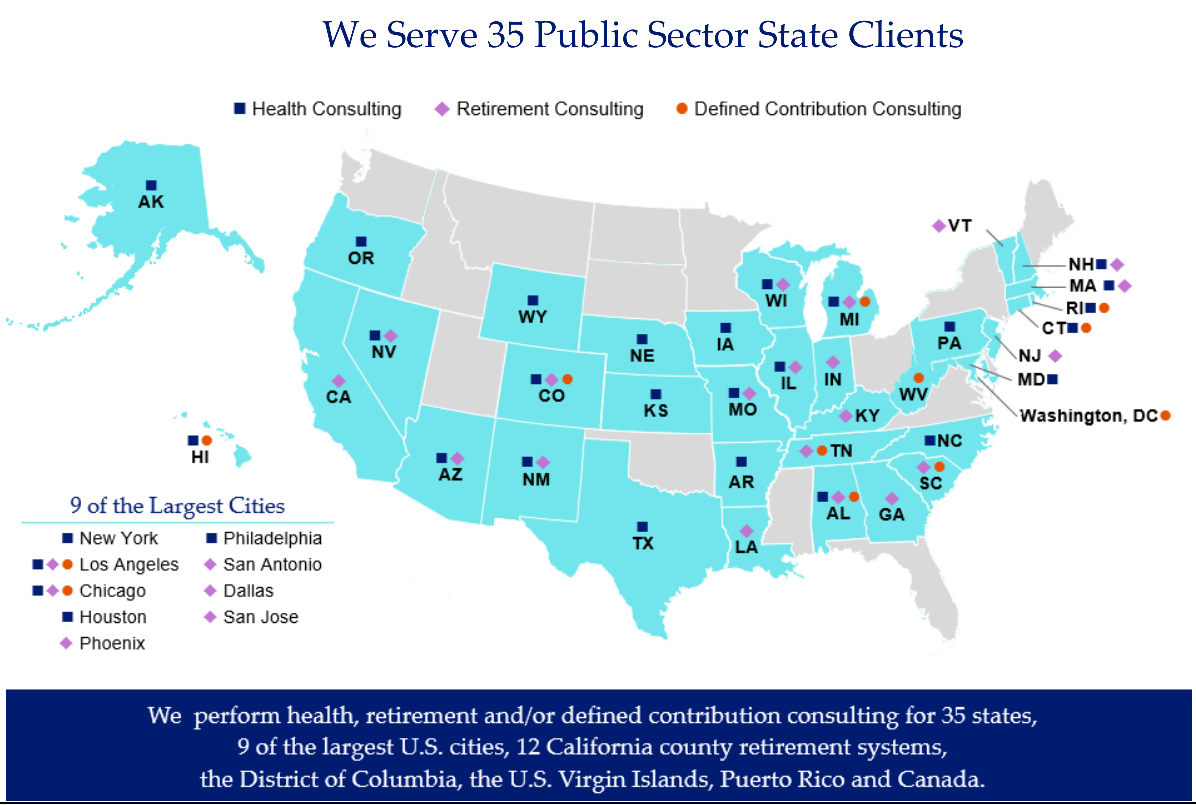
Since the provision of our client services is organized around a team concept, if one member of the team is unavailable, other members of the team will be able to carry on. Each team member is also part of a department. The managers of these departments play an active role in supervising the client work produced by their staff members. They also ensure that appropriate backup is available. Our team concept has proven to be successful in maintaining continuity of services to our clients. Segal also has a deep bench and can utilize members of other teams and regions in the rare event that may be needed so that client deadlines continue to be met.

We have learned through experience that our clients look to the principal consultants to help provide historical and business perspective on changes being contemplated. Segal's commitment is to involve our best technical specialists in each client project, while maintaining clear account management through seasoned professionals who are directly involved in the day-to-day benefit consulting and actuarial work.

We will be available to provide actuarial consultation and advisory services on any technical, policy, legal, or administrative issues via in-person and/or virtual meetings, telephone calls and written correspondence.

Public Sector market share

Segal's public sector market team provides benefit consulting services to more than 500 public sector entities representative of 35 states (as shown in the exhibit below, plus the District of Columbia, the U.S. Virgin Islands, Puerto Rico, the U.S. Government and Canada. We have been providing actuarial consulting services to public sector retirement plans since the 1950s. Retirement actuarial consulting services are provided to over 100 public sector funds including state and local entities, transportation authorities and both primary and secondary education institutions.



Client assets vary in size, with our larger systems representing between $1 billion and over $40 billion. Segal's retirement practice is known for the depth of its knowledge. Many of our consultants are recognized as national experts, testifying before legislatures, leading professional associations and committees, and speaking at national and regional conferences and forums. Our consultants are also regular contributors to professional magazines and journals.

A representative list of our public sector clients is attached to this proposal as *Appendix D.*

Actuarial consulting expertise and experience

Segal is a leading, independent firm of benefit, compensation and human resources consultants for over 85 years, providing actuarial consulting services to public sector entities. We consult to public entities nationwide, including states, counties, cities and other municipalities and special districts. Many of our clients have plans that include general employees, teachers and public safety employees. From our work with these plans, we understand the unique nature of the different groups and the impact this has on retirement benefit planning and actuarial needs. We are keenly aware of the economy and the competing demands for resources within the jurisdictions that fund retirement plans. We also understand the importance of participants' retirement security and the role the plan plays in meeting human resource objectives.

In partnership with our public sector clients, we have developed cutting-edge benefit approaches that provide secure retirement and quality health care for public employees. Offering nearly universal coverage and comprehensive benefits requires governments to continually search for cost efficiencies and innovations. Examples of our expert advice include:

- Segal is a leading architect in the design and implementation of retirement plans and health care alternatives that provide employees with expanded choice and employers with more financial and quality control. Strategic benefits planning is the key tool we use to assess the current environment, develop future directions, identify long-term goals and implement change for our clients.
- Just as healthcare benefits in the public sector were revolutionized in the 1980s through managed care and flexible benefit programs, retirement benefits are now being reevaluated.
- Working with our government clients, Segal has developed pension plan alternatives that combine characteristics of both defined benefit and defined contribution plans. These "hybrid" plans are innovations that reward both career employees and attract high-quality individuals to public service.
- Segal's leadership role in national public sector organizations is widely recognized, as is our role in the review and development of public employee benefit programs. Our professionals are frequent speakers, authors and advisors to organizations such as the National Association of State Retirement Administrators, National Council on Teacher Retirement, Government Finance Officers Association, National Association of Government Deferred Contribution Administrators and the National Association of Public Pension Plan Attorneys.
- Seeing a need for a state and local government health benefits organization, Segal was instrumental in the founding of the State and Local Government Benefits Association (SALGBA). Today, more than 20 years after our initial sponsorship and organization of its first two conferences, SALGBA is a thriving organization devoted to the special issues and challenges confronting public sector health benefit plans.

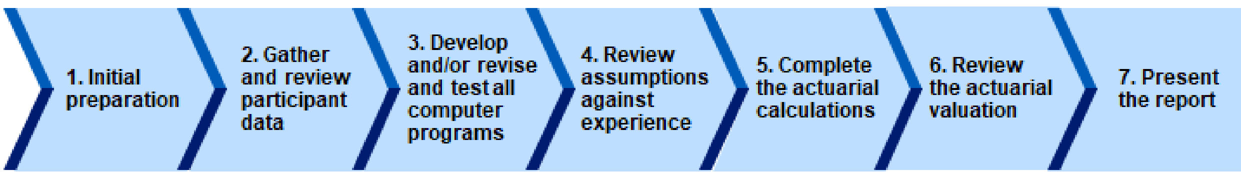
3. Describe bidder's approach for providing Actuarial Valuation Services for defined benefit and cash balance public pension funds. Give examples.

Bidder response:

An actuarial valuation must communicate the financial condition of the Plan in a clear, concise manner and with the utmost degree of accuracy. Segal's established approach to actuarial valuations defines a sequence, methodology and set of quality controls that allow us to consistently meet this high standard of quality and accuracy.

Valuations are always prepared by a credentialed actuary in a manner consistent with all laws, accounting requirements and Actuarial Standards of Practice (ASOPs). Our rigorous quality control regiment enables us to produce work of the highest quality.

Each valuation includes the determination of the required contributions and the various actuarial present values based on the participant data, financial information and the actuarial assumptions and methods. It also explains what changes occurred since the previous report and why.



The following list presents a work schedule and methodology for the completion of an actuarial valuation. We always customize our work to the client's needs and recognize that certain aspects of our standard work plan may need to be modified for to meet the client's needs.

1a. **Do the initial preparation**. Set up files, including plan documents for all plans, previous valuations and any other relevant materials. Prepare a summary of the benefit plans and the present assumptions. Speak with NPERS' staff to ensure that there is complete agreement and full understanding of the operation of each plan of benefits.

1b. **Prepare a data request, identifying all required information for the calculations**. This will include complete census information on active, terminated and retired participants, as well as a complete statement of plan assets and a financial reconciliation to the prior valuation date.

1c. **Review the initial preparation and data request**. Have the initial preparation and data request reviewed by the reviewing actuary.

2a. **Send the data request to the Plan**. Work with the Plan, as necessary, to simplify data preparation and assure its completeness and accuracy. Participant data can be uploaded electronically to Segal's secure file transfer protocol (SFT) website. Financial data should be provided in the form of financial statements completed by the Plan's independent auditor.

2b. **Review the data when received, to be sure it conforms to the data request**. Run the participant data through standard "edit and distribution" programs to verify completeness and reasonableness. Discuss any problems with Plan staff.

3. **Develop and/or revise and test all computer programs**. We will make programming adjustments as necessary to take into account changes in benefits, contributions and actuarial assumptions. We go through extensive testing of valuation applications before, during and after processing the actual valuations to ensure that the programs perform as expected.

4. **Review assumptions against experience**. The team will assess developing trends and analyze actuarial gains and losses since the prior valuation. We will discuss with Plan staff, if necessary, to verify unusual results.

5. **Complete the actuarial calculations**. Run final versions of computer valuation programs. Prepare work sheets and tables. Submit all calculations to the reviewing actuary for verification of mathematical accuracy.

6a. **Review the actuarial valuations**. This review encompasses the entire process including participant and financial data preparation, calculations and programs. The Peer Reviewing Actuary assumes responsibility for the completeness and correctness of the actuarial results.

6b. **Draft the report and presentation** to be presented to the Plan.

6c. **Perform the final review**. The Primary and Secondary Actuaries will conduct this review.

7. **Distribute the report**.

Segal has built and maintained a full suite of actuarial software in-house for many years – this allows us to customize our deliverables based on the unique needs of our clients. Our dedicated Actuarial Technology and Systems department is comprised of a group of systems developers responsible for providing and supporting the company's state-of-the-art actuarial valuation system. This system has been designed internally to maintain control and flexibility to allow for modifications to best meet the unique needs of our clients.

Cash Balance Plan considerations

Because of the unique nature of Cash Balance Plans, some alternate considerations are required compared to the process for traditional defined benefit valuations.

The rate of return on Cash Balance accounts is a key assumption that must be closely monitored. Not only will this assumption have a large effect on the projected benefits, but participant behavior could be tied closely to the relative sizes of individual balances.

Because of this variability in benefit amounts, in many cases service-based retirement assumptions may be advantageous to traditional age-based retirement age assumptions. These assumptions should be reconciled with actual experience in the valuation. Additionally, the interest crediting rate (such as the 30-year U.S. Treasury) must be monitored closely and incorporated in the valuation.

Because both liabilities and assets interact with expected balances and plan returns, Cash Balance Plans have a different risk structure than traditional defined benefit plans. In addition to the standard deterministic valuation, stochastic modeling or stress-testing may be informative to understand the full nature of risks to the plan.

Cash Balance plans may have additional features related to the current aggregate balance and funded ratio. Determining a possible Additional Earnings Credit based on the two-step determination process is one example of such a feature. Determining the Gain and Loss Reserve after any Additional Earnings Credits are paid out is another.

Finally, actuarial funding policies may differ between Cash Balance Plans and regular valuations. As previously discussed, this may include using the Traditional Unit Credit cost method since benefits are not salary based and using the market value of assets for determining total fund balance.

In addition to the factors that would be studied for traditional types of plans, the following items would need to be studied in an analysis of a Cash Balance Plan:

- **Interest crediting on member accounts**: Past and expected future experience for the crediting rate is an important item in the experience analysis.

- **Percentage of members electing lump sums**: The stated assumption appears to be that members elect a single life annuity. We cannot be certain that this is accurate. However, this should be analyzed as part of an experience study so that an accurate measure of benefit elections can be applied to the valuation.
- **Additional Earnings Credit (AEC)**: The possibility for future AECs and at what level should be studied and documented.

Actuarial valuation system

Our actuarial valuation system includes:

- **SCRUB** (Segal Cloud Reconciling Utility for Benefit plan data): This data reconciliation application starts with client-supplied records and produces a single source of data for all actuarial processing needs. Data received from the client via secure methods is imported into SCRUB, a proprietary cloud and web-based application. This centralized data solution offers the security of managing user access to client data, and encryption for data at all points of the process. SCRUB offers the user flexibility via a variety of features and tools to accommodate the uniqueness of each individual client's data.
- **STAR**: This is a multi-decrement actuarial valuation program that produces a comprehensive set of liability calculations associated with a wide range of benefit plans. The architecture of the program capitalizes on the speed and security of cloud technology, and the modular structure of the underlying code allows for improvements to be implemented with a high degree of ease, speed and accuracy.
- **Costs and report generator**: The set of demographic and liability calculations produced by STAR is automatically imported into an integrated costs and report generator program. This program produces actuarial calculations associated with the liabilities to meet regulatory, legislative and client requirements. The results of these calculations are electronically linked to a report generator that creates the valuation report including tables and graphs.
- **Experience study software**: This software aggregates experience over survey period and compiles summary tables and charts comparing expected to actual to recommended data.
- **Actuarial utility programs**: These user-friendly tools are readily available to our actuaries for use in performing various actuarial calculations such as Section 415 limitations, Social Security calculations and generation of annuity values.
- **Asset liability modeling**: Segal's capabilities include our proprietary Forecast and Pulse dynamic real-time modeling tool that accommodates deterministic projections to increase understanding and facilitate decision-making by allowing plan sponsors to view and assess emerging retirement plan finances. Segal's Asset Liability Modeling (ALM) tool is used for stochastic asset/liability modeling studies to make sound decisions regarding plan assets and liabilities while measuring actuarial funding risks.
  - Segal Pulse®: Segal Pulse® is Segal's web-based version of our popular forecast modeling tool that dynamically generates financial and actuarial deterministic projections. For clients who want to explore alternative scenarios hands-on, Segal Pulse is an enhanced, client-driven version of our forecast tool.

Segal deploys a user-friendly and secure extranet system utilizing secure Microsoft SharePoint technology to provide a portal for the LCPR and consulting teams to share files, data, documents and other information. Segal's extranet uses encrypted login and password protection and is immune to indexing by external search engines.

4. Describe bidder's approach for providing GASB Services for single and multiple employer public pension funds. Give examples.
Bidder response: We provide the following services related to GASB 67 and 68: **Calculation of the discount rate**: Segal has developed a spreadsheet that we will modify to incorporate NPERS' data and funding policy. Specifically, Segal will project the benefits and assets for members in the system as of the measurement date. The benefits must be projected to the date of the expected last payment. Assets are projected by incorporating all cash flows for contributions from employers and non-employer contributing entities that are intended to finance the benefits of current active and inactive members. Projected contributions must be allocated to those made on behalf of current members based upon member payroll and the funding policy. The crossover date is the date at which the projected assets do not cover the projected benefits. The benefit payment stream for the years prior to the cross-over date are discounted at the NPERS' long-term expected rate of return. The benefit payment stream for years on or after the crossover date is discounted at a yield for 20-year, tax exempt municipal bonds with an average rating of AA/Aa or higher. The discount rate is the single rate that is equivalent to the present value of the two benefit payment streams. **Determination of net pension liability (NPL) and change in net pension liability**: Segal will program and test its valuation programs to determine the NPL. The NPL is equal to the total pension liability (TPL) minus plan assets. The TPL is the actuarial accrued liability, based upon the entry age normal actuarial cost method, and the discount rate. The new pension expense is the change in NPL, with deferred recognition of certain elements. The components of the new pension expense include: • Service cost (i.e., normal cost) • Interest on the TPL as of the beginning of the year • Changes in TPL over the year (with certain deferrals) • Differences between actual and projected earnings over the year (with certain deferrals) • Projected investment returns over the year • Employee contributions • Other changes in plan net position (i.e., market value of assets) **Financial statements, note disclosures and required supplementary information**: Segal will work with NPERS to gather the data and develop the format for the financial statements, note disclosures and required supplementary information. Plan and employer disclosures are greatly expanded. Highlights of the required disclosures include: • Description of the plan and assumptions • Policy for determining contributions • Sensitivity analysis of the impact on NPL of a one percentage point increase and decrease in the discount rate • Changes in the NPL for the past 10 years • Development of long-term earnings assumption • Annual rates of investment return for past 10 years (plan only)

Determination of NPERS employers' proportionate share: NPERS employers must recognize their proportion of the NPL and the pension expense on their financial statements. A method that is based on the employer's projected long-term contributions to the pension plan as compared to the total projected long-term contributions of all employers is encouraged. The method could be based on the individual employer's share of the total employer contributions, payroll, or the method used by the cost-sharing plan to determine the employer contribution. Segal will analyze the method for determining the employers' contributions and will work with NPERS' staff to confirm the methodology for determining the proportionate share.

Assistance with requirements relative to reporting and disclosures to employers: Segal will work with NPERS' staff to determine the level of assistance that NPERS wishes to provide employers with their financial reporting and disclosure requirements. Segal will identify the items that NPERS must provide to the employers and will develop a strategy for communicating with the employers. This step will include developing the format and process for gathering the information needed for the required financial statement reporting and disclosure items. Segal can also work with NPERS to educate employers on the GASB 68 requirements.

All reports will include all the necessary material to comply with GASB Statements No. 67 and 68 reporting and disclosure requirements.

GASB No. 67/68 experience

Segal has been active in the development and implementation of GASB Statements No. 67 and 68. Our consultants worked directly with the GASB during the Statement drafting process. In fact, Segal developed the spreadsheet showing the derivation of the discount rate included as Tables 1 to 3 in Statements 67 and 68. We have kept our clients informed of the changes throughout the process through client notices and webinars, and submitted formal comments on statement drafts. Segal has also performed calculations of the NPL (Net Pension Liability) and allocations to employers for cost-sharing multiple-employer pension plans under the new Statements. In addition, several Segal actuaries served on GASB's task force during the drafting stage and in the development of the Implementation Guides.

5. Describe bidder's approach for providing Projection Services for public pension funds. Give examples.

Bidder Response:

Segal has a variety of software that we use for projecting liabilities, assets, contributions, funded status, zone status and other key funding metrics. Deterministic models are better suited to show how different assumptions will affect the Plan's funding. Stochastic models excel at displaying a range of results and measuring the probability of the Plan's various funding metrics changing over time. Both types of projections can be used to make decisions, and it depends on the question asked as to which type will provide the more appropriate and useful answer. Both modeling techniques can use projected liabilities that utilize a roll-forward approach with appropriate adjustment to reflect assumed changes in the demographic population or an open group forecast where our software projects new entrants based on a specific new entrant demographic profile.

Deterministic projections

Deterministic projections are based on the hypothesis that a particular event will occur such as plan assets will return 7% next year and perhaps the same in every year thereafter. Alternatively, the returns could be set assuming lower near-term returns, followed by higher returns based on expectations that the investment environment will change. Therefore, each variable in the projection, such as expected investment return or projected pay increases, is predetermined for each future year.

Segal's proprietary software – **Forecast** – allows us to perform these deterministic projections where individual variables within the deterministic projections can be changed to measure how the change could affect financial results like plan solvency, funded percentage, actuarially determined contribution amounts, and other key funding metrics. Deterministic projections are invaluable for exploring multiple "what if" scenarios, varying such inputs as employment levels, investment returns on assets, interest rate used to discount liabilities, pay increases, contribution rates and benefit levels. This type of projection is valuable for sensitivity testing of how varying inputs may affect where the Plan is headed. However, while this method accurately illustrates the impact of a particular outcome (i.e., the Plan's exposure to that event occurring), it gives very little indication of the likelihood of that event occurring. That is where stochastic projections can be helpful.

Client-led deterministic projections

Segal Pulse®: Featuring an easy-to-use interface, this enhanced version of our robust, proprietary Forecast modeling tool called Segal Pulse® allows our clients to make their own real-time projections – including a review of funding issues – to increase their understanding of the direction their plans are heading and to learn what factors could change that direction. Segal Pulse® is a web-based forecasting tool available to our clients that dynamically generates financial and actuarial projections. Using Segal Pulse®, NPERS can prepare its own deterministic projections and can be custom tailored to NPERS's specific situation. Once the baseline projections are set up, alternate scenarios can be modeled in a "live" setting based on inputs.

Segal Pulse® functionalities are comprehensive and include:

- Fluctuation in future investment returns
- Variation of future contributions
- Change in active population and salary growth assumptions
- Modification to future benefit accrual rates

Stochastic projections

Stochastic projections aggregate thousands of deterministic projections to provide a range of results that can be used to determine likelihood or probability outcomes within a specified range. For example, using stochastic projections, one can determine, for a specific investment portfolio and set of capital market assumptions, what the probability of falling below a certain funding threshold will be for each of the next 10 years. Stochastic projections can also quantify the likely effects of plan design changes or contribution rate changes under consideration. By assessing the future impact of proposed benefit and contribution rate changes, stochastic projections can help identify which course of action is most consistent with the Trustees' resources, strategies and objectives for managing the plan. In particular, stochastic projections can show how plan design and/or contribution rate changes affect the investment or contribution risk to the plan. For example, a plan design change and a contribution rate change could appear to provide the same results when using deterministic projections. However, a stochastic projection could show that one change over another has a better probability of improving the funding status.

Our stochastic modeling tool can perform up to 10,000 deterministic projections through time, based upon internally generated scenarios using Monte Carlo simulation techniques. The tool will aggregate the thousands of projections to create a distribution of possible outcomes and provide a range of expected results, best-case and worst-case outcomes, with the associated probabilities.

6. Describe bidder’s approach for providing Actuarial Experience Studies for public pension funds. Give examples.

Bidder Response:

Segal will assist the PERB in an analysis of the demographic and financial experience of the Nebraska School Retirement System, the Omaha School Retirement System, the Nebraska State Employee Retirement System, the Nebraska County Employees Retirement System, the Nebraska State Patrol Retirement System and the Nebraska Judges Retirement System. The evaluations will be a comprehensive analysis of each System’s experience. The reports will detail the reasons behind annual variations in the contribution rates.

Segal’s experience study will review the major actuarial assumptions and methods, as follows:

- **Investment return**: The estimated average net rate of return on assets over the lifetime of the System. This rate is used to discount liabilities.
- **Salary increases**: The expected annual increases to an individual’s salary
- **Payroll growth**: The expected increase in total membership payroll from year to year
- **Other economic assumptions**: Underlying estimates of inflation and other assumptions unrelated to demographic experience
- **Retirement rates**: The probability of retirement at each age at which employees are eligible to retire
- **Withdrawal rates**: The probability, at each age, of leaving employment before the next birthday due to reasons other than death, disability or retirement
- **Disability incidence rates**: The probability, at each age, of leaving employment before the next birthday due to disability
- **Mortality rates**: The probability, at each age, of dying before the next birthday. This is used for in-service death for active participants and projects life expectancies for annuitants and survivors. There are separate assumptions for healthy and disabled participants.

Segal will also comment on the actuarial methods being used by NPERS:

- **Actuarial cost method**: The method used to allocate the total cost of the NPERS into past and future components
- **Actuarial asset valuation method**: The method used to smooth investment gains and losses on the market value of assets

Experience study process

Segal typically delivers the experience study reports within eight weeks of receipt of complete data. In order to complete a comprehensive four-year experience review investigation, NPERS would need to provide Segal with census data covering five consecutive valuation cycles. The analyses will describe the reasons for changes in the contribution rates based on a comparison of actual changes in liabilities with expected changes according to each of the various actuarial assumptions.

Review of demographic assumptions

Segal will compile tabulations that show the distribution by age of the number of members during the four- or five-year period "exposed" to the events of termination from employment, retirement, death, and disability. A member is considered exposed to an event if he or she meets the age and service requirements for that event. The assumed rates of occurrence for each event, used in the most recent annual actuarial valuations, are then applied to the number of members exposed to determine the number of members expected to separate from service or die for each category. If the actuarial assumptions were changed during the interim period, only the most recently adopted assumptions are used.

The actual number of members who separated due to termination from employment, retirement, death, or disability is then compared to the expected number. The results are then expressed as a ratio of actual experience over expected experience. In some instances, a high ratio is favorable for the financial experience of the system, and in other cases, a high ratio is unfavorable. Data is generally grouped by age in five-year increments to provide statistically significant results.

The results of the experience study are the basis for the actuary's recommendation of assumption changes. However, the actuary must also take into account factors that impact member behavior, such as benefit changes within the retirement system or special early retirement incentives; as well as benefits outside the plan, such as retiree medical benefits that might influence the age a member will retire. In addition, any special events that occurred during the experience period that are not likely to recur must be removed from the analysis.

In addition to comparing actual to expected experience and adjusting the results for special plan benefits, circumstances, and economic conditions, the actuary must consider future expectations of experience due to future plan changes or changes in the economy.

To summarize, the actuary's recommendation of assumptions is based on the following:

- Comparison of actual to expected experience
- Adjustment for special plan benefits, circumstances, and economic conditions
- Adjustment for future plan changes and economic conditions

Traditionally, salary increases have been separated among inflation, productivity and merit/seniority components. Each component is analyzed separately with only the merit/seniority component being a function of the system demographics. Frequently, we may discover that actual inflation has been lower than the actuary assumed, and that may be masking an understatement of the merit/seniority component. By separating those components and studying each separately, we can refine each component and produce more accurate and consistent figures.

With respect to economic assumptions, we analyze experience slightly differently for retirement as compared to health and welfare programs.

Review of economic assumptions

With respect to the assumptions of inflation and investment return, the prior experience is less relevant and greater emphasis is given to the anticipated system experience. For this purpose, we would look to forecasts made by economists and investment consulting and investment management firms.

Review rate of inflation

With respect to the inflation assumptions, we would look to the market's expectations of inflation as reflected in the fixed income yields and forecasts of inflation from economists and other expert reports.

Review of rate of investment return

Actuarial Standard of Practice No. 27 (ASOP 27), entitled “Selection of Economic Assumptions for Measuring Pension Obligations,” outlines appropriate considerations for setting the investment return assumption. In evaluating the assumption, the “Building-Block Method” is commonly used.

Under the Building-Block Method, (i) an expected future return is developed for each asset class, (ii) an average, weighted real-return range reflecting the plan’s expected asset class mix is developed, and (iii) the best-estimate real-return is combined with the best-estimate of expected inflation. Stochastic simulation models that take into account correlations among returns of different asset classes and inflation are frequently used to obtain the final result.

Sources of investment data

ASOP 27 encourages the actuary to review appropriate investment data, including:

- Current yields to maturity of fixed income securities, such as government securities and corporate bonds
- Forecasts of inflation and of total returns for each asset class
- Historical investment data, including real risk-free returns, the inflation component of the return, and the real return or risk premium for each asset class
- Historical plan performance
- Historical data showing standard deviations, correlations, and other statistical measures related to historical returns of each asset class and to inflation

Other factors to be considered

ASOP 27 also advises the actuary to take into account the following factors:

- Investment policy
- Reinvestment risk
- Investment volatility
- Investment manager performance
- Investment expenses
- Cash flow timing
- Benefit volatility
- Other issues unique to the plan

We understand that:

- If the contract is renewed for a second term, we will complete an actuarial experience study for the School, State Patrol, Judges, State Cash Balance, and County Cash Balance plans by December 31, 2028, using the four years ending June 30, 2027, or December 31, 2027, and at a four-year interval thereafter or as required by the State Legislature
- If the contract is renewed for a second term, we will complete an Actuarial Experience Study for the Omaha School plan by December 31, 2029, using the four years ending December 31, 2028, and at a four-year interval thereafter or as required by the State Legislature
- If the contract is renewed for a third term, we will complete an Actuarial Experience Study for the School, State Patrol, Judges, State Cash Balance, and County Cash Balance plans by December 31, 2032, using the four years ending June 30, 2031, or December 31, 2031, and at a four-year interval thereafter or as required by the State Legislature
- If the contract is renewed for a third term, we will complete an Actuarial Experience Study for the Omaha

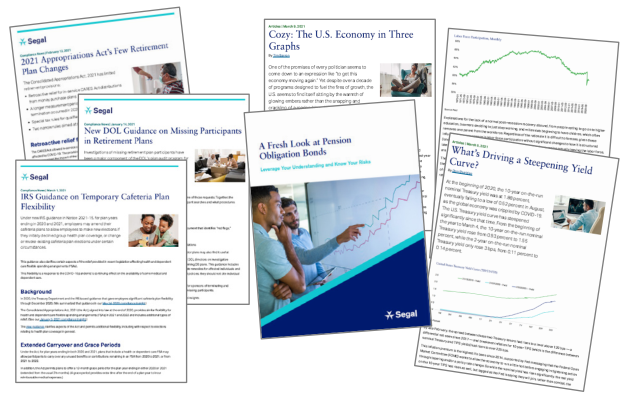
School plan by December 31, 2033, using the four years ending December 31, 2032, and at a four-year interval thereafter or as required by the State Legislature
7. Describe bidder's approach for providing Benefit Adequacy Studies for public pension funds.
Bidder Response: An efficient retirement program provides significant benefits at a reasonable cost, which is competitive in the plan sponsor's market. Analyzing benefit adequacy requires consideration of all three elements noted above. The benefits will be reviewed to consider the value to the employee as a replacement ratio and as compared to target retirement ratios. It is our understanding that NPERS would also like to compare the benefit design and costs with comparable retirement systems. Segal will also assist NPERS in developing benefit policy, which incorporates benefit adequacy, competitiveness and cost to deliver.
8. Describe bidder's approach for providing Supplemental Services for public pension funds.
Bidder Response: We use our hourly rates when asked to perform Supplemental Services for public pension funds. After a discussion with NPERS to determine the Scope of Service for the project, we will provide a proposal for review and approval prior to beginning the work.
9. Describe bidder's experience at providing Legislative Expertise for public pension funds.
Bidder Response: A consulting service with growing significance is to keep clients like NPERS advised on shifts in national retirement trends and developments in federal legislation and/or regulations. We have special expertise in advising state retirement systems regarding the rapidly changing structure of public sector retirement and retiree health plans. We will provide our legislative and regulatory updates and governmental publications to the Board and staff, and any other interested personnel, and we will keep the Board and staff aware of developments as they occur and their potential impact. We also will advise the Board and staff regarding pension accounting standards proposed or issued by the Governmental Accounting Standards Board (GASB). Segal has placed a long-standing emphasis on the importance of research and development that keeps our clients informed on all aspects of public sector employee benefits programs. We have extensive experience in preparing comprehensive studies and reports on benefits-related topics involving pension legislative and regulatory issues for many of our clients. Segal will help NPERS identify and monitor pertinent federal, legal and regulatory developments through daily review of specialized trade publications and research of critical state and local regulatory matters as necessary. We monitor the release of relevant government materials and have prompt access to all official documents, such as proposed and final regulations, Revenue Rulings and bills introduced or acted on in Congress. Segal remains very active in producing multimedia material that contributes to a wider sphere of industry knowledge while keeping our clients specifically informed of key retirement and health care public sector

compliance news. Given the fluctuating nature of our current national healthcare and retirement landscape, we maintain a close watch on the changing trends across government policies and rulings. Our goal is to cultivate an important relationship between our research expertise and consulting practices in order to provide timely information for our clients.

Resources available to our clients

Segal produces a wide array of public sector plan-specific publications, ranging from data analysis to frequent compliance and regulation alerts, to ensure our clients are informed and prepared, including:

- *Compliance News*, newsletters which summarize important developments affecting plan compliance, published on our website and distributed via email as timely alerts
- Consulting insights, surveys and studies of interest to sponsors of public sector plans
- Complimentary webinars for our clients to discuss current topics of concern and new legal and regulatory requirements



In addition to the above, **Matt Strom, FSA, MAAA, EA**, your Primary Actuary, has deep experience testifying before legislative and administrative bodies. For example, he annually presents a summary of valuation results for Colorado PERA to the Legislative Audit Committee and has testified with PERA staff to the Pension Review Board and Pension Review Subcommittee. In addition, Matt has testified to public bodies in Springfield and Chicago, Illinois related to pension matters.

c. Attachment C: Additional corporate experience

ATTACHMENT C

Additional Corporate Experience

Request for Proposal Number 120961 O5

Bidder Name: The Segal Company (Midwest), Inc. d/b/a Segal

Bidders shall complete and submit the Additional Corporate Experience Document to provide Actuarial Services for the Nebraska Public Employees Retirement Systems (NPERS). Bidders are required to describe in detail how their qualifications meet the specifications outlined within each Requirement.

The Additional Corporate Experience Document must indicate how the bidder intends to comply with the requirement and the effort required to achieve that compliance. It is not sufficient for the bidder to simply state that it intends to meet the requirements of the RFP. The State will consider any such response to the requirements in this RFP to be non-responsive. The narrative should provide the State with sufficient information to differentiate the bidder's solution from other bidders' solutions.

CORPORATE OVERVIEW – Additional Corporate Experience (Section VI.A.1.h.iv.)
1. Qualification One: As of December 31, 2024, bidder has a minimum of three (3) public pension fund clients. Please submit a written description of how this qualification is satisfied, including, at a minimum, a list of at least three (3) public pension fund clients for whom the bidder currently provides actuarial consulting services. These descriptions should include: **a)** The time period of the project; **b)** The scheduled and actual completion dates; **c)** The Contractor's responsibilities; **d)** For reference purposes, a customer name (including the name of a contact person, a current telephone number, and e-mail address); and, **e)** Each project description should identify whether the work was performed as the prime Contractor or as a subcontractor. If a bidder performed as the prime Contractor, the description should provide the originally scheduled completion date and budget, as well as the actual (or currently planned) completion date and actual (or currently planned) budget.
Bidder Response: Following are three public pension fund clients. Segal is the prime contractor for each of these projects; there are no subcontractors involved in the work.

Client name:	**Vermont State Retirement Systems**
Time period of project:	Ongoing
Scheduled / actual completion date:	Ongoing
Segal's responsibilities:	Actuarial consulting
Client contact name:	Tim Duggan
Telephone number:	802.828.5195
Email address:	Tim.duggan@vermont.org
Project description:	Segal is engaged as the ongoing actuarial valuation and consulting actuary to the Vermont State Retirement Systems

Client name:	**Colorado Public Employees Retirement Association**
Time period of project:	Ongoing
Scheduled / actual completion date:	Ongoing
Segal's responsibilities:	Actuarial consulting
Client contact name:	Koreen Holden, FCA, EA, MAAA
Telephone number:	303.837.6256
Email address:	kholden@copera.org
Project description:	Segal is engaged as the ongoing actuarial valuation and consulting actuary to the Colorado Public Employees Retirement System

Client name:	**Teachers' Retirement System of the State of Illinois**
Time period of project:	Ongoing
Scheduled / actual completion date:	Ongoing
Segal's responsibilities:	Actuarial consulting
Client contact name:	Amy Reynolds
Telephone number:	217.814.2272
Email address:	areynolds@trsil.org
Project description:	Segal is engaged as the ongoing actuarial valuation and consulting actuary to the Teachers' Retirement System of the State of Illinois

2. Qualification Two:
The bidder has a minimum of five (5) years of experience in providing actuarial consulting services to a public pension fund. This means that the bidder as an organization has been providing actuarial consulting services to a public pension fund for at least five (5) years. This requirement is not satisfied simply because its employees have at least five (5) years' experience in providing actuarial consulting services to a public pension fund. Please submit a written description of how this qualification is satisfied, including, at a minimum, a list of the public pension fund clients for whom the actuarial consulting firm has provided actuarial consulting services for at least five (5) years.

Bidder Response:

For more than 70 years, Segal has been providing actuarial and benefits consulting services to help public sector retirement clients, of all types and sizes, achieve their goals.

Today, we provide actuarial and benefits consulting services to approximately 500 public sector entities, including nearly 120 public sector retirement clients. They range in size from $500 million to over $50 billion and include state and local governments, transportation districts, police and fire departments and education systems. As a national firm with more than 170 credentialed actuaries across the U.S. and Canada, Segal will bring our in-depth knowledge of best practices and successful approaches used by other public sector retirement clients to augment the work we do for NPERS.

3. Qualification Three:
The bidder's lead consultant on the account must have a minimum of ten (10) years of experience in providing actuarial consulting service to public pension funds. This experience shall include general consulting, experience analysis, and valuation assignments for such funds. This person shall also have experience in testifying before legislative and administrative bodies in support of actuarial positions and the principles used in valuing a public retirement system or pricing legislation, and an ability to discuss in laymen's terms the

following: actuarial theory; basis for assumptions; and other actuarial matters. The lead consultant must be a member of the American Academy of Actuaries. Please submit a written description of how this qualification is satisfied, including, at a minimum, a list of the lead consultant's experience in providing actuarial consulting services to public pension funds for at least ten (10) years, and showing past experience at testifying before legislative and administrative bodies.
Bidder Response: **Matthew Strom, FSA, MAAA, EA, Senior Vice President, Consulting Actuary,** will serve as the Lead Actuary and Client Relationship Manager (CRM) for NPERS. He has more than 25 years of experience consulting to sponsors of defined benefit pension plans. His responsibilities include presenting to boards of trustees, reviewing actuarial valuations, preparing actuarial cost studies and managing other special projects for public sector retirement plans. His expertise includes deterministic and stochastic cost and funding level projections, plan design analyses, experience studies, asset/liability modeling and actuarial audits. Additionally, Matt is a member of Segal's Public Sector Leadership Group. He serves as actuary to a number of public sector retirement systems including: • Chicago Housing Authority Pension Plan • Teachers' Retirement System of the State of Illinois • Firemen's Annuity and Benefit Fund of Chicago • Chicago Municipal Employees' Pension and Annuity Pension Fund • Chicago Park Employees' Pension and Annuity Pension Fund • Illinois Commission on Government Forecasting and Accountability • Colorado Public Employees' Retirement Association • Vermont Retirement System Matt has deep experience testifying before legislative and administrative bodies. For example, he annually presents a summary of valuation results for Colorado PERA to the Legislative Audit Committee and has testified with PERA staff to the Pension Review Board and Pension Review Subcommittee. In addition, Matt has testified to public bodies in Springfield and Chicago, Illinois related to pension matters.
4. Qualification Four: Professional staff assigned to the account shall have a minimum of five (5) years of experience in the field of actuarial science and will include persons with appropriate professional credentials such as Fellow or Associate of Society of Actuaries, and/or Fellow of the Conference of Actuaries in Public Practice, and/or Member of the American Academy of Actuaries, and/or meet standards of a qualified actuary under the provisions of the Employee Retirement Income Security Act of 1974. Please submit a written description of how this qualification is satisfied, including, at a minimum, a list of the professional staffs' experience in providing actuarial consulting services to public pension funds for at least five (5) years, and showing the professional staffs' credentials.
Bidder Response: The following table outlines the team assigned to NPERS, each actuary's credentials and their years of experience in providing actuarial consulting services to public pension plans.

Name	Years of Experience	Representative List of Experience with Public Pension Plans
Matthew Strom, FSA, MAAA, EA	25+	• Illinois Commission on Government Forecasting and Accountability • Teachers' Retirement System of the State of Illinois • Firemen's Annuity and Benefit Fund of Chicago • Chicago Municipal Employees' Pension and Annuity Pension Fund • Chicago Park Employees' Pension and Annuity Pension Fund • Chicago Housing Authority Pension Plan • Colorado Public Employees' Retirement Association • Vermont Retirement System
Daniel Siblik, ASA, MAAA, FCA, EA	25+	• Illinois Commission on Government Forecasting and Accountability • Teachers' Retirement System of the State of Illinois • Chicago Municipal Employees' Pension and Annuity Pension Fund • Chicago Housing Authority Pension Plan • Firemen's Annuity and Benefit Fund of Chicago • State of Michigan
Tatsiana (Tanya) Dybal, FSA, MAAA, EA	15+	• Teachers' Retirement System of the State of Illinois • Colorado Public Employees' Retirement Association • Chicago Housing Authority Pension Plan
David Nickerson, ASA, EA	13+	• Teachers' Retirement System of the State of Illinois • Milwaukee Transport Services Inc. Transport Employees' Pension Plan • Illinois Commission on Government Forecasting and Accountability • Firemen's Annuity and Benefit Fund of Chicago
Jakob Nolan, ASA, MAAA, EA	7+	• Chicago Housing Authority • Municipal Employees Benefit Fund of Chicago • Firemen's Annuity Benefit Fund of Chicago

d. Deliverables and due dates (Cost Proposal)

120961 O5

COST PROPOSAL

ACTUARIAL SERVICES FOR THE NEBRASKA PUBLIC EMPLOYEES RETIREMENT SYSTEMS (NPERS)

These costs shall be all-inclusive. Neither the State, the PERB, nor NPERS will be responsible for travel, out-of-pocket, or other expenses of the actuarial consultant/firm.

Bidder Name: The Segal Company (Midwest), Inc. d/b/a Segal

Description	Unit of Measure	Initial Year One	Initial Year Two	Initial Year Three
Consultation Service and Reports for the Annual Valuation of the School Defined Benefit Plan	$	$37,000	$37,000	$37,000
Consultation Service and Reports for the Annual Valuation of the Omaha School Defined Benefit Plan	$	$32,000	$32,000	$32,000
Consultation Service and Reports for the Annual Valuation of the Judges Defined Benefit Plan	$	$20,000	$20,000	$20,000
Consultation Service and Reports for the Annual Valuation of the Patrol Defined Benefit Plan	$	$23,000	$23,000	$23,000
Consultation Service and Reports for the Annual Valuation of the State Cash Balance Plan and ERBF	$	$32,000	$32,000	$32,000
Consultation Service and Reports for the Annual Valuation of the County Cash Balance plan and ERBF	$	$32,000	$32,000	$32,000
Consultation Services and Reports for GASB 67	$	$32,000	$32,000	$32,000
Consultation Services and Reports for GASB 68	$	$39,000	$39,000	$39,000
Annual 5-year projection report	EA	$16,000	$16,000	$16,000
Annual 30-year projection report	EA	$25,000	$25,000	$25,000
Projection modeling software	YR	$0	$0	$0

2025 Actuarial Experience Study for Omaha School Defined Benefit Plan	EA	$25,000		
One Time Benefit Adequacy Study to be completed as required by NPERS	EA	$100,000		

OPTIONAL SUPPLEMENTAL SERVICES:

PLEASE LIST ALL POSITIONS THAT MIGHT BE UTILIZED FOR ADDITIONAL SUPPLEMENTAL SERVICES. (Add rows as needed.)

Hourly ranges will not be accepted. Please break out positions if needed. For example, Consulting Actuary I, Consulting Actuary II, Consulting Actuary III, etc.

Position Title	Initial Year One Hourly Rate	Initial Year Two Hourly Rate	Initial Year Three Hourly Rate
Consulting Actuary I	$495	$495	$495
Consulting Actuary II	$465	$465	$465
Actuary Manager	$445	$445	$445
Actuary Assistant	$365	$365	$365
Actuary Support Staff	$245	$245	$245
Compliance Consultant	$445	$445	$445

OPTIONAL THREE (3) YEAR - RENEWAL 1

Description	Unit of Measure	Optional Renewal One Year Four	Optional Renewal One Year Five	Optional Renewal One Year Six
Consultation Service and Reports for the Annual Valuation of the School Defined Benefit Plan	$	$40,000	$40,000	$40,000
Consultation Service and Reports for the Annual Valuation of the Omaha School Defined Benefit Plan	$	$34,500	$34,500	$34,500
Consultation Service and Reports for the Annual Valuation of the Judges Defined Benefit Plan	$	$21,000	$21,000	$21,000

Consultation Service and Reports for the Annual Valuation of the Patrol Defined Benefit Plan	$	$24,500	$24,500	$24,500
Consultation Service and Reports for the Annual Valuation of the State Cash Balance Plan and ERBF	$	$34,500	$34,500	$34,500
Consultation Service and Reports for the Annual Valuation of the County Cash Balance plan and ERBF	$	$34,500	$34,500	$34,500
Consultation Services and Reports for GASB 67	$	$34,000	$34,000	$34,000
Consultation Services and Reports for GASB 68	$	$42,000	$42,000	$42,000
Annual 5 year projection report	EA	$17,200	$17,200	$17,200
Annual 30 year projection	EA	$26,500	$26,500	$26,500
Projection modeling software	YR	$0	$0	$0
2028 Actuarial Experience Study for School, Judges, State Patrol, State Cash Balance, and County Cash Balance Plans	EA	$72,000		
2029 Actuarial Experience Study for Omaha School Defined Benefit Plan	EA		$27,500	

OPTIONAL SUPPLEMENTAL SERVICES DURING OPTIONAL RENEWAL PERIOD ONE:

PLEASE LIST ALL POSITIONS THAT MIGHT BE UTILIZED FOR ADDITIONAL SUPPLEMENTAL SERVICES (Add rows as needed.)

Hourly ranges will not be accepted. Please break out positions if needed. For example, Consulting Actuary I, Consulting Actuary II, Consulting Actuary III, etc.

Position title	Optional Renewal Two - Year Seven Hourly Rate	Optional Renewal Two - Year Eight Hourly Rate	Optional Renewal Two - Year Nine Hourly Rate
Consulting Actuary I	$530	$530	$530
Consulting Actuary II	$480	$480	$480
Actuary Manager	$460	$460	$460
Actuary Assistant	$390	$390	$390
Actuary Support Staff	$260	$260	$260
Compliance Consultant	$460	$460	$460

OPTIONAL THREE (3) YEAR - RENEWAL 2

Description	Unit of Measure	Optional Renewal Two Year Seven	Optional Renewal Two Year Eight	Optional Renewal Two Year Nine
Consultation Service and Reports for the Annual Valuation of the School Defined Benefit Plan	$	$42,500	$42,500	$42,500
Consultation Service and Reports for the Annual Valuation of the Omaha School Defined Benefit Plan	$	$37,000	$37,000	$37,000
Consultation Service and Reports for the Annual Valuation of the Judges Defined Benefit Plan	$	$22,500	$22,500	$22,500
Consultation Service and Reports for the Annual Valuation of the Patrol Defined Benefit Plan	$	$26,000	$26,000	$26,000
Consultation Service and Reports for the Annual Valuation of the State Cash Balance Plan and ERBF	$	$37,000	$37,000	$37,000
Consultation Service and Reports for the Annual Valuation of the County Cash Balance plan and ERBF	$	$37,000	$37,000	$37,000
Consultation Services and Reports for GASB 67	$	$36,500	$36,500	$36,500
Consultation Services and Reports for GASB 68	$	$45,000	$45,000	$45,000
Annual 5-year projection report	EA	$18,500	$18,500	$18,500
Annual 30-year projection	EA	$28,500	$28,500	$28,500
Projection modeling software	YR	$0	$0	$0
2032 Actuarial Experience Study for School, Judges, State Patrol, State Cash Balance, and County Cash Balance Plans	EA		$77,500	
2033 Actuarial Experience Study for Omaha School Defined Benefit Plan	EA			$30,000

OPTIONAL SUPPLEMENTAL SERVICES DURING OPTIONAL RENEWAL PERIOD TWO:

PLEASE LIST ALL POSITIONS THAT MIGHT BE UTILIZED FOR ADDITIONAL SUPPLEMENTAL SERVICES (Add rows as needed.)

Hourly ranges will not be accepted. Please break out positions if needed. For example, Consulting Actuary I, Consulting Actuary II, Consulting Actuary III, etc.

Position title	Optional Renewal Two - Year Seven Hourly Rate	Optional Renewal Two - Year Eight Hourly Rate	Optional Renewal Two - Year Nine Hourly Rate
Consulting Actuary I	$570	$570	$570
Consulting Actuary II	$415	$415	$415
Actuary Manager	$495	$495	$495
Actuary Assistant	$420	$420	$420
Actuary Support Staff	$280	$280	$280
Compliance Consultant	$495	$495	$495

Attachments and Supplementary Information

A. Sample Actuarial Valuation report

B. Sample GASB 67 68 report

C. Sample Experience Study

D. Sample Benefits Adequacy study

A. Sample Actuarial Valuation report

A sample Actuarial Valuation report begins on the following page.

State Employees' Retirement System

Actuarial Valuation and Review

As of June 30, 2023

This report has been prepared at the request of the Board to assist in administering the State Employees' Retirement System. The measurements shown in this actuarial valuation may not be applicable for other purposes.

Segal

101 North Wacker Drive, Suite 500
Chicago, IL 60606-1724
segalco.com
T 312.984.8500

October 18, 2023

Board of Trustees
State Employees' Retirement System
Capitol City, State 12345

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2023, of the State Employees' Retirement System (SERS). This report summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirement for the fiscal year ending June 30, 2025.

This report was prepared in accordance with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board, at the request of the Board to assist in administering the Retirement System. The census information and financial information on which our calculations were based was prepared by the Office of the State Treasurer. That assistance is gratefully acknowledged.

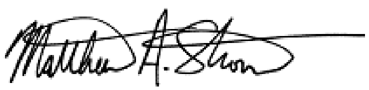
Segal does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. To the extent we can, however, Segal does review the data for reasonableness and consistency. Based on our review of the data, we have no reason to doubt the substantial accuracy of the information on which we have based this report and we have no reason to believe there are facts or circumstances that would affect the validity of these results.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The actuarial calculations were directed under the supervision of Matthew A. Strom, FSA, MAAA, EA. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in this actuarial valuation is complete and accurate. The investment return and inflation assumptions were selected by the State Pension Investment Committee. The remaining actuarial assumptions used in this actuarial valuation were selected by the Board based upon our analysis and recommendations. In my opinion, the assumptions are reasonable and take into account the experience of the Plan and reasonable expectations.

I look forward to reviewing this report and to answering any questions at the next Board meeting.

Sincerely,
Segal



Matthew A. Strom, FSA, MAAA, EA
Senior Vice President and Actuary

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Section 1: Actuarial Valuation Summary

Purpose and basis

This report was prepared by Segal to present a valuation of the System as of June 30, 2023, pursuant to section 123, subsection (a), of Title 4, Chapter 5, State Statutes Annotated, relating to the State Employees' Retirement System. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits.

The contribution requirements presented in this report are based on:

- The benefit provisions of the System, as administered by the Board;
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of June 30, 2023, provided by System staff;
- The unaudited assets of the System as of June 30, 2023, provided by System staff;
- Economic assumptions regarding future salary increases, inflation, and investment earnings;
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.; and
- The funding policy prescribed by State statute.

Certain disclosure information required by GASB Statements No. 67 and 68 as of June 30, 2023, for the System is provided in separate reports.

Valuation highlights

1. Segal strongly recommends an actuarial funding policy that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy set in the State Pension Code meets this standard. Section 123, subsection (a)(1), of Title 4, Chapter 5, State Statutes Annotated calls for annual payments on the unfunded actuarial accrued liability to be made over a closed period ending on June 30, 2038. The amount of each annual payment is calculated assuming that the amortization period will remain closed and that the amortization amount will increase annually at the rate of 3% over the preceding year.
2. Actual employer contributions made during the fiscal year ending June 30, 2023, were $116.4 million, or 100.3% of the actuarially determined contribution (ADC) of $116.0 million. In the prior fiscal year, actual employer contributions were $197.5 million, or 164.7% of the prior year's actuarially determined contribution.
3. The rate of return on the market value of assets was 7.58% for the July 1, 2022, to June 30, 2023, plan year. The return on the actuarial value of assets was 5.95% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial loss when measured against the assumed rate of return of 7.00%. We advise the Board to continue to monitor actual and anticipated investment returns relative to the assumed long-term rate of return on investments.
4. The actuarial value of assets is 104.1% of the market value of assets, compared to the prior year where the actuarial value of assets was 105.7% of the market value of assets. The investment experience in the past years has only been partially recognized in the actuarial value of assets. As the deferred net loss is recognized in future years, the cost of the System is likely to increase more than expected unless the net loss is offset by future experience. The recognition of the deferred net market loss of $100.1 million will also have an impact on the future funded percentage. If the deferred net loss was recognized immediately in the actuarial value of assets, the actuarially determined contribution rate would increase from 20.06% to about 21.42% of payroll.
5. The actuarial loss from investment experience is $25.0 million.
6. The net experience loss from sources other than investment experience was approximately $9.4 million, or 0.3% of the actuarial accrued liability. Retirement experience resulted in a loss of $5.8 million due to members retiring earlier than expected, compared to a $22.9 million loss in the prior year. Salary and service experience resulted in a loss of $8.6 million due to larger salary increases than expected, compared to a loss of $30.7 million in the prior year. Lastly, there was a $3.2 million gain due to lower-than-expected actual 2024 COLAs, compared to a loss of $46.7 million in the prior year. The remaining non-investment experience sources were consistent with the prior valuation. Additional detail regarding this loss is shown in *Section 2, Other experience*.

Changes from prior valuation

7. The following actuarial assumptions were approved by the Board and changed with this valuation:
   - Assumed rates of salary increase were increased based on plan experience.
   - COLA assumptions were decreased as follows:
     - Active Group A, C, F, and G members first eligible for normal or unreduced early retirement on or after July 1, 2022, and active Group D members first appointed or elected on or after July 1, 2022:
       - Group A: decreased from 2.40% to 2.25%.
       - Group C: decreased from 2.15% to 2.10%.
       - Group D:
         - First $75,000 of retirement benefits paid: decreased from 2.40% to 2.25%.
         - Retirement benefits paid above $75,000: decreased from 1.15% to 1.10%.
       - Groups F and G: decreased from 2.25% to 2.15%.
     - All other members:
       - Groups A, C, and D: decreased from 2.40% to 2.25%.
       - Groups E and F – Retired on or before June 30, 2008: decreased from 1.35% to 1.25%.
       - Groups E and F – Retired on or after July 1, 2008: decreased from 2.40% to 2.35%.
   - Administrative expenses assumption was increased from 0.40% of projected to payroll to 0.45% of projected payroll.
   - Mortality assumptions were updated as follows:
     - Pre-Retirement:
       - Groups A and F: PubG-2010 General Employee Amount-Weighted Table with no credibility adjustments.
       - Group D: PubG-2010 General Employee Amount-Weighted Above Median Table with no credibility adjustments.
     - Healthy Post-Retirement – Retirees:
       - Groups A and F: PubG-2010 General Healthy Retiree Amount-Weighted Table for males and females with credibility adjustments of 101% and 105%, respectively, of the rates for all ages.
       - Group C and G: PubS-2010 Public Safety Retiree Amount-Weighted Table with no credibility adjustments.
     - Healthy Post-Retirement – Beneficiaries:
       - Group C and G: Pub-2010 Contingent Survivor Amount-Weighted Table with no credibility adjustments.

- Disabled Post-Retirement:
  - Groups C and G: PubS-2010 Safety Disabled Retiree Amount-Weighted Table with no credibility adjustments.
- The mortality improvement scale was updated to MP-2021 for all assumptions for all groups.

- Assumed inactive vested retirement rates for all pre-Normal Retirement Ages were decreased to 15%.
- Assumed disability rates were decreased as follows:
  - Groups A, D, and F: rates were uniformly decreased by 40% for all ages.
  - Group C: rates were uniformly decreased by 25% for all ages.

As a result of these assumption changes, the normal cost increased by $1.8 million, and the actuarial accrued liability increased by $13.3 million.

8. The funded percentage (the ratio of the actuarial value of assets to actuarial accrued liability) is 70.3%, compared to the prior year's funded percentage of 69.9%. This percentage is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded percentage is 67.5%, compared to 66.1% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of System assets to cover the estimated cost of settling the System's benefit obligation or the need for or the amount of future contributions.
9. The results of this June 30, 2023, actuarial valuation are used to determine the actuarially determined contribution for the fiscal year ending June 30, 2025, and to estimate the actuarially determined contribution for the fiscal year ending June 30, 2026. The actuarially determined contribution for fiscal 2025 is $131.3 million, an increase of $9.5 million from fiscal year 2024. Last year's estimate of the actuarially determined contribution for fiscal 2025 is $9.7 million less than this year's actual amount. This is due to the investment loss on an actuarial basis and the net demographic loss, combined with the impact of updating the actuarial assumptions as outlined above. The estimated fiscal 2026 actuarially determined contribution is $131.1 million.
10. The unfunded actuarial accrued liability is $1.066 billion, which is an increase of $27.4 million since the prior valuation.

Risk

11. It is important to note that this actuarial valuation is based on financial and demographic data as of June 30, 2023. The Plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the plan year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after June 30, 2023, due to COVID-19. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.

12. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions. We have included a discussion of various risks that may affect the System in *Section 2, Risk*.

GASB

13. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the System's funding policy and measuring the progress of that funding policy. The Net Pension Liability and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of June 30, 2023, and June 30, 2024, will be provided separately. The actuarially determined contribution in this valuation is expected to be used as the actuarially determined contribution for GASB financial reporting.

Summary of key valuation results

		2023	2022
Actuarially determined employer contributions:	• Actuarially determined employer contributions for fiscal 2025 (and 2024)	$131,346,935	$121,873,370
	• Estimated actuarially determined employer contributions for fiscal 2026 (and 2025)	131,081,498	121,642,588
Actuarial accrued liability for plan year beginning July 1:	• Retired members and beneficiaries	$2,270,533,748	$2,209,736,910
	• Deferred members as reported by the System	65,437,477	63,306,594
	• Inactive members as reported by the System	40,739,666	34,968,442
	• Active members	1,212,359,321	1,136,121,843
	• Total	3,589,070,212	3,444,133,789
	• Employer normal cost for plan year beginning July 1	36,384,942	32,821,872
Assets for plan year beginning July 1:	• Market value of assets (MVA)	$2,423,230,404	$2,276,645,124
	• Actuarial value of assets (AVA)	2,523,348,610	2,405,795,708
	• Actuarial value of assets as a percentage of market value of assets	104.13%	105.67%
Funded status for plan year beginning July 1:	• Unfunded actuarial accrued liability based on MVA	$1,165,839,808	$1,167,488,665
	• Funded percentage on MVA basis	67.52%	66.10%
	• Unfunded actuarial accrued liability based on AVA	$1,065,721,602	$1,038,338,081
	• Funded percentage on AVA basis	70.31%	69.85%
	• Remaining amortization period (years)	15	16
Key assumptions:	• Investment return	7.00%	7.00%
	• Inflation rate	2.30%	2.30%
Demographic data for plan year beginning July 1:	• Number of retired members and beneficiaries	8,058	7,963
	• Number of deferred members as reported by System	844	815
	• Number of inactive members as reported by System	2,287	2,012
	• Number of active members	8,611	8,324
	• Total payroll	$621,255,605	$576,951,813
	• Average payroll	72,147	69,312
	• Total monthly benefits for all retired members and beneficiaries	15,534,832	14,611,387
	• Average monthly benefit for all retired members and beneficiaries	1,928	1,835

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan provisions	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Member information	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Financial Information	Part of the cost of a plan will be paid from existing assets — the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the Office of the State Treasurer. A snapshot as of a single date may not be an appropriate value for determining a single year's contribution requirement, especially in volatile markets. Plan sponsors often use an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan members for the rest of their lives and the lives of their beneficiaries. This requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of members in each year, as well as forecasts of the Plan's benefits for each of those events. In addition, the benefits forecasted for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that is expected to be achieved on the plan's assets. All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions are selected within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model may use approximations and estimates that will have an immaterial impact on our results. In addition, the actuarial assumptions may change over time, and while this may have a significant impact on the reported results, it does not mean that the previous assumptions were unreasonable or wrong.

Section 1: Actuarial Valuation Summary

Models	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. 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.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the System and Board. Segal is not responsible for the use or misuse of its report, particularly by any other party.
An actuarial valuation is a measurement at a specific date — it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted.
Actuarial results in this report are not rounded, but that does not imply precision.
If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to its other advisors for expertise in these areas.
While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
Segal's report shall be deemed to be final and accepted by the System upon delivery and review. Trustees should notify Segal immediately of any questions or concerns about the final content.

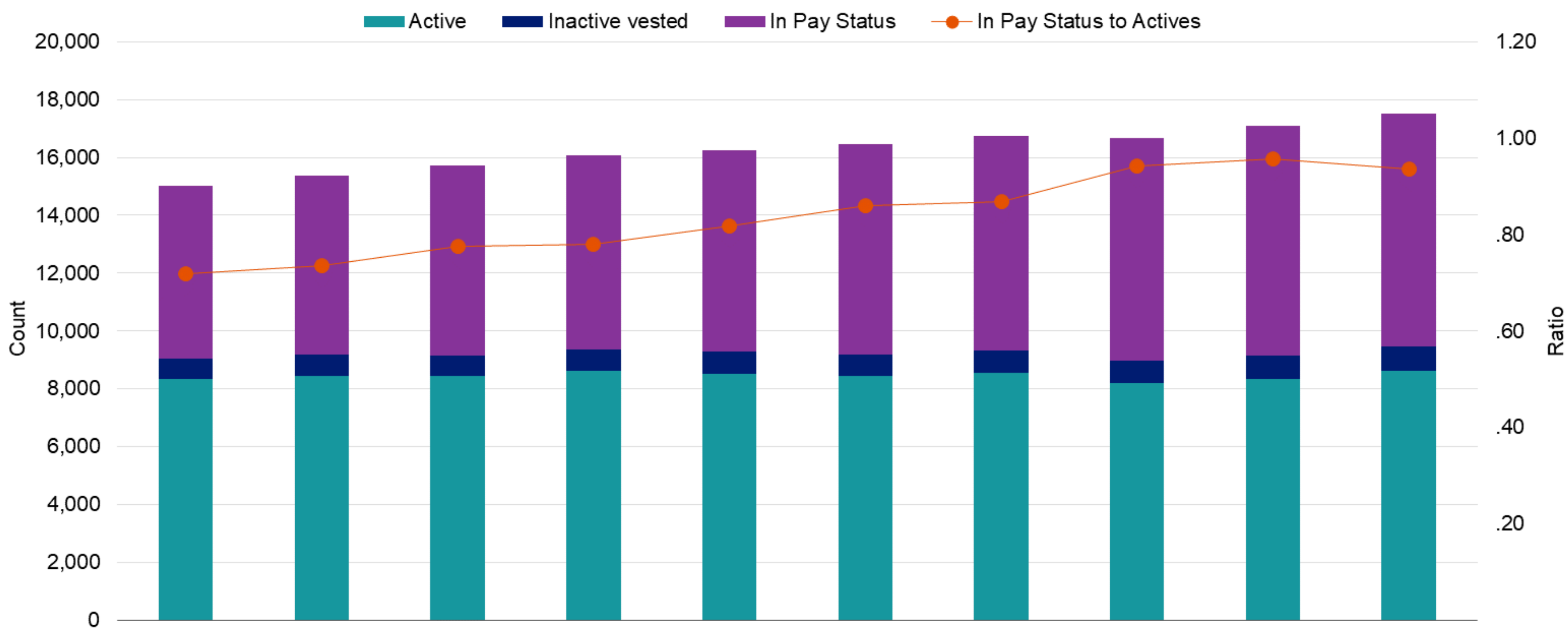
As Segal has no discretionary authority with respect to the management or assets of the System, it is not a fiduciary in its capacity as actuaries and consultants with respect to the System.

Section 2: Actuarial Valuation Results

Member data

This section presents a summary of significant statistical data on covered members.

Member Population as of June 30



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
In Pay Status	5,980	6,204	6,542	6,727	6,974	7,268	7,424	7,716	7,963	8,058
Deferred[1]	732	735	728	742	753	747	768	771	815	844
Active	8,325	8,446	8,436	8,620	8,530	8,443	8,539	8,192	8,324	8,611
Ratio[2]	0.72	0.73	0.78	0.78	0.82	0.86	0.87	0.94	0.96	0.94

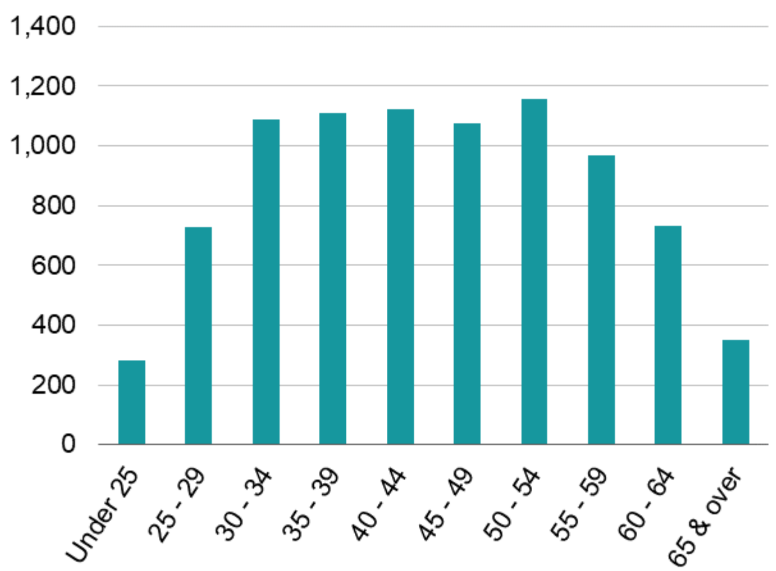
[1] Excludes inactive members as reported by the System.
[2] Effective for the June 30, 2023, actuarial valuation, all historical ratios were updated to reflect the ratio of in pay status members to active members.

Active members

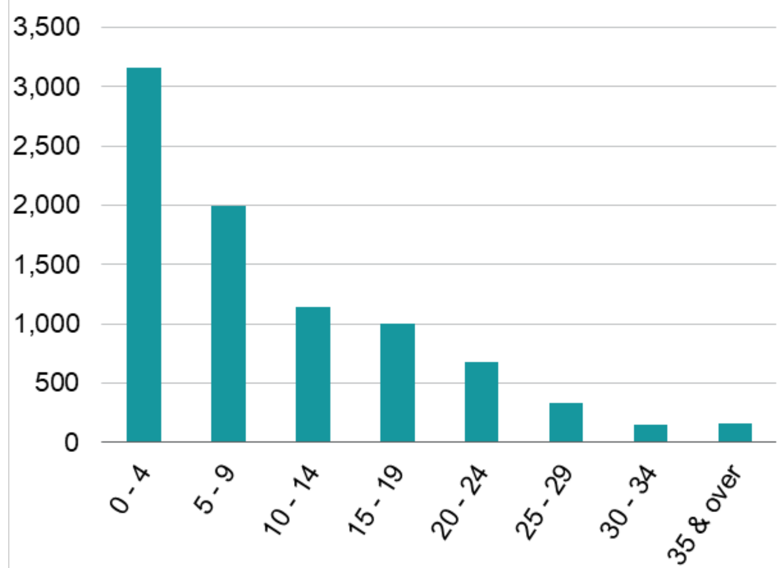
As of June 30	2023	2022	Change
Active members	8,611	8,324	3.4%
Average age	45.1	45.3	−0.2
Average years of creditable service	10.2	10.4	−0.2
Average payroll	$72,147	$69,312	4.1%

Distribution of Active Members as of June 30, 2023

Actives by Age



Actives by Years of Service



Inactive and deferred members

In this year's valuation, there were 2,287 inactive members as reported by the System. A member is reported as inactive if they have withdrawn from active employment within the three-year period preceding the valuation date, or if they withdrew prior to the three-year period preceding the valuation date, but do not have a vested right to a deferred or immediate vested benefit and have not taken a refund of their employee contributions.

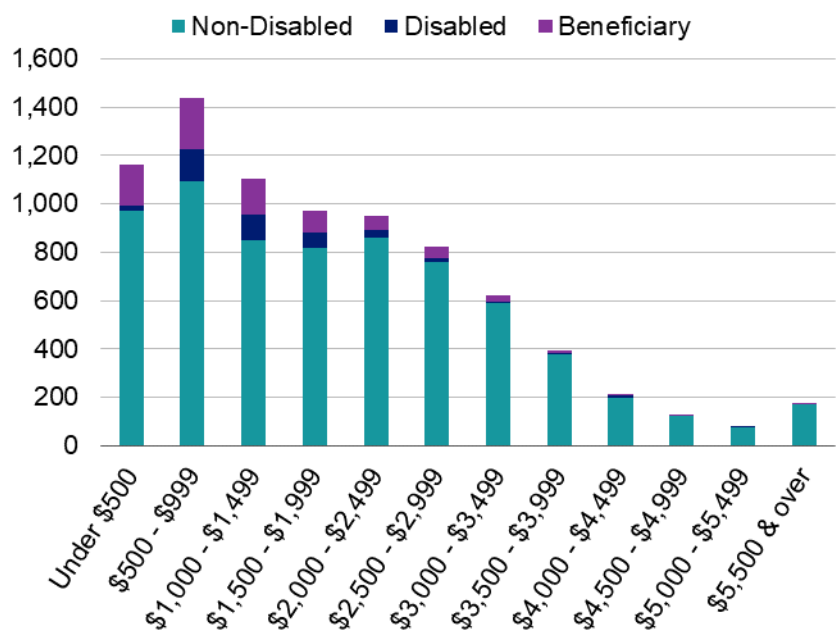
In addition, there were 844 deferred members as reported by the System. A member is reported as deferred if they have withdrawn from active employment prior to the three-year period preceding the valuation date and have a vested right to a deferred or immediate vested benefit.

Retired members and beneficiaries

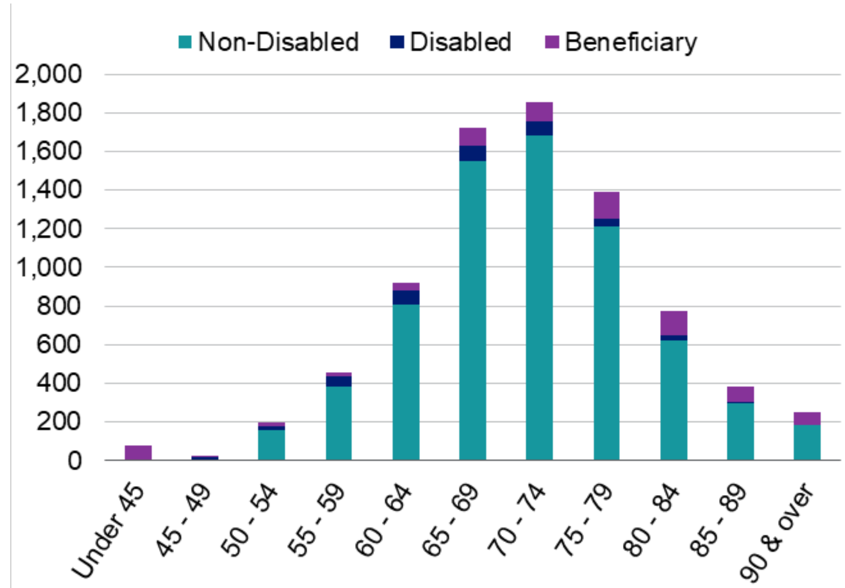
As of June 30	2023	2022	Change
Retired members (including disability)	7,289	7,196	1.3%
Average age	71.6	71.2	0.4
Average amount	$1,996	$1,899	5.1%
Beneficiaries	769	767	0.3%
Total monthly amount	$15,534,832	$14,611,387	6.3%

Distribution of Pensioners as of June 30, 2023

Pensioners by Type and Monthly Amount



Pensioners by Type and Age



Historical plan population

Member Data Statistics: 2014 – 2023

	Active Members			Retired Members[1]		
As of June 30	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2014	8,325	45.2	11.8	5,421	69.7	$1,510
2015	8,446	46.5	11.7	5,554	70.0	1,561
2016	8,436	46.2	11.3	5,858	70.1	1,587
2017	8,620	46.0	11.1	6,092	70.3	1,616
2018	8,530	45.9	11.0	6,302	70.4	1,663
2019	8,443	45.7	10.8	6,567	70.6	1,718
2020	8,539	45.6	10.8	6,704	70.9	1,755
2021	8,192	45.7	10.9	6,973	71.0	1,805
2022	8,324	45.3	10.4	7,196	71.2	1,899
2023	8,611	45.1	10.2	7,289	71.6	1,996

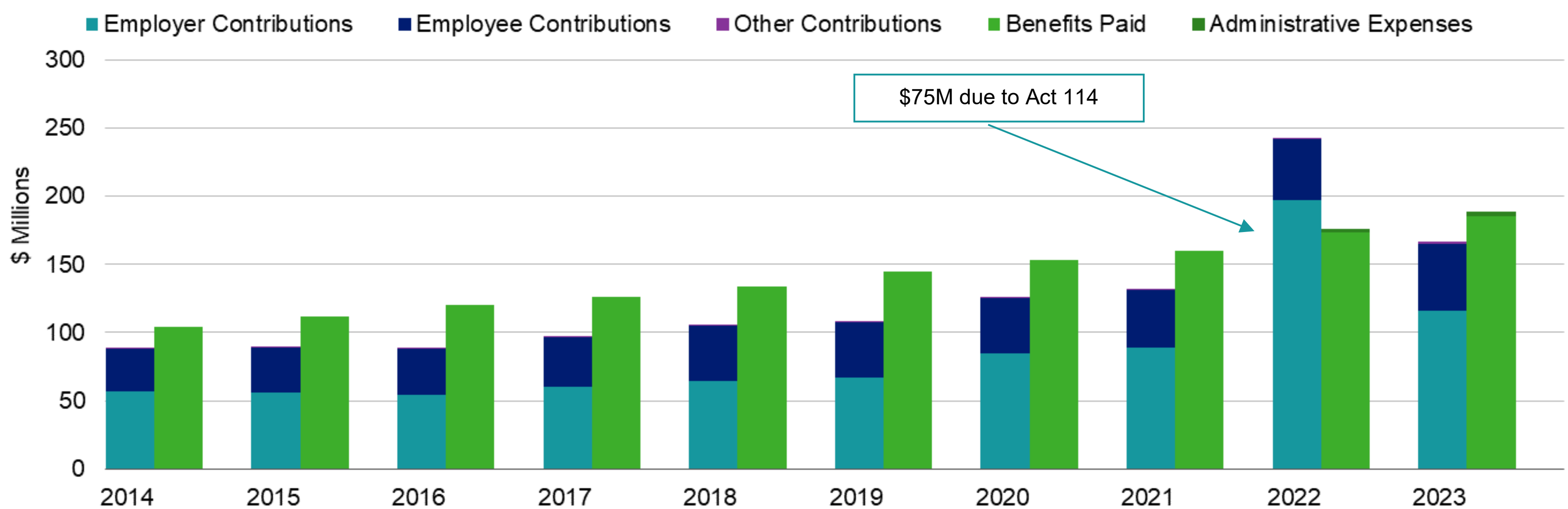
[1] Not including beneficiaries.

Financial information

Retirement plan funding anticipates that, over the long term, both contributions and investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components. Benefits have exceeded employer and member contributions for all years shown except for 2022 (due to the additional one-time payment of $75 million per Act 114).

Additional financial information, including a summary of these transactions for the valuation year, is presented in *Section 3, Exhibits C, D* and *E*.

Comparison of Contributions to Benefits and Paid for Years Ended June 30, 2014 – 2023



Section 2: Actuarial Valuation Results

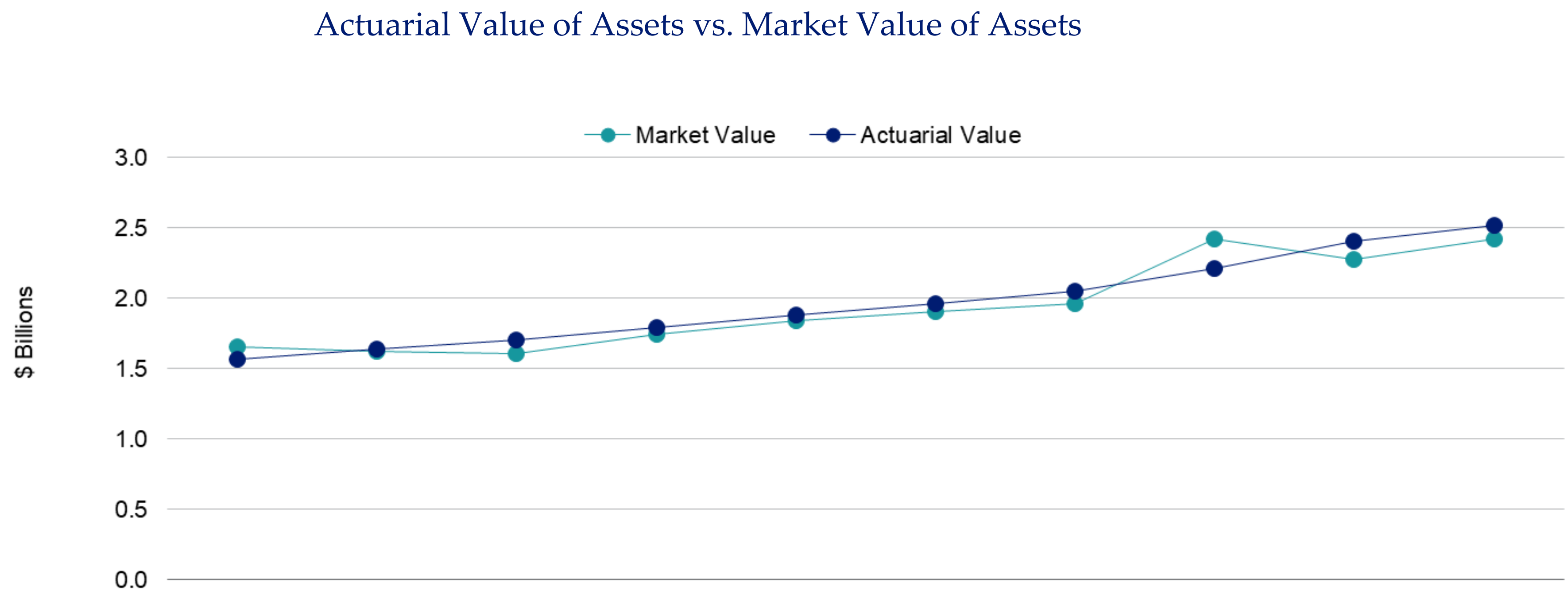
It is desirable to have level and predictable plan costs from one year to the next. For this reason, the State Pension Investment Commission has adopted an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. A characteristic of the asset valuation method is that, over time, it is more likely to produce an actuarial value of assets that is less than the market value of assets. The asset method provides a degree of conservatism to increase the likelihood that benefits are funded. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Determination of Actuarial Value of Assets for Year Ended June 30, 2023

1	Actuarial value of assets, June 30, 2022		$2,405,795,708
2	Net new money[1], including expected investment income (7.00%)		142,582,454
3	Preliminary asset value: **1 + 2**		2,548,378,162
4	Smoothing adjustment		
	a) Market value, June 30, 2023	$2,423,230,404	
	b) Preliminary asset value	2,548,378,162	
	c) Unrecognized appreciation	−125,147,758	
	d) Adjustment	X 20%	−25,029,552
5	Actuarial value of assets, June 30, 2023: **3 + 4d**		$2,523,348,610
6	Actuarial value of assets as a percentage of market value: **5 ÷ 4a**		104.13%

[1] Net new money is comprised of contributions, interest, and dividends, less benefit payments and expenses.

Asset history for years ended June 30

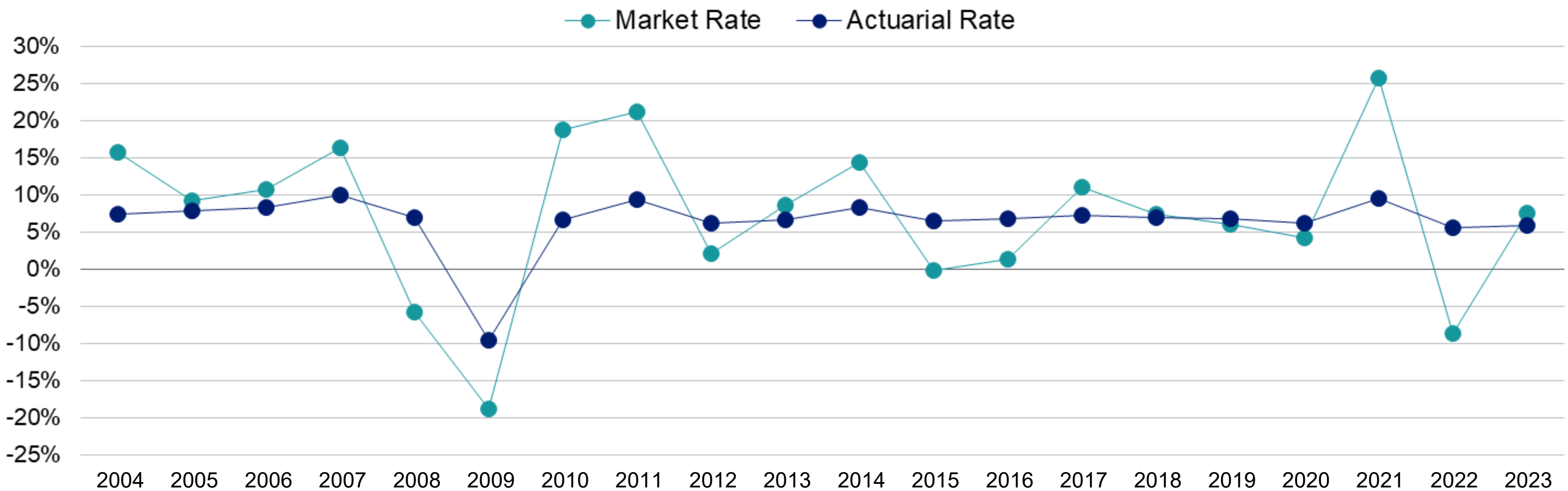


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Actuarial Value[1]	$1.57	$1.64	$1.71	$1.79	$1.88	$1.96	$2.05	$2.22	$2.41	$2.52
Market Value[1]	1.66	1.62	1.61	1.75	1.84	1.91	1.96	2.43	2.28	2.42
Ratio	0.95	1.01	1.06	1.03	1.02	1.03	1.05	0.91	1.06	1.04

[1] In billions

Historical investment returns

Market and Actuarial Rates of Return for Years Ended June 30



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Market rate	15.7%	9.3%	10.7%	16.4%	−5.7%	−18.8%	18.8%	21.2%	2.2%	8.6%	14.4%	−0.1%	1.4%	11.0%	7.4%	6.1%	4.3%	25.7%	−8.7%	7.6%
Actuarial rate	7.4%	7.8%	8.3%	10.0%	6.9%	−9.6%	6.7%	9.3%	6.3%	6.7%	8.3%	6.5%	6.7%	7.3%	6.9%	6.8%	6.3%	9.6%	5.6%	6.0%
Assumed rate	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.5%	8.5%	8.5%	8.5%	8.5%	7.95%	7.95%	7.5%	7.5%	7.0%	7.0%	7.0%	7.0%

Average Rates of Return	Actuarial Value	Market Value
Most recent five-year average return:	6.77%	6.27%
Most recent ten-year average return:	6.92%	6.44%
Most recent fifteen-year average return:	6.09%	6.21%
Most recent twenty-year average return:	6.43%	6.63%

Actuarial experience

To calculate the actuarially determined contribution (ADC), assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the ADC will decrease relative to the previous year. On the other hand, the ADC will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single years' experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The net experience loss is $34,475,701, which includes $25,029,552 from investment losses and $9,446,149 in losses from all other sources. The net experience variation from individual sources other than investments was 0.3% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended June 30, 2023

1	Net loss from investments[1]	−$25,029,552
2	Loss on administrative expenses	−81,118
3	Net loss from other experience	−9,365,031
4	Net experience loss: **1 + 2 + 3**	−$34,475,701

[1] Details on next page

Investment experience

Actuarial planning is long term. The obligations of a pension plan are expected to continue for the lifetime of all its participants.

The assumed long-term rate of return of 7.00% considers past experience, the System's asset allocation policy, and future expectations.

Investment Experience

		Year Ended June 30, 2023	
		Market Value	**Actuarial Value**
1	Investment income	$171,535,276	$142,502,898
2	Average value of assets	2,264,170,126	2,393,320,710
3	Rate of return: **1 ÷ 2**	7.58%	5.95%
4	Assumed rate of return	7.00%	7.00%
5	Expected investment income: **2 x 4**	$158,491,909	$167,532,450
6	Actuarial gain/(loss): **1 − 5**	$13,043,367	−$25,029,552

Administrative expenses

Administrative expenses for the year ending June 30, 2023, totaled $2,578,013, as compared to the assumption of $2,416,448.

Other experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among members,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected),
- actual COLAs paid (more or less than assumed), and
- salary and service increases (greater or smaller than projected).

Liability Changes Due to Demographic Experience for Year Ended June 30

	2019	2020	2021	2022	2023
Net turnover	−$1,588,998	−$2,812,974	$3,446,914	$13,686,201	$4,513,484
Retirement	−13,424,864	−8,892,489	−19,015,951	−22,922,279	−5,790,656
Mortality	−1,885,105	3,692,473	−4,440,365	10,206,668	8,005,442
Disability retirements	291,792	−434,494	−158,342	−1,598,758	−59,419
Salary/service increases	344,400	−3,697,977	−4,448,937	−30,740,425	−8,552,557
COLA experience[1]	11,993,826	23,969,841	−35,588,639	−46,706,996	3,240,429
Miscellaneous[2]	−14,994,521	−2,407,484	−3,195,329	−9,645,414	−10,721,754
Total	−$19,263,470	$9,416,896	−$63,400,649	−$87,721,003	−$9,365,031

[1] COLA experience gain for 2023 is due to actual 2024 COLAs being lower than expected (2.20% actual vs 2.40% expected for Group A, C, and D members, 1.10% actual vs 1.35% expected for Group F members who retired before July 1, 2008, and 2.20% actual vs 2.40% expected for Group F members who retired after July 1, 2008).

[2] Miscellaneous gains and losses are comprised of all demographic gains and losses that are not individually listed in the table above. Some of the largest attributing items typically include data updates, show-up/drop-off records (records that were not previously valued, or records that were previously valued that are no longer being valued), and actual timing of cash flows being different than assumed.

Actuarial assumptions

Effective for the June 30, 2023, actuarial valuation, the following assumptions were updated:

- Assumed rates of salary increase were increased based on plan experience.
- COLA assumptions were decreased as follows:
  - Active Group A, C, F, and G members first eligible for normal or unreduced early retirement on or after July 1, 2022, and active Group D members first appointed or elected on or after July 1, 2022:
    - Group A: decreased from 2.40% to 2.25%.
    - Group C: decreased from 2.15% to 2.10%.
    - Group D:
      - First $75,000 of retirement benefits paid: decreased from 2.40% to 2.25%.
      - Retirement benefits paid above $75,000: decreased from 1.15% to 1.10%.
    - Groups F and G: decreased from 2.25% to 2.15%.
  - All other members:
    - Groups A, C, and D: decreased from 2.40% to 2.25%.
    - Groups E and F – Retired on or before June 30, 2008: decreased from 1.35% to 1.25%.
    - Groups E and F – Retired on or after July 1, 2008: decreased from 2.40% to 2.35%.
- Administrative expenses assumption was increased from 0.40% of projected to payroll to 0.45% of projected payroll.
- Mortality assumptions were updated as follows:
  - Pre-Retirement:
    - Groups A and F: PubG-2010 General Employee Amount-Weighted Table with no credibility adjustments.
    - Group D: PubG-2010 General Employee Amount-Weighted Above Median Table with no credibility adjustments.
  - Healthy Post-Retirement – Retirees:
    - Groups A and F: PubG-2010 General Healthy Retiree Amount-Weighted Table for males and females with credibility adjustments of 101% and 105%, respectively, of the rates for all ages.
    - Group C and G: PubS-2010 Public Safety Retiree Amount-Weighted Table with no credibility adjustments.
  - Healthy Post-Retirement – Beneficiaries:
    - Group C and G: Pub-2010 Contingent Survivor Amount-Weighted Table with no credibility adjustments.

  - Disabled Post-Retirement:
    - Groups C and G: PubS-2010 Safety Disabled Retiree Amount-Weighted Table with no credibility adjustments.
  - The mortality improvement scale was updated to MP-2021 for all assumptions for all groups.
- Assumed inactive vested retirement rates for all pre-Normal Retirement Ages were decreased to 15%.
- Assumed disability rates were decreased as follows:
  - Groups A, D, and F: rates were uniformly decreased by 40% for all ages.
  - Group C: rates were uniformly decreased by 25% for all ages.

As a result of these assumption changes, the normal cost increased by $1.8 million, and the actuarial accrued liability increased by $13.3 million. Details on actuarial assumptions and methods are in *Section 4, Exhibit I.*

Plan provisions

There were no changes in plan provisions since the prior valuation. A summary of plan provisions is in *Section 4, Exhibit II*.

Development of unfunded actuarial accrued liability

Development of Unfunded Actuarial Accrued Liability for Year Ended June 30, 2023

1	Unfunded actuarial accrued liability at beginning of year		$1,038,338,081
2	Normal cost at beginning of year		73,970,897
3	Total contributions		−166,358,015
4	Interest on **1**, **2** & **3**		72,039,098
5	Expected unfunded actuarial accrued liability		$1,017,990,061
6	Changes due to:		
	(a) Net experience (gain)/loss	$34,475,701	
	(b) Assumptions	13,255,840	
	(c) Funding method	0	
	(d) Plan provisions	0	
	Total changes		47,731,541
7	Unfunded actuarial accrued liability at end of year		$1,065,721,602

Actuarially determined contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability. The statute governing the System specifies the funding policy used to calculate the actuarially determined contribution based on a closed amortization period ending on June 30, 2038. As of July 1, 2023, there are 15 years remaining on this schedule.

The actuarially determined contribution for the fiscal year ending June 30, 2024, is $121,873,370 based on the June 30, 2022, actuarial valuation. The results of this June 30, 2023, actuarial valuation with the additional Act 114 contributions are used to determine the actuarially determined contribution for the fiscal year ending June 30, 2025, and to estimate the actuarially determined contribution for the fiscal year ending June 30, 2026, as shown in *Section 2, Actuarially determined contribution for following two fiscal years.*

The preliminary contribution requirement as of July 1, 2023, is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, and actuarial gains and losses.

Preliminary Contribution Requirement

		Year Beginning July 1			
		2023		2022	
		Amount	% of Payroll	Amount	% of Payroll
1	Total normal cost, adjusted for timing[1]	$83,397,238	12.77%	$74,099,643	12.26%
2	Administrative expenses	2,939,373	0.45%	2,416,448	0.40%
3	Expected employee contributions	−49,951,669	−7.65%	−43,694,219	−7.23%
4	Employer normal cost: **1 + 2 + 3**	$36,384,942	5.57%	$32,821,872	5.43%
5	Actuarial accrued liability	3,589,070,212		3,444,133,789	
6	Actuarial value of assets	2,523,348,610		2,405,795,708	
7	Unfunded actuarial accrued liability: **5 − 6**	$1,065,721,602		$1,038,338,081	
8	Payment on unfunded actuarial accrued liability, adjusted for timing[1]	94,667,812	14.49%	87,969,539	14.56%
9	Preliminary contribution requirement: **4 + 8**	$131,052,754	20.06%	$120,791,411	19.99%
10	Projected payroll	653,193,932		604,112,062	

[1] Contributions are assumed to be paid at the middle of the year.

Reconciliation of preliminary contribution requirement

Reconciliation of Preliminary Contribution Requirement from July 1, 2022, to July 1, 2023

		Amount	% of Payroll
1	Preliminary Contribution Requirement as of July 1, 2022	$120,791,411	19.99%
2	Effect of plan amendment(s)	-	0.00%
3	Effect of change in asset method	-	0.00%
4	Effect of expected change in amortization payment due to payroll growth	2,639,086	0.44%
5	Effect of expected change in amortization method	-	0.00%
6	Effect of change in actuarial assumptions	2,845,615	0.47%
7	Effect of total contributions (more)/less than actuarially determined contribution	−172,145	−0.03%
8	Effect of investment (gain)/loss	2,223,370	0.37%
9	Effect of other gains and losses on accrued liability	839,099	0.14%
10	Effect of change in administrative expenses[1]	522,924	0.09%
11	Net effect of other changes, including composition and number of members, payroll[2]	1,363,394	−1.41%
12	Total change	$10,261,343	0.07%
13	Preliminary Contribution Requirement as of July 1, 2023: **1 + 12**	$131,052,754	20.06%

[1] The dollar amount of expected administrative expenses increased as the assumption increased to 0.45% of projected payroll.

[2] The percent of payroll value includes the effect of the change in projected payroll basis. All percentages for previous items are calculated on the basis of prior year projected payroll. This percent of payroll value includes an additional element to account for the fact that the percentage in item 13 is based on projected payroll from the current valuation. It is possible that the dollar amount of change may be positive while the percent of payroll value is negative, and vice versa. It is expected that the dollar amount as a percentage of prior year projected payroll will not match the percent of payroll value.

Amortization schedule for unfunded actuarial accrued liability – schedule of contributions required by statute

Unfunded Liability Amortization Schedule

As of July 1	Balance	Additional Act 114 State Contribution[1] (Year Following)	Amortization Payment[2] (Year Following)	Funded Percentage
2023	$1,065,721,602	$9,000,000	$90,903,961	70.31%
2024	1,036,980,653	12,000,000	97,001,194	71.99%
2025	996,817,587	15,000,000	98,682,385	74.02%
2026	949,000,844	15,000,000	100,007,735	76.12%
2027	896,465,977	15,000,000	101,255,428	78.22%
2028	838,963,046	15,000,000	102,399,277	80.32%
2029	776,251,702	15,000,000	103,404,356	82.41%
2030	708,110,904	15,000,000	104,222,758	84.51%
2031	634,353,687	15,000,000	104,786,394	86.60%
2032	554,850,435	15,000,000	104,993,883	88.68%
2033	469,567,328	0	104,684,562	90.75%
2034	394,150,488	0	107,825,098	92.51%
2035	310,205,873	0	111,059,851	94.31%
2036	217,039,081	0	114,391,647	96.16%
2037	113,904,177	0	117,823,396	98.06%
2038	0	0	0	100.00%

[1] Under Act 114, beginning in FY24, the State is contributing an additional payment that grows to $15 million in FY26 and remains at that level until the fund reaches 90%.
[2] The annual payment to amortize the unfunded actuarial liability is calculated based upon installments increasing at a rate of 3% per year.

Projection of actuarially determined contribution for following two fiscal years

On the basis of the June 30, 2023, actuarial valuation, the employer normal cost rate is 5.57%. In order to reflect the future member contribution increases per Act 114, the fiscal 2025 employer normal cost rate is reduced by an estimated 49 basis points and the fiscal 2026 employer normal cost rate is reduced by an additional estimated 45 basis points. These reduced employer normal cost rates are applied to the projected payrolls for fiscal 2025 and fiscal 2026, respectively, to determine the employer normal cost for each year. The payment on the unfunded liability is added to the employer normal cost to determine the actuarially determined contribution for the fiscal year ending June 30, 2025, and to estimate the actuarially determined contribution for the fiscal year ending June 30, 2026, as shown below. The final actuarially determined contribution for fiscal 2026 will be determined with the next valuation.

Actuarially Determined Contribution: 2025 – 2026

			Projected Contributions		
Fiscal Year Ended June 30	**Projected Payroll[1]**	**Employer Normal Cost Rate**	**Employer Normal Cost**	**Unfunded Liability Payment**	**Total**
2025	$676,055,720	5.08%	$34,345,741	$97,001,194	$131,346,935
2026	699,717,670	4.63%	32,399,113	98,682,385	131,081,498

[1] In these projections, total payroll is assumed to increase by 3.5% each year.

History of employer contributions

A history of the most recent years of contributions is shown below.

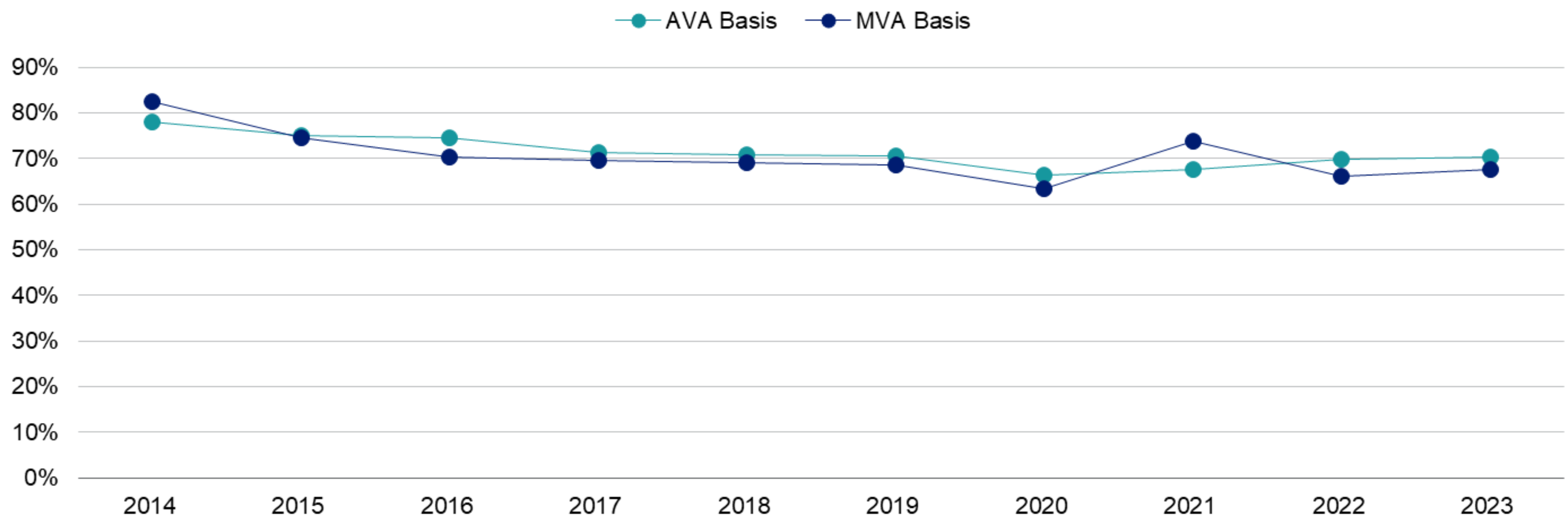
History of Employer Contributions: 2015 – 2024

Fiscal Year Ended June 30	Actuarially Determined Contribution: Amount[1]	Actuarially Determined Contribution: Percentage of Payroll[2]	Actual Employer Contribution: Amount	Actual Employer Contribution: Percentage of Payroll[2]	Percent Contributed
2015	$44,651,783	10.25%	$55,881,364	12.83%	125.15%
2016	46,237,853	10.11%	54,347,060	11.88%	117.54%
2017	48,503,358	10.14%	60,280,480	12.60%	124.28%
2018	52,065,397	10.67%	64,564,323	12.26%	124.01%
2019	62,984,742	11.57%	66,617,894	12.24%	105.77%
2020	78,943,914	14.01%	84,429,972	15.34%	106.95%
2021	83,876,570	14.51%	88,944,172	15.38%	106.04%
2022	119,967,769	20.73%	197,523,008	34.13%	164.65%
2023	116,038,400	19.21%	116,387,502	19.27%	100.30%
2024	121,873,370	18.66%	--	--	--

[1] Budgeted contribution amount from prior valuation report.
[2] Based on expected payroll.

History of funded percentage

A history of the most recent years of funded percentage as of June 30th is shown below.



Actuarial balance sheet

An overview of the System's funding is provided by an Actuarial Balance Sheet, which compares the total liabilities (current and future) to the total assets (current and future). The liabilities are calculated by determining the amount and timing of all future payments that will be made by the System for current members. These payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value of all benefits, referred to as the "liability" of the System.

Second, this liability is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the System, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

Actuarial Balance Sheet

	Year Ended	
	June 30, 2023	**June 30, 2022**
Liabilities		
• Present value of benefits for retired members and beneficiaries	$2,270,533,748	$2,209,736,910
• Present value of benefits for inactive former members	106,177,143	98,275,036
• Present value of benefits for active members	1,964,922,284	1,792,585,559
Total liabilities	**$4,341,633,175**	**$4,100,597,505**
Assets		
• Total valuation value of assets	$2,523,348,610	$2,405,795,708
• Present value of future contributions by members	484,494,333	512,911,558
• Present value of future employer contributions for:		
• Entry age cost	268,068,630	143,552,158
• Unfunded actuarial accrued liability	1,065,721,602	1,038,338,081
Total of current and future assets	**$4,341,633,175**	**$4,100,597,505**

Low-Default-Risk Obligation Measure

In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*. One of the revisions to ASOP 4 requires the disclosure of a Low-Default-Risk Obligation Measure (LDROM) when performing a funding valuation. The LDROM presented in this report is calculated using the same methodology and assumptions used to determine the Actuarial Accrued Liability (AAL) used for funding, except for the discount rate. The LDROM is required to be calculated using "a discount rate…derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future."

The LDROM is a calculation assuming a plan's assets are invested in an all-bond portfolio, generally lowering expected long-term investment returns. The discount rate selected and used for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index Rate, published at the end of each week. The last published rate in June of the measurement period, by The Bond Buyer (www.bondbuyer.com), is 3.65% for use effective June 30, 2023. This is the rate used to determine the discount rate for valuing reported public pension plan liabilities in accordance with Governmental Accounting Standards when plan assets are projected to be insufficient to make projected benefit payments, and the 20-year period reasonably approximates the duration of such plans. The LDROM is not used to determine a plan's funded status or Actuarially Determined Contribution. The plan's expected return on assets, currently 7.00%, is used for these calculations.

As of June 30, 2023, the LDROM for the System is $5.57 billion. The difference between the plan's AAL of $3.59 billion and the LDROM, or $1.98 billion, can be thought of as the increase in the AAL if the entire portfolio were invested in low-default-risk securities. Alternatively, this difference could also be viewed as representing the expected savings from investing in the plan's diversified portfolio compared to investing only in low-default-risk securities.

ASOP 4 requires commentary to help the intended user understand the significance of the LDROM with respect to the funded status of the plan, plan contributions, and the security of participant benefits. In general, if plan assets were invested exclusively in low-default-risk securities, the funded status would be lower and the Actuarially Determined Contribution would be higher. While investing in a portfolio with low-default-risk securities may be more likely to reduce investment volatility and the volatility of employer contributions, it also may be more likely to result in higher employer contributions or lower benefits.

Risk

Since the actuarial valuation results are dependent on a given set of assumptions and data as of a specific date, there is a risk that emerging results may differ significantly as actual experience differs from the assumptions.

Below is a brief discussion of some of the risks that may affect the System. This discussion is focused on funding-related risks, but similar concerns may apply to risks regarding the level of expense and liabilities reported for System accounting purposes as well.

There are external factors including legislative or financial reporting changes that could impact the System's funding and disclosure requirements. While we do not assume any changes in such external factors, it is important to understand that they could have significant consequences for the System.

In 2019, the Board engaged Segal to perform a detailed analysis of the potential range of the impact of risks relative to the System's future financial condition. This study included an overview of risks that affect the System and stakeholders, as well as various stochastic and deterministic modeling scenarios, primarily focusing on investment returns.

A detailed risk assessment is important for SERS because:

- The negative cash flow position of the System could be exacerbated by relatively small deviations from assumed future experience.
- Retired and inactive members account for more than half of the System's liabilities limiting options for reducing plan liabilities in the event of adverse experience.
- Most actuarial assumptions have been revised and updated since the last detailed risk analysis was performed.
- The risks identified below show significant potential for variability.

The following risks could significantly affect the System's future condition:

- **Investment Risk** (the risk that returns will be different than expected)
  - If the prior year's investment performance resulted in a market value of assets that is 10% different than the current value, it would result in a change of $242.3 million in the asset value. A 10% increase in assets would cause the unfunded liability (market value basis) to decrease from $1.166 billion to $0.924 billion. Likewise, a 10% decrease in the asset value would cause the unfunded liability to increase from $1.166 billion to $1.408 billion.
  - Since the System's assets are much larger than contributions, investment performance may create volatility in the actuarially determined contribution requirements. For example, for each 1% difference in actual return, the actuarially determined

contribution would increase or decrease by 0.30% of payroll, disregarding the effects of the five-year phase-in of investment gains and losses.

- To illustrate the potential for future investment volatility, the market value rate of return over the last 20 years has ranged from a low of −18.80% to a high of 25.71%.

- **Longevity Risk** (the risk that mortality experience will be different than expected)

  The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.

  The current mortality assumptions represent our best estimate of the mortality rates for this plan; however, a 10% reduction in the assumed mortality rates results in an increase in the liabilities of roughly 3% for most plans. For SERS, a 3% liability increase would result in an increase in the unfunded accrued liability of $107.7 million. The unfunded accrued liability (market value of assets basis) would increase from $1.166 billion to $1.274 billion.

- **Demographic Risk** (the risk that member experience will be different than assumed)

  Examples of this risk include:

  - Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply.
  - More or less active member turnover than assumed.
  - Salary increases more or less than assumed.

- **Maturity Measures**

  As pension plans mature, the cash need to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities.

  - Over the past ten years, the ratio of in-pay-status members to active members has increased from a low of 0.72 to a high of 0.96. Currently the System has an in-pay-status to active member ratio of 0.94.
  - As of June 30, 2023, the retired life actuarial accrued liability represents 63% of the total actuarial accrued liability. In addition, the actuarial accrued liability for inactive and deferred members represents 3% of the total. The higher the non-active actuarial accrued liability is as a percent of the total liability, the greater the danger of volatility in results.
  - For the prior year, benefits paid were $19.3 million more than contributions received, or 0.8% of the market value of assets. Typically, as the System matures, more cash will be needed from the investment portfolio to meet benefit payments.

- **Actual Experience Over the Last Five Years and Implications for the Future**

Plan Year Ended	Investment Gain/(Loss)	Administrative Expense Gain/(Loss)	All Other Gains and (Losses)
2019	−$13,757,751	N/A	−$19,263,470
2020	−23,939,803	N/A	9,416,896
2021	52,180,733	N/A	−63,400,649
2022	−32,287,646	$43,700	−87,721,003
2023	−25,029,552	−81,118	−9,365,031

- Past experience can help demonstrate the sensitivity of key results to the System's actual experience. Over the past five years:
  - The investment gain(loss) for a year (actuarial basis) has ranged from a loss of $32.3 million to a gain of $52.2 million.
  - The non-investment gain(loss) for a year has ranged from a loss of $87.7 million to a gain of $9.4 million.
- The funded percentage on the actuarial value of assets has ranged from a low of 66.4% to a high of 77.9% over the past ten years.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Category	As of June 30 2023	As of June 30 2022	Change From Prior Year
Active members in valuation:			
• Number	8,611	8,324	3.4%
• Average age	45.1	45.3	−0.2
• Average years of creditable service	10.2	10.4	−0.2
• Total payroll	$621,255,605	$576,951,813	7.7%
• Average payroll	72,147	69,312	4.1%
• Total active vested members	5,487	5,462	0.5%
Inactive members:			
• Number of deferreds as reported by the System	844	815	3.6%
• Number of inactives as reported by the System	2,287	2,012	13.7%
Retired members:			
• Number in pay status	6,897	6,800	1.4%
• Average age	71.9	71.5	0.4
• Average monthly benefit	$2,027	$1,931	5.0%
Disability retirees:			
• Number in pay status	392	396	−1.0%
• Average age	66.7	66.3	0.4
• Average monthly benefit	$1,436	$1,360	5.6%
Beneficiaries:			
• Number in pay status	769	767	0.3%
• Average age	71.2	71.1	0.1
• Average monthly benefit	$1,286	$1,229	4.6%

Exhibit B: Reconciliation of Member Data

	Active Members	Deferreds	Inactives	Disability Retirees	Retired Members	Beneficiaries	Total
Number as of July 1, 2022	**8,324**	**815**	**2,012**	**396**	**6,800**	**767**	**19,114**
• New members	1,028	N/A	202	0	12	N/A	1,242
• Inactives as reported by the System	-506	0	506	N/A	N/A	N/A	0
• Deferred as reported by the System	N/A	82	-82	N/A	N/A	N/A	0
• Retirements	-218	-41	-13	N/A	272	N/A	0
• New disabilities	-10	0	0	11	-1	N/A	0
• Return to work from disability	0	N/A	N/A	0	N/A	N/A	0
• Died with beneficiary	-9	0	0	-3	-33	45	0
• Died without beneficiary	-7	-1	-1	-12	-149	-47	-217
• Refunds of contributions	-98	-4	-238	0	0	0	-340
• Rehire	107	-6	-101	N/A	0	N/A	0
• Certain period expired	N/A	N/A	0	0	0	-4	-4
• Data adjustments	0	-1	2	0	-4	8	5
Number as of July 1, 2023	**8,611**	**844**	**2,287**	**392**	**6,897**	**769**	**19,800**

Exhibit C: Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended June 30, 2023		Year Ended June 30, 2022	
Net assets at market value at the beginning of the year		$2,276,645,124		$2,425,222,408
Contribution income:				
• Employer contributions	$116,387,502		$197,523,008	
• Member contributions	48,580,695		44,654,960	
• Less administrative expenses	−2,578,013		−2,352,151	
Net contribution income		*$162,390,184*		*$239,825,817*
Net other income		$1,389,818		$862,283
Investment income:				
• Interest, dividends and other income	$20,114,026		$16,785,884	
• Asset appreciation	151,421,250		−229,545,692	
• Less investment fees	−3,025,871		−2,714,103	
Net investment income		*$168,509,405*		*−$215,473,911*
Total income available for benefits		**$332,289,407**		**$25,214,189**
Less benefit payments:				
• Benefits	−$180,735,163		−$167,690,557	
• Refunds of contributions	−3,911,594		−4,386,131	
• Death claims	−812,777		−813,731	
• Transfers to other pension trust funds	−244,593		−901,054	
Net benefit payments		*−$185,704,127*		*−$173,791,473*
Change in reserve for future benefits		**$146,585,280**		**−$148,577,284**
Net assets at market value at the end of the year		**$2,423,230,404**		**$2,276,645,124**

Exhibit D: Summary Statement of Plan Assets

	June 30, 2023		June 30, 2022	
Cash equivalents		$36,074,483		$22,781,883
Total accounts receivable		43,342,216		14,883,184
Prepaid expenses		70,506		68,602
Capital assets, net of depreciation		274,203		521,831
Investments:				
• Fixed income	$110,493,827		$128,651,224	
• Equities	69,417,330		209,763,371	
• Mutual and commingled funds	1,578,834,310		1,496,507,550	
• Real estate and venture capital	647,913,594		431,376,299	
Total investments at market value		$2,406,659,061		$2,266,298,444
Total assets		$2,486,420,469		$2,304,553,944
Total liabilities		−$63,190,065		−$27,908,820
Net assets at market value		**$2,423,230,404**		**$2,276,645,124**
Net assets at actuarial value		**$2,523,348,610**		**$2,405,795,708**

Exhibit E: Development of the Fund through June 30, 2023

Year Ended June 30	Employer Contributions	Member Contributions	Net Other Income	Net Investment Return[1]	Admin. Expenses	Benefit Payments[2]	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2013	$51,370,307	$29,847,352	$638,436	$110,717,567	-$1,374,643	-$99,194,618	$1,470,493,897	$1,469,169,902	99.91%
2014	56,482,985	31,745,692	453,852	203,720,178	-1,158,183	-104,492,553	1,657,245,868	1,566,075,540	94.50%
2015	55,881,364	33,296,248	423,273	-8,484,694	-2,104,636	-111,396,184	1,624,861,239	1,636,267,663	100.70%
2016	54,347,060	34,055,217	293,444	17,962,425	-1,775,647	-120,093,586	1,609,650,152	1,707,267,941	106.06%
2017	60,280,480	35,966,987	785,504	170,358,016	-2,119,044	-126,479,801	1,748,442,294	1,793,794,733	102.59%
2018	64,564,323	40,423,239	554,842	123,632,169	-2,026,240	-134,090,344	1,841,500,283	1,881,804,847	102.19%
2019	66,617,894	40,818,039	298,872	106,777,462	-2,246,008	-144,296,719	1,909,469,823	1,964,500,825	102.88%
2020	84,429,972	40,902,188	594,069	78,964,510	-2,268,390	-153,025,531	1,959,066,641	2,054,825,853	104.89%
2021	88,944,172	42,113,318	247,033	497,422,654	-2,280,512	-160,290,898	2,425,222,408	2,216,499,478	91.39%
2022	197,523,008	44,654,960	862,283	-215,473,911	-2,352,151	-173,791,473	2,276,645,124	2,405,795,708	105.67%
2023	116,387,502	48,580,695	1,389,818	168,509,405	-2,578,013	-185,704,127	2,423,230,404	2,523,348,610	104.13%

[1] On a market basis, net of investment fees.
[2] Includes “other expenses”.

Exhibit F: Definition of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

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 into account 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 Loss:	A measure of the difference between actual experience and 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 that may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., 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 actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding 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, withdrawal, 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.

Section 3: Supplemental Information

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 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 Actuarially Determined Contribution (ADC) and the Net Pension Liability.
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair 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 percentage 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, determined under the System's funding policy. 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.
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 upon which the cost of the Fund is calculated, including: Investment return - the rate of investment yield that the Fund will earn over the long-term future; Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; Retirement rates - the rate or probability of retirement at a given age; Withdrawal rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; 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 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 withdrawal.
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 employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund 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 Percentage:	The ratio of the Actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes calculate a market funded percentage, using the market value of assets (MVA), rather than the AVA.
GASB 67 and GASB 68:	Governmental Accounting Standards Board (GASB) 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 the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. 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.
Net Pension Liability:	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
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 with respect to 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.
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:	Market value of assets.
Total Pension Liability (TPL):	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 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.

Section 4: Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions and Methods

Rationale for Assumptions: The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Review dated September 18, 2023 (as prepared by Segal) and in the Economic Experience Study (as prepared by Segal) adopted by the State Pension Investment Commission during their meeting on July 25, 2023.

Inflation: 2.30%.

Investment Return: 7.00%.

The investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the System's target asset allocation.

Salary Increases: Varying service based rates depending on years from hire date:

Years From Hire	Annual Rate of Salary Increase (%)	Years From Hire	Annual Rate of Salary Increase (%)	Years From Hire	Annual Rate of Salary Increase (%)
0	6.38	13	4.85	26	4.28
1	6.38	14	4.78	27	4.27
2	6.38	15	4.71	28	4.19
3	6.14	16	4.64	29	4.10
4	5.91	17	4.57	30	4.02
5	5.67	18	4.52	31	3.93
6	5.44	19	4.47	32	3.85
7	5.20	20	4.42	33	3.83
8	5.15	21	4.37	34	3.81
9	5.09	22	4.32	35	3.80
10	5.04	23	4.31	36	3.78
11	4.98	24	4.30	37+	3.76
12	4.93	25	4.29		

Section 4: Actuarial Valuation Basis

Cost-of-Living Adjustments (COLA):	For active Group A, C, F, and G members who are first eligible for normal or unreduced early retirement on or after July 1, 2022, and for active Group D members who are first appointed or elected on or after July 1, 2022: • Group A — Assumed to occur on January 1 following two years of retirement at the rate of 2.25% per annum. The January 1, 2024, COLA is expected to be 2.20%[1]. • Group C — Assumed to occur on January 1 following two years of retirement at the rate of 2.10% per annum. The January 1, 2024, COLA is expected to be 2.20%[1]. • Group D — Assumed to occur on January 1 following two years of retirement at the rate of 2.25% per annum on the first $75,000 of retirement benefits paid and 1.10% per annum on retirement benefits paid above $75,000. The January 1, 2024, COLA is expected to be 2.20%[1] on the first $75,000 of retirement benefits paid and 1.10%[1] on retirement benefits paid above $75,000. • Group F/G — Assumed to occur on January 1 following two years of retirement at the rate of 2.15% per annum. For members hired before July 1, 2008, assumed to begin two years after the attainment of age 62 for deferred retirements. For members hired on or after July 1, 2008, assumed to begin two years after the attainment of age 65 for deferred retirements. The January 1, 2024, COLA is expected to be 2.20%[1]. For all other members: • Groups A/C/D — Assumed to occur on January 1 following one year of retirement at the rate of 2.25% per annum. The January 1, 2024, COLA is expected to be 2.20%. • Groups E/F — Assumed to occur on January 1 following one year of retirement at the rate of 1.25% per annum (beginning one year after the attainment of age 62 for deferred retirements) for members who retired on or before June 30, 2008. The January 1, 2024, COLA is expected to be 1.10%. For members retiring on or after July 1, 2008, assumed to occur on January 1 following one year of retirement at the rate of 2.35% per annum. For members hired before July 1, 2008, assumed to begin one year after the attainment of age 62 for deferred retirements. For members hired on or after July 1, 2008, assumed to begin one year after the attainment of age 65 for deferred retirements. The January 1, 2024, COLA is expected to be 2.20%. [1]These amounts were required to be calculated in 2024 as a result of Act 114; however, they will not be applied to any members in 2024.

Mortality Rates:	*Pre-Retirement:* • Groups A/F — PubG-2010 General Employee Amount-Weighted Table with generational projection using scale MP-2021 • Group C/G — PubS-2010 Public Safety Employee Amount-Weighted Table with generational projection using scale MP-2021 • Group D* — PubG-2010 General Employee Amount-Weighted Above Median Table with generational projection using scale MP-2021 *Healthy Post-Retirement - Retirees*: • Groups A/F — PubG-2010 General Healthy Retiree Amount-Weighted Table with credibility adjustments of 101% and 105% for the Male and Female tables, respectively, with generational projection using scale MP-2021 • Group C/G — PubS-2010 Public Safety Retiree Amount-Weighted Table with generational projection using scale MP-2021 • Group D — PubG-2010 General Healthy Retiree Amount-Weighted Above Median Table with generational projection using scale MP-2021 *Healthy Post-Retirement - Beneficiaries*: • Groups A/F/C/G — Pub-2010 Contingent Survivor Amount-Weighted Table with generational projection using scale MP-2021 • Group D — Pub-2010 Contingent Survivor Amount-Weighted Above Median Table with generational projection using scale MP-2021 *Disabled Post-Retirement*: • Groups A/F/D — PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Table with generational projection using scale MP-2021 • Groups C/G — PubS-2010 Safety Disabled Retiree Amount-Weighted Table with generational projection using Scale MP-2021 The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years. * 30% of deaths are assumed to be accidental.

Separation from Service before Retirement (Due to Withdrawal and Disability):

Representative values of the assumed annual rates of withdrawal and disability are as follows:

Withdrawal Groups A/D[1]				Disability[2]		
Ultimate Rates		Increase Factors				
Age	Male/Female	Service	Male/Female	Age	Groups A/D/F	Group C
25	4.9066%	1	4.000	25	0.0095%	0.0578%
30	3.9275	3	2.500	30	0.0122	0.0743
35	3.2826	5	1.900	35	0.0163	0.0994
40	3.0392	7	1.600	40	0.0244	0.1485
45	2.6920	9	1.300	45	0.0399	0.2426
50	2.2464			50	0.0633	0.4091
55	1.8346			55	0.1117	0.6810
60	3.9019			60	0.1803	

[1] 20% of disability incidents are assumed to be accidental for Group C and 10% of disability incidents are assumed to be accidental for all other members.

[2] The Ultimate Rates are multiplied by the Increase Factors during the first 10 years of service.

Withdrawal Group C

Service	Male	Female
0	10.800%	21.600%
1	6.480	12.960
2	5.400	10.800
3	3.456	6.912
4	3.456	6.912
5	3.456	6.912
6-19	3.240	6.480
20+	0.000	0.000

Separation from Service before Retirement (Due to Withdrawal and Disability) *(continued)*:

Withdrawal Group F[1]

Ultimate Rates 0-10 Years of Service		Increase Factors		Ultimate Rates[2] 10-30 Years of Service	
Age	**Male/Female**	**Service**	**Male/Female**	**Age**	**Male/Female**
25	6.3933%	0	2.850	25	4.2200%
30	5.1207	2	2.300	30	3.3800
35	4.2723	4	1.550	35	2.8200
40	3.9542	6	1.300	40	2.6100
45	3.5148	8	1.150	45	2.3200
50	2.9240			50	1.9300
55	2.4695			55	1.6300
60	2.4695			60	1.6300

1 The Ultimate Rates are multiplied by the Increase Factors during the first 10 years of service.

2 Withdrawal Rates are 0.00% for all Group F members with 30+ years of service

Retirement Rates:

Retirement Group F[1]

Age	Male	Female	Age	Male	Female
40-52	20.00%	10.00%	63	17.50%	15.00%
53	15.00	10.00	64	20.00	15.00
54	15.00	10.00	65	22.50	20.00
55	5.00	5.00	66	25.00	30.00
56	5.00	5.00	67	25.00	30.00
57	5.00	5.00	68	25.00	30.00
58	5.00	7.50	69	25.00	30.00
59	7.50	7.50	70+	100.00	100.00
60	7.50	7.50			
61	15.00	12.50			
62	25.00	25.00			

1 All Group A and D members are assumed to retire when first eligible.

Retirement Rates *(continued)*:	

Age	Retirement Group C[2] Male/Female
50	50.00%
51	10.00
52	10.00
53	10.00
54	5.00
55	5.00
56	5.00
57+	100.00

[2] Effective July 1, 2022, the mandatory retirement age for Group C members was increased from age 55 to age 57.

Inactive Members as Reported by the System:	Not Vested: Valuation liability equals 100% of accumulated contributions. Vested: Valuation liability based on accrued benefit and 15% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age with a deferred vested benefit.
Deferred Members as Reported by the System:	Valuation liability based on accrued benefit and 15% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age with a deferred vested benefit.
Future Administrative Expenses:	0.45% of projected payroll
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	• Groups A/D 75.4% of male members and 64.0% of female members are assumed to be married. • Group C 73.3% of male members and 61.0% of female members are assumed to be married. • Group F 71.4% of male members and 63.1% of female members are assumed to be married.
Age of Spouse:	Females three years younger than males.
Benefit Election:	• Non-Group C All members are assumed to elect the single life annuity option. • Group C Single members are assumed to elect single life annuity. Married members are assumed to elect the 70% joint & survivor option

Section 4: Actuarial Valuation Basis

Actuarial Value of Assets:	The amount of the assets for valuation purposes equals the preliminary asset value plus 20% of the difference between market and preliminary asset values. The preliminary asset value is equal to the previous year's asset value (for valuation purposes) adjusted for contributions less benefit payments and expenses plus expected investment income. If necessary, a further adjustment is made to ensure that the valuation assets are within 20% of the market value.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary, with Normal Cost determined using the plan of benefits applicable to each member.
Modeling:	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 a 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 direction of the supervising actuary.
Justification for Change in Actuarial Assumptions:	Effective for the June 30, 2023, actuarial valuation, the following actuarial assumptions were changed according to past experience and future expectations: • Salary Increase, • Assumed COLAs, • Death After Retirement, • Death in Active Service, • Inactive Vested Retirement, • Disability Incidence, and • Administrative Expenses.

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the System included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Effective Date:	July 1, 1972 (for consolidated system).	
Credible Service:	Service as a member plus purchased service.	
Average Final Compensation (AFC):	• Groups A/F	Average annual compensation during highest 3 consecutive years.
	• Group C	Average annual compensation during highest 2 consecutive years.
	• Group D	For active members who retire on or after July 1, 2022, and do not meet one of the following two requirements: (1) at least age 57 with 5 or more years of service as a judge in Group D as of June 30, 2022; (2) Group D as of June 30, 2022, with 15 or more years of service: - Average annual compensation during final 2 years of service. For all other members: - Annual compensation during final year of service.
Normal Retirement – Eligibility:	• Group A	Earlier of age 65 with 5 years of service or age 62 with 20 years of service.
	• Group C	Age 55.
	• Group D	For members first appointed or elected on or before June 30, 2022: - Age 62 with 5 years of service. For members first appointed or elected on or after July 1, 2022: - Age 65 with 5 years of service.
	• Group F	Age 62 or 30 years of service. For members hired after June 30, 2008, age 65 or a sum of age plus service greater than or equal to 87.
Normal Retirement – Amount:	• Group A	1.67% of AFC times service.
	• Group C	2.50% of AFC times service, up to a maximum benefit cap of 50% of AFC. The maximum benefit cap is increased by 1.5% of AFC for each year worked after attaining the later of age 50 or 20 years of benefit service, applied prospectively to service worked after July 1, 2022.

Normal Retirement – Amount *(continued)*:	• Group D	For active members who retire on or after July 1, 2022, and do not meet one of the following two requirements: (1) at least age 57 with 5 or more years of service as a judge in Group D as of June 30, 2022; (2) Group D as of June 30, 2022, with 15 or more years of service: - 3.33% of AFC times service, up to a maximum benefit cap of 80% of AFC. For all other members: - 3.33% of AFC times service, up to a maximum benefit cap of 100% of AFC.
	• Group F	1.25% of AFC times service prior to January 1, 1991, plus 1.67% of AFC times service after 1990, up to a maximum benefit cap of 50% of AFC. For members hired on or after July 1, 2008, the maximum benefit cap is 60% of AFC.
Early Retirement – Eligibility:	• Groups A/D	Age 55 with 5 years of service or 30 years of service.
	• Group C	Age 50 with 20 years of service.
	• Group F	Age 55 with 5 years of service.
Early Retirement – Amount:	• Group A	Actuarial equivalent of normal retirement allowance. For members with 30 years of service, there is no reduction.
	• Group C	Same as normal retirement allowance.
	• Group D	For members first appointed or elected on or before June 30, 2022: - Normal allowance reduced by 3% for each year commencement precedes age 62. For members first appointed or elected on or after July 1, 2022: - Normal allowance reduced by 3% for each year commencement precedes age 65.
	• Group F	For members hired prior to July 1, 2008, no reduction if 30 years of service; otherwise normal allowance reduced by 6% for each year commencement precedes age 62. For members hired on or after July 1, 2008, no reduction if combination of years and service equal 87; other reduced from age 65 based on the following table:

Years of Service	Reduction in Benefit
35	One-eighth of 1% per month
30	One-fourth of 1% per month
25	One-third of 1% per month
20	Five-twelfths of 1% per month
Less than 20	Five-ninths of 1% per month

Section 4: Actuarial Valuation Basis

Vesting:	• All groups – 5 years of service.
Ordinary Disability – Eligibility:	• All groups – 5 years of service and incapacitated, not work related, for performance of duty.
Ordinary Disability – Amount:	All groups – Immediate allowance based on service to date of disability. Benefit is the greatest of 25% of AFC and unreduced accrued benefit as of date of disability.
Accidental Disability – Eligibility:	All groups – Incapacitated because of work related accident.
Accidental Disability – Amount:	• Groups A/D/F Immediate allowance equal to the greater of 25% of AFC and unreduced accrued benefit as of date of disability. • Group C Immediate allowance equal to 50% of AFC with additional 10% of AFC for each dependent child (up to 30%).
Ordinary Death – Eligibility:	• Groups A/F Death after eligibility for early retirement or 10 years of service. • Groups C/D Death after normal retirement age or 10 years of service.
Ordinary Death – Amount:	• Groups A/D/F Maximum of reduced allowance under 100% survivor option and disability allowance under 100% disability survivor option, commencing immediately. • Group C 70% of the allowance that would have been payable to the member plus additional allowance equal to 10% of AFC for each dependent child (up to 30%).
Accidental Death – Eligibility:	• Groups A/C/D/F – Death because of work related accident.
Accidental Death – Amount:	• Groups A/D/F Allowance equal to 25% of AFC payable to spouse. • Group C Allowance equal to 35% of AFC payable to spouse plus 10% for each dependent child (up to 30%).

Post-Retirement Adjustments:	For active Group A, C, F, and G members who are first eligible for normal or unreduced early retirement on or after July 1, 2022, and for active Group D members who are first appointed or elected on or after July 1, 2022: • Group A — Allowances in payment for at least two years, increased on each January 1 by the net percentage increase in Consumer Price Index (CPI). The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is less than 1%, members will not receive an increase. • Group C — Allowances in payment for at least two years, increased on each January 1 by the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 4%. If the net percentage increase in CPI is less than 1%, members will not receive an increase. • Group D — Allowances in payment for at least two years, increased on each January 1 by the net percentage increase in CPI on the first $75,000 of retirement benefits paid and half of the net percentage increase in CPI on retirement benefits paid above $75,000. The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is less than 1%, members will not receive an increase. • Group F/G — Allowances in payment for at least two years, increased on each January 1 by the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 4%. If the net percentage increase in CPI is less than 0%, members will not receive an increase. For all other members: • Groups A/C/D — Allowances in payment for at least one year, increased on each January 1 by the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is less than 1%, members will not receive an increase. • Groups E/F — For members who retired on or before June 30, 2008, allowances in payment for at least one year, increased on each January 1 by half of the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is between 0-1%, members will receive a 1% increase. If the net percentage increase in CPI is less than 0%, members will not receive an increase. A Group F member in receipt of an early retirement allowance shall not receive a post-retirement adjustment until such time as the member has attained normal retirement eligibility. For members who retired on or after July 1, 2008, allowances in payment for at least one year, increased on each January 1 by the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is between 0-1%, members will receive a 1% increase. If the net percentage increase in CPI is less than 0%, members will not receive an increase. A Group F member in receipt of an early retirement allowance shall not receive a post-retirement adjustment until such time as the member has attained normal retirement eligibility.

Section 4: Actuarial Valuation Basis

Optional Benefit and Death after Retirement:	Lifetime allowance or actuarially equivalent allowance with survivor benefit as elected by member upon retirement. Upon death of a Group C member, an allowance equal to 70% of the member's allowance is continue to the surviving spouse.
Refund of Contributions:	Upon termination, if the member so elects, or if no other benefit is payable, the member's accumulated contributions with interest are refunded.
Member Contribution Rates:	Member contributions as a percentage of earnable compensation are described in the table below:

	Salary Percentile	FY23	FY24	FY25	FY26	FY27+
Group A	All	6.65%	6.65%	6.65%	6.65%	6.65%
Group C	All	9.03%	9.53%	10.03%	10.03%	10.03%
Group D	<25th	6.65%	6.65%	6.65%	6.65%	6.65%
	25th-50th	7.15%	7.65%	8.15%	8.15%	8.15%
	50th-75th	7.15%	7.65%	8.15%	8.65%	8.65%
	75th+	7.15%	7.65%	8.15%	8.65%	9.15%
Group F	<25th	6.65%	6.65%	6.65%	6.65%	6.65%
	25th-50th	7.15%	7.65%	8.15%	8.15%	8.15%
	50th-75th	7.15%	7.65%	8.15%	8.65%	8.65%
	75th+	7.15%	7.65%	8.15%	8.65%	9.15%

Changes in Plan Provisions:	Aside from the future contribution rate increases shown above, there were no other changes in plan provisions since the prior valuation.

Section 5: Additional Summary Tables of Member Data

Table 1A: Members in Active Service as of June 30, 2023, by Age, Years of Service, and Average Payroll – All Employee Groups

		Years of Creditable Service							
Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 & over
Under 25	281	281	- -	- -	- -	- -	- -	- -	- -
	$42,162	$42,162	- -	- -	- -	- -	- -	- -	- -
25 - 29	729	614	114	1	- -	- -	- -	- -	- -
	$55,823	$51,749	$77,635	$70,386	- -	- -	- -	- -	- -
30 - 34	1,085	608	397	79	1	- -	- -	- -	- -
	$63,794	$55,294	$73,007	$82,555	$91,834	- -	- -	- -	- -
35 - 39	1,112	467	344	224	76	1	- -	- -	- -
	$68,472	$53,074	$75,322	$85,506	$81,995	$60,125	- -	- -	- -
40 - 44	1,121	343	299	226	203	49	1	- -	- -
	$75,312	$59,305	$75,284	$82,153	$91,280	$89,724	$80,437	- -	- -
45 - 49	1,073	273	221	163	198	174	44	- -	- -
	$79,593	$56,851	$75,461	$84,020	$91,818	$97,698	$98,450	- -	- -
50 - 54	1,158	246	208	168	209	174	112	40	1
	$79,506	$55,012	$75,464	$82,596	$91,270	$89,704	$96,182	$85,173	$99,209
55 - 59	971	174	188	119	149	143	100	57	41
	$78,545	$57,370	$73,582	$80,031	$85,909	$83,865	$92,632	$93,384	$86,542
60 - 64	730	121	148	101	114	86	62	33	65
	$77,179	$55,925	$75,632	$77,981	$81,706	$83,349	$87,418	$88,569	$87,369
65 & over	351	38	70	60	50	51	18	16	48
	$82,194	$54,411	$81,391	$77,301	$89,093	$86,792	$80,385	$94,352	$96,033
Total	8,611	3,165	1,989	1,141	1,000	678	337	146	155
	$72,147	$53,788	$75,089	$82,315	$88,679	$89,457	$92,922	$90,152	$89,910

Table 1B: Members in Active Service as of June 30, 2023, by Age, Years of Service, and Average Payroll – General Employees – Group A

		Years of Creditable Service							
Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 & over
Under 25	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
50 - 54	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
55 - 59	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--

Table 1C: Members in Active Service as of June 30, 2023, by Age, Years of Service, and Average Payroll – Law Enforcement Personnel – Group C

		Years of Creditable Service							
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 & over**
Under 25	15	15	- -	- -	- -	- -	- -	- -	- -
	$66,625	$66,625	- -	- -	- -	- -	- -	- -	- -
25 - 29	64	52	12	- -	- -	- -	- -	- -	- -
	$87,477	$83,141	$106,265	- -	- -	- -	- -	- -	- -
30 - 34	80	30	35	15	- -	- -	- -	- -	- -
	$96,524	$86,054	$100,322	$108,603	- -	- -	- -	- -	- -
35 - 39	73	11	21	33	8	- -	- -	- -	- -
	$97,958	$66,383	$90,258	$111,174	$107,066	- -	- -	- -	- -
40 - 44	60	5	5	16	31	3	- -	- -	- -
	$111,461	$71,034	$96,877	$111,997	$117,327	$139,659	- -	- -	- -
45 - 49	74	6	2	9	20	29	8	- -	- -
	$121,522	$85,073	$91,407	$106,504	$119,192	$131,805	$141,830	- -	- -
50 - 54	40	- -	2	5	18	8	7	- -	- -
	$114,169	- -	$105,061	$89,547	$119,299	$119,876	$114,643	- -	- -
55 - 59	1	- -	- -	- -	- -	1	- -	- -	- -
	$53,750	- -	- -	- -	- -	$53,750	- -	- -	- -
60 - 64	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -
65 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	407	119	77	78	77	41	15	- -	- -
	$102,633	$79,833	$98,171	$108,923	$117,206	$128,148	$129,143	- -	- -

Table 1D: Members in Active Service as of June 30, 2023, by Age, Years of Service, and Average Payroll – Judges – Group D

		Years of Creditable Service							
Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 & over
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -
30 - 34	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -
35 - 39	2	1	- -	1	- -	- -	- -	- -	- -
	$84,424	$6,468	- -	$162,381	- -	- -	- -	- -	- -
40 - 44	1	1	- -	- -	- -	- -	- -	- -	- -
	$13,510	$13,510	- -	- -	- -	- -	- -	- -	- -
45 - 49	4	2	1	1	- -	- -	- -	- -	- -
	$146,885	$133,202	$145,816	$175,320	- -	- -	- -	- -	- -
50 - 54	6	1	1	3	1	- -	- -	- -	- -
	$164,246	$108,873	$175,320	$175,320	$175,320	- -	- -	- -	- -
55 - 59	13	2	3	4	3	- -	1	- -	- -
	$163,565	$94,358	$175,320	$175,320	$178,358	- -	$175,320	- -	- -
60 - 64	6	2	1	- -	2	1	- -	- -	- -
	$103,836	$15,287	$184,434	- -	$111,786	$184,434	- -	- -	- -
65 & over	17	1	5	4	5	2	- -	- -	- -
	$155,152	$32,991	$175,320	$116,151	$180,726	$179,877	- -	- -	- -
Total	49	10	11	13	11	3	1	- -	- -
	$145,762	$64,754	$173,466	$156,119	$167,054	$181,396	$175,320	- -	- -

Table 1E: Members in Active Service as of June 30, 2023, by Age, Years of Service, and Average Payroll – General Employees – Group F

		Years of Creditable Service							
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 & over**
Under 25	266	266	- -	- -	- -	- -	- -	- -	- -
	$40,783	$40,783	- -	- -	- -	- -	- -	- -	- -
25 - 29	665	562	102	1	- -	- -	- -	- -	- -
	$52,777	$48,845	$74,267	$70,386	- -	- -	- -	- -	- -
30 - 34	1,005	578	362	64	1	- -	- -	- -	- -
	$61,189	$53,698	$70,367	$76,450	$91,834	- -	- -	- -	- -
35 - 39	1,037	455	323	190	68	1	- -	- -	- -
	$66,366	$52,855	$74,351	$80,644	$79,045	$60,125	- -	- -	- -
40 - 44	1,060	337	294	210	172	46	1	- -	- -
	$73,325	$59,267	$74,917	$79,880	$86,586	$86,467	$80,437	- -	- -
45 - 49	995	265	218	153	178	145	36	- -	- -
	$76,205	$55,635	$74,992	$82,101	$88,743	$90,877	$88,810	- -	- -
50 - 54	1,112	245	205	160	190	166	105	40	1
	$77,802	$54,792	$74,688	$80,640	$88,173	$88,250	$94,951	$85,173	$99,209
55 - 59	957	172	185	115	146	142	99	57	41
	$77,416	$56,940	$71,932	$76,717	$84,010	$84,077	$91,797	$93,384	$86,542
60 - 64	724	119	147	101	112	85	62	33	65
	$76,958	$56,608	$74,892	$77,981	$81,169	$82,159	$87,418	$88,569	$87,369
65 & over	334	37	65	56	45	49	18	16	48
	$78,481	$54,990	$74,166	$74,526	$78,911	$82,993	$80,385	$94,352	$96,033
Total	8,155	3,036	1,901	1,050	912	634	321	146	155
	$70,183	$52,731	$73,585	$79,425	$85,325	$86,520	$90,972	$90,152	$89,910

Table 2A: Summary of Retired Member and Beneficiary Data by Attained Age
All Employee Groups

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	$0	0	$0	65	$533,387
36	0	0	0	0	0	0
37	0	0	0	0	2	16,230
38	0	0	0	0	0	0
39	0	0	0	0	1	21,486
40	0	0	2	93,273	0	0
41	0	0	1	44,428	0	0
42	0	0	0	0	0	0
43	0	0	1	9,927	1	28,033
44	0	0	0	0	3	28,910
45	0	0	1	15,532	2	20,480
46	1	19,168	3	73,824	0	0
47	1	22,745	5	120,017	0	0
48	0	0	2	33,337	1	9,649
49	4	160,627	1	8,994	3	27,574
50	17	710,181	3	64,529	2	28,191
51	19	820,517	4	139,571	3	35,923
52	33	1,743,462	4	120,364	3	52,533
53	43	1,808,694	6	93,208	5	127,643
54	46	2,158,264	3	48,705	5	88,853
55	62	2,621,210	12	293,209	3	53,798
56	63	2,601,836	6	153,236	4	62,513
57	79	2,954,252	9	244,364	4	49,807
58	85	2,755,442	12	230,202	3	49,768
59	92	3,023,478	17	316,425	7	127,158
60	102	3,389,048	13	232,439	4	45,584
61	123	3,756,257	21	373,720	11	181,200
62	172	4,653,647	16	297,818	9	175,687
63	190	4,821,885	14	261,692	9	110,078
64	217	4,956,634	12	172,834	9	175,225
65	261	6,502,075	18	326,685	20	369,481

Table 2A: Summary of Retired Member and Beneficiary Data by Attained Age All Employee Groups *(continued)*

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	309	$7,631,523	15	$239,139	11	$180,985
67	309	6,695,182	10	196,961	21	391,427
68	324	7,997,030	20	287,507	22	385,190
69	352	8,051,597	16	176,069	19	335,946
70	327	8,291,609	17	270,299	22	410,292
71	341	7,848,600	20	259,395	18	306,119
72	346	8,250,744	13	198,204	22	335,702
73	344	7,982,243	14	208,657	22	410,169
74	321	7,426,971	10	169,968	17	239,536
75	327	7,170,525	11	125,279	25	432,324
76	305	7,624,921	8	207,181	32	577,807
77	207	4,893,257	8	114,949	24	358,470
78	196	4,116,057	7	95,226	29	511,417
79	177	3,794,039	5	83,417	29	449,672
80	179	3,997,588	6	73,560	30	506,860
81	145	3,243,248	5	43,578	33	510,057
82	117	2,057,375	6	70,978	29	415,136
83	104	1,867,704	4	50,353	18	277,147
84	79	1,284,032	2	12,057	18	240,696
85	71	1,304,361	3	59,134	12	143,695
86	57	1,196,253	1	4,383	16	306,444
87	74	1,185,885	0	0	23	369,852
88	56	1,163,664	2	22,093	17	231,929
89	38	683,868	0	0	16	222,136
90	46	851,019	1	8,567	13	140,128
91	29	408,305	0	0	11	117,011
92	30	397,290	1	5,203	11	139,386
93	22	248,396	0	0	13	313,405
94	16	195,563	0	0	4	28,822
≥ 95	39	452,221	1	5,409	13	164,642
Total	6,897	$167,790,489	392	$6,755,898	769	$11,871,593

Table 2B: Summary of Retired Member and Beneficiary Data by Attained Age General Employees – Group A

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	$0	0	$0	0	$0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	0	0	0	0	0
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	0	0	0	0	0	0
53	0	0	0	0	0	0
54	0	0	0	0	0	0
55	0	0	0	0	0	0
56	0	0	0	0	0	0
57	0	0	0	0	0	0
58	0	0	0	0	0	0
59	2	104,857	0	0	0	0
60	0	0	0	0	0	0
61	1	9,915	0	0	0	0
62	0	0	0	0	0	0
63	0	0	0	0	0	0
64	0	0	0	0	0	0
65	2	74,647	0	0	1	8,026

Table 2B: Summary of Retired Member and Beneficiary Data by Attained Age General Employees – Group A *(continued)*

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	0	$0	0	$0	0	$0
67	0	0	0	0	1	21,654
68	2	62,976	1	6,380	0	0
69	0	0	1	2,406	0	0
70	2	84,541	0	0	1	10,563
71	5	124,946	1	9,659	0	0
72	3	88,191	0	0	0	0
73	3	89,850	0	0	1	49,673
74	3	92,877	1	24,263	1	12,840
75	5	145,876	0	0	1	26,804
76	3	73,074	0	0	2	64,356
77	5	170,512	0	0	0	0
78	0	0	0	0	3	27,056
79	3	104,004	0	0	2	20,872
80	0	0	0	0	1	18,002
81	5	191,051	0	0	2	29,336
82	4	119,217	0	0	5	57,793
83	2	51,709	0	0	0	0
84	4	157,288	0	0	0	0
85	3	89,973	1	14,550	0	0
86	5	119,234	0	0	0	0
87	1	20,866	0	0	1	23,625
88	7	247,884	0	0	0	0
89	3	75,908	0	0	0	0
90	2	51,327	0	0	0	0
91	2	36,597	0	0	2	25,297
92	1	32,693	0	0	1	5,754
93	2	19,089	0	0	0	0
94	1	22,429	0	0	0	0
≥ 95	2	33,612	0	0	4	32,065
Total	83	$2,495,144	5	$57,257	29	$433,717

Table 2C: Summary of Retired Member and Beneficiary Data by Attained Age State Police and Motor Vehicle Inspectors – Group B

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	$0	0	$0	0	$0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	0	0	0	0	0
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	0	0	0	0	0	0
53	0	0	0	0	0	0
54	0	0	0	0	0	0
55	0	0	0	0	0	0
56	0	0	0	0	0	0
57	0	0	0	0	0	0
58	1	8,070	0	0	1	23,160
59	0	0	0	0	0	0
60	0	0	0	0	0	0
61	0	0	0	0	0	0
62	0	0	0	0	0	0
63	0	0	0	0	0	0
64	0	0	0	0	0	0
65	1	13,082	0	0	0	0

Table 2C: Summary of Retired Member and Beneficiary Data by Attained Age State Police and Motor Vehicle Inspectors – Group B *(continued)*

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	0	$0	0	$0	0	$0
67	1	10,352	0	0	0	0
68	0	0	0	0	0	0
69	1	11,239	0	0	0	0
70	0	0	0	0	0	0
71	0	0	0	0	0	0
72	1	5,719	0	0	0	0
73	0	0	0	0	0	0
74	0	0	1	24,081	0	0
75	0	0	0	0	1	15,138
76	1	44,033	0	0	0	0
77	2	76,170	0	0	0	0
78	0	0	0	0	1	15,043
79	0	0	1	25,136	0	0
80	1	10,374	0	0	1	19,884
81	0	0	0	0	0	0
82	0	0	0	0	0	0
83	0	0	0	0	0	0
84	0	0	0	0	0	0
85	0	0	0	0	0	0
86	0	0	0	0	0	0
87	0	0	0	0	0	0
88	0	0	0	0	0	0
89	0	0	0	0	0	0
90	0	0	0	0	0	0
91	0	0	0	0	0	0
92	0	0	0	0	0	0
93	0	0	0	0	0	0
94	0	0	0	0	0	0
≥ 95	0	0	0	0	0	0
Total	9	$179,039	2	$49,217	4	$73,225

Table 2D: Summary of Retired Member and Beneficiary Data by Attained Age Law Enforcement Personnel – Group C

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	$0	0	$0	26	$266,543
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	2	93,273	0	0
41	0	0	1	44,428	0	0
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	0	0	0	0	0	0
46	1	19,168	1	51,493	0	0
47	1	22,745	2	92,224	0	0
48	0	0	0	0	0	0
49	1	64,347	0	0	0	0
50	8	417,326	1	35,954	0	0
51	9	514,054	3	128,682	1	14,147
52	14	951,288	2	88,564	0	0
53	18	976,004	0	0	1	41,823
54	18	1,027,372	0	0	1	14,898
55	28	1,413,100	2	74,461	1	33,582
56	20	1,141,284	1	52,206	0	0
57	21	1,192,632	3	159,637	0	0
58	22	947,478	1	56,939	0	0
59	18	828,948	1	18,648	1	27,317
60	15	923,087	1	30,262	0	0
61	14	495,230	0	0	1	34,773
62	7	311,969	2	91,251	0	0
63	19	828,720	0	0	0	0
64	14	562,513	0	0	0	0
65	15	854,157	1	40,964	1	23,721

Table 2D: Summary of Retired Member and Beneficiary Data by Attained Age Law Enforcement Personnel – Group C *(continued)*

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	19	$1,044,860	1	$13,029	1	$32,627
67	15	683,584	0	0	1	41,619
68	18	938,958	0	0	1	26,337
69	7	337,364	0	0	1	36,135
70	14	714,585	2	85,662	2	49,862
71	9	419,487	0	0	1	13,663
72	4	219,966	0	0	1	35,257
73	13	632,049	1	40,834	1	18,878
74	4	167,294	1	35,889	1	28,151
75	8	372,380	0	0	3	124,332
76	11	599,056	3	138,351	4	146,305
77	8	398,467	1	49,738	2	63,035
78	1	31,854	1	40,016	1	41,229
79	5	220,793	0	0	3	100,583
80	9	472,951	0	0	3	116,241
81	5	265,254	0	0	3	97,168
82	4	165,966	0	0	2	66,749
83	2	103,249	0	0	1	43,571
84	0	0	0	0	1	16,531
85	2	102,999	1	33,219	1	20,778
86	2	113,230	0	0	1	34,177
87	1	36,326	0	0	2	83,382
88	2	117,872	0	0	1	23,137
89	0	0	0	0	2	65,914
90	2	104,789	0	0	2	66,150
91	0	0	0	0	0	0
92	2	78,218	0	0	1	36,149
93	0	0	0	0	4	97,282
94	0	0	0	0	0	0
≥ 95	1	49,856	0	0	1	18,824
Total	431	$21,882,830	35	$1,495,724	81	$2,000,869

Table 2E: Summary of Retired Member and Beneficiary Data by Attained Age Judges – Group D

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	$0	0	$0	0	$0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	0	0	0	0	0
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	0	0	0	0	0	0
53	1	10,688	0	0	0	0
54	0	0	0	0	0	0
55	0	0	0	0	0	0
56	0	0	0	0	0	0
57	0	0	0	0	0	0
58	0	0	0	0	0	0
59	0	0	0	0	1	19,500
60	0	0	0	0	0	0
61	0	0	0	0	0	0
62	1	125,455	0	0	0	0
63	1	101,372	0	0	0	0
64	1	60,752	0	0	0	0
65	1	30,110	0	0	0	0

Table 2E: Summary of Retired Member and Beneficiary Data by Attained Age Judges – Group D *(continued)*

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
66	0	$0	0	$0	0	$0
67	0	0	0	0	0	0
68	5	319,410	0	0	0	0
69	2	179,607	0	0	0	0
70	6	394,903	0	0	0	0
71	5	366,999	0	0	0	0
72	5	388,217	0	0	0	0
73	4	350,049	0	0	0	0
74	6	462,359	0	0	0	0
75	2	232,512	0	0	0	0
76	3	413,207	0	0	0	0
77	5	156,028	0	0	0	0
78	1	160,179	0	0	1	23,179
79	3	207,717	0	0	0	0
80	5	392,807	0	0	0	0
81	3	302,513	0	0	0	0
82	0	0	0	0	0	0
83	1	87,911	0	0	0	0
84	1	41,239	0	0	0	0
85	1	94,111	0	0	0	0
86	3	200,771	0	0	1	101,185
87	1	72,327	0	0	1	38,690
88	1	116,319	0	0	1	75,751
89	0	0	0	0	0	0
90	1	112,497	0	0	0	0
91	1	42,339	0	0	0	0
92	0	0	0	0	0	0
93	1	45,208	0	0	3	177,221
94	0	0	0	0	0	0
≥ 95	2	31,468	0	0	1	56,140
Total	73	$5,499,073	0	$0	9	$491,666

Table 2F: Summary of Retired Member and Beneficiary Data by Attained Age General Employees – Groups E/F

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance
≤ 35	0	$0	0	$0	39	$266,844
36	0	0	0	0	0	0
37	0	0	0	0	2	16,230
38	0	0	0	0	0	0
39	0	0	0	0	1	21,486
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
43	0	0	1	9,927	1	28,033
44	0	0	0	0	3	28,910
45	0	0	1	15,532	2	20,480
46	0	0	2	22,331	0	0
47	0	0	3	27,793	0	0
48	0	0	2	33,337	1	9,649
49	3	96,280	1	8,994	3	27,574
50	9	292,855	2	28,575	2	28,191
51	10	306,463	1	10,889	2	21,776
52	19	792,174	2	31,800	3	52,533
53	24	822,002	6	93,208	4	85,819
54	28	1,130,892	3	48,705	4	73,955
55	34	1,208,110	10	218,748	2	20,215
56	43	1,460,552	5	101,030	4	62,513
57	58	1,761,620	6	84,727	4	49,807
58	62	1,799,894	11	173,264	2	26,608
59	72	2,089,672	16	297,777	5	80,341
60	87	2,465,961	12	202,176	4	45,584
61	108	3,251,111	21	373,720	10	146,427
62	164	4,216,223	14	206,567	9	175,687
63	170	3,891,794	14	261,692	9	110,078
64	202	4,333,369	12	172,834	9	175,225
65	242	5,530,078	17	285,721	18	337,735

Table 2F: Summary of Retired Member and Beneficiary Data by Attained Age General Employees – Groups E/F *(continued)*

	Service Pensioners		Disability Pensioners		Beneficiaries	
Age	**Number**	**Annual Allowance**	**Number**	**Annual Allowance**	**Number**	**Annual Allowance**
66	290	$6,586,663	14	$226,110	10	$148,358
67	293	6,001,246	10	196,961	19	328,154
68	299	6,675,685	19	281,127	21	358,852
69	342	7,523,387	15	173,663	18	299,812
70	305	7,097,578	15	184,637	19	349,867
71	322	6,937,167	19	249,736	17	292,456
72	333	7,548,651	13	198,204	21	300,445
73	324	6,910,295	13	167,823	20	341,618
74	308	6,704,440	7	85,736	15	198,544
75	312	6,419,757	11	125,279	20	266,050
76	287	6,495,551	5	68,829	26	367,146
77	187	4,092,081	7	65,211	22	295,435
78	194	3,924,024	6	55,210	23	404,909
79	166	3,261,525	4	58,281	24	328,217
80	164	3,121,455	6	73,560	25	352,733
81	132	2,484,430	5	43,578	28	383,553
82	109	1,772,193	6	70,978	22	290,594
83	99	1,624,834	4	50,353	17	233,576
84	74	1,085,505	2	12,057	17	224,165
85	65	1,017,278	1	11,365	11	122,917
86	47	763,018	1	4,383	14	171,082
87	71	1,056,366	0	0	19	224,155
88	46	681,588	2	22,093	15	133,041
89	35	607,960	0	0	14	156,223
90	41	582,406	1	8,567	11	73,978
91	26	329,369	0	0	9	91,714
92	27	286,379	1	5,203	9	97,482
93	19	184,099	0	0	6	38,903
94	15	173,134	0	0	4	28,822
≥ 95	34	337,285	1	5,409	7	57,613
Total	6,301	$137,734,402	350	$5,153,700	646	$8,872,116

Table 3: Summary of Retired Member and Beneficiary Data by Year of Retirement – All Employee Groups

Year of Retirement	Number	Annual Allowance	Average Annual Allowance
≤ 1970	0	$0	$0
1971	0	0	0
1972	0	0	0
1973	0	0	0
1974	1	8,730	8,730
1975	0	0	0
1976	0	0	0
1977	1	14,550	14,550
1978	2	31,847	15,924
1979	1	6,980	6,980
1980	4	29,469	7,367
1981	0	0	0
1982	4	85,060	21,265
1983	6	63,049	10,508
1984	2	30,780	15,390
1985	7	114,701	16,386
1986	5	57,499	11,500
1987	17	236,303	13,900
1988	17	306,320	18,019
1989	18	330,189	18,344
1990	40	582,025	14,551
1991	37	815,311	22,035
1992	32	358,064	11,190
1993	55	927,006	16,855
1994	28	452,941	16,176
1995	57	826,243	14,495
1996	229	4,414,167	19,276
1997	71	1,449,097	20,410
1998	68	1,174,445	17,271
1999	94	1,869,828	19,892
2000	113	2,157,584	19,094

Table 3: Summary of Retired Member and Beneficiary Data by Year of Retirement – All Employee Groups *(continued)*

Year of Retirement	Number	Annual Allowance	Average Annual Allowance
2001	118	$1,974,585	$16,734
2002	129	2,693,958	20,883
2003	148	3,376,332	22,813
2004	202	4,583,105	22,689
2005	207	4,090,379	19,760
2006	214	4,756,459	22,226
2007	243	5,103,487	21,002
2008	262	6,136,401	23,421
2009	435	10,611,660	24,395
2010	319	7,353,856	23,053
2011	309	6,979,259	22,587
2012	326	7,512,284	23,044
2013	295	6,738,382	22,842
2014	334	7,539,187	22,572
2015	477	11,032,872	23,130
2016	367	9,282,014	25,292
2017	385	9,980,752	25,924
2018	425	10,516,249	24,744
2019	481	12,287,577	25,546
2020	358	8,886,617	24,823
2021	481	12,937,851	26,898
2022	458	11,098,990	24,234
2023	176	4,603,533	26,156
Grand Total	8,058	$186,417,979	$23,135

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B. Sample GASB 67 and GASB 68 report

Sample GASB 67 and GASB 68 reports begin on the following page.

State Teachers' Retirement System

Governmental Accounting Standards Board Statement 67 Actuarial Valuation Report as of June 30, 2022

Segal

Segal

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December 5, 2022

Board of Trustees
State Teachers' Retirement System

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statement No. 67 Accounting Valuation as of June 30, 2022, for the State Teachers' Retirement System, a cost-sharing multiple-employer defined benefit pension plan, based on a June 30, 2022, measurement date. It contains the actuarial information that will need to be disclosed in order to comply with GASB 67.

It is important to note that GASB 67 only defines pension liability for financial reporting purposes and does not apply to contribution amounts for pension funding purposes. The assumptions used in this valuation are the same as those in the Actuarial Valuation and Review report as of June 30, 2021, dated October 29, 2021, except as noted herein. Additional details can be found in that report.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist the Board and the member units in preparing their financial reports. The financial information on which our calculations were based was provided by the Office of the State Treasurer. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

The actuarial calculations were directed under the supervision of Matthew A. Strom, FSA, MAAA, EA. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in this actuarial valuation is complete and accurate.

The assumptions used in this actuarial valuation were approved by the Board based upon our analysis and recommendations. In our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the System and are appropriate for purposes of the valuation.

We look forward to reviewing this report with you and to answering any questions.

Sincerely,

Segal

Kathleen A. Riley, FSA, MAAA, EA Senior Vice President and Chief Actuary	Matthew A. Strom, FSA, MAAA, EA Senior Vice President and Actuary

Table of Contents

Section 1: Valuation Summary

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the System. The System uses an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

Section 1: Valuation Summary

Modeling	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 a 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 direction of the supervising actuary.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the State Teachers' Retirement System. Segal is not responsible for the use or misuse of its report, particularly by any other party.
An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
Sections of this report may include actuarial results that are not rounded, but that does not imply precision.
If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to their other advisors for expertise in these areas.

As Segal has no discretionary authority with respect to the management or assets of the System, it is not a fiduciary in its capacity as actuaries and consultants with respect to the System.

Purpose and basis

This report has been prepared by Segal to present certain disclosure information required by Governmental Accounting Standards Board Statement No. 67 as of June 30, 2022. This report, based on unaudited financial information as of June 30, 2022, provided by the Office of the State Treasurer and the State Teachers' Retirement System Actuarial Valuation Report as of June 30, 2021, dated October 29, 2021, reflects:

- The benefit provisions of the Pension Plan, as administered by the Board; and
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of June 30, 2021, provided by the Office of the State Treasurer.

The assumptions are the same as shown in the State Teachers' Retirement System Actuarial Valuation Report as of June 30, 2021, except as noted herein.

Highlights of the valuation

The following key findings were the result of this actuarial valuation:

- The Net Pension Liability (NPL) is equal to the difference between the Total Pension Liability (TPL) and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and, therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) on a market value basis. The NPL increased from $1.70 billion as of June 30, 2021, to $1.93 billion as of June 30, 2022, and the Plan's Fiduciary Net Position as a percent of the TPL decreased from 58.83% to 54.81%.

- The NPL, measured as of June 30, 2022, and June 30, 2021, was determined based on the results of the actuarial valuations as of June 30, 2021, and June 30, 2020, respectively, adjusted using standard actuarial techniques.

- The discount rate used to determine the TPL and NPL as of June 30, 2022, and June 30, 2021, was 7.00%.

- At the June 9, 2022, Board meeting, the Actuarially Determined Contribution for the fiscal year ending June 30, 2023, calculated as part of the June 30, 2021, actuarial valuation, was recertified to reflect the additional funding and benefit changes from Act 114 and Act 173. In the determination of this recertified amount, various plan provisions and actuarial assumptions from the June 30, 2021, actuarial valuation were updated to reflect Act 114 and Act 173. Those updates were also used in the determination of the TPL as of June 30, 2022, which decreased the TPL as of June 30, 2022, by $32.5 million. Details on the specific updates can be located in the June 30, 2022, Actuarial Valuation and Review report dated October 25, 2022.

Section 2: Accounting Information

Exhibit 1 – Net Pension Liability

The components of the Net Pension Liability of the State Teachers' Retirement System are as follows:

	June 30, 2022	June 30, 2021
Total Pension Liability	$4,267,971,774	$4,118,283,288
Plan Fiduciary Net Position	2,339,412,945	2,422,793,508
System's Net Pension Liability	1,928,558,829	1,695,489,780
Plan Fiduciary Net Position as a percentage of the Total Pension Liability*	54.81%	58.83%

* *These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.*

Actuarial assumptions. The Total Pension Liability as of June 30, 2022, was determined by rolling forward the Total Pension Liability as of June 30, 2021, to June 30, 2022, using the following actuarial assumptions:

Investment rate of return	7.00%, net of pension plan investment expenses, including inflation
Inflation	2.30%
Salary increases	Ranging from 3.30% to 10.50%
Cost of Living Adjustments	For active Group C members who are first eligible for normal retirement on or after July 1, 2022: • Assumed to occur on January 1 following two years of retirement at the rate of 1.20% per annum (beginning two years after the attainment of age 62 for members who elect reduced early retirement). The January 1, 2023, COLA is expected to be 2.00%[1]. [1]This amount was required to be calculated in 2023 as a result of Act 114 and Act 173; however, it will not be applied to any members in 2023.

Cost of Living Adjustments *(continued)*	For all other members: • Group A — Assumed to occur on January 1 following one year of retirement at the rate of 2.40% per annum. The January 1, 2022, COLA was 4.60%. The January 1, 2023, COLA is expected to be 5.00%. • Groups B/C — Assumed to occur on January 1 following one year of retirement at the rate of 1.35% per annum (beginning one year after the attainment of age 62 for Group C members who elect reduced early retirement). The January 1, 2022, COLA was 2.30%. The January 1, 2023, COLA is expected to be 2.50%.
Mortality	• *Pre-Retirement:* PubT-2010 Teacher Employee Amount-Weighted Table with generational projection using scale MP-2019 • *Retiree Healthy Post-Retirement*: PubT-2010 Teacher Healthy Retiree Amount-Weighted Table with generational projection using scale MP-2019 • *Beneficiary Healthy Post-Retirement*: 109% of the Pub-2010 Contingent Survivor Amount-Weighted Table with generational projection using scale MP-2019 • *Disabled Post-Retirement*: PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using scale MP-2019 The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the underlying groups and estimated future experience and professional judgment. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Determination of discount rate and investment rates of return

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of June 30, 2022, are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Passive Global Equities	24.00%	4.30%
Active Global Equities	5.00%	4.30%
Large Cap US Equities	4.00%	3.25%
Small/Mid Cap US Equities	3.00%	3.75%
Non-US Developed Market Equities	7.00%	5.00%
Private Equity	10.00%	6.50%
Emerging Market Debt	4.00%	3.50%
Private and alternative Credit	10.00%	4.75%
Non-Core Real Estate	4.00%	6.00%
Core Fixed Income	19.00%	0.00%
Core Real Estate	3.00%	3.50%
US TIPS	3.00%	-0.50%
Infrastructure/Farmland	4.00%	4.25%
	100.00%	

** Calculated as the Arithmetic Rates of Return minus the Rate of Inflation, as provided by the State Treasurers' Office*

Discount rate: The discount rate used to measure the Total Pension Liability was 7.00%. In accordance with paragraph 43 of GASB 67, professional judgement was applied to determine that the System's projected Fiduciary Net Position exceeds projected benefit payments for current active and inactive members for all years. Our analysis was based on the expectation that the employer will continue to contribute an amount at least equal to the actuarially determined contribution, which is comprised of an employer normal cost payment and a payment to reduce the unfunded liability to zero by June 30, 2038, in accordance with State statute. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability.

Discount rate sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability, calculated using the discount rate of 7.00%, as well as what the Net Pension Liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate:

	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
Net Pension Liability as of June 30, 2022	$2,455,235,410	$1,928,558,829	$1,490,986,176

Exhibit 2 – Schedule of changes in Net Pension Liability – last ten fiscal years

	Year End June 30,				
	2022	2021	2020	2019	2018
Total Pension Liability					
Service cost	$71,860,741	$72,148,904	$40,744,545	$39,766,250	$40,117,462
Interest	285,340,636	270,700,007	255,392,953	246,468,440	237,746,182
Differences between expected and actual experience	52,713,885	88,064,572	31,636,975	28,997,522	59,468,842
Changes of assumptions	0	0	310,967,594	0	-32,956,623
Changes of benefit terms	-32,528,331	0	0	0	0
Benefit payments, including refunds of employee contributions	-227,698,445	-215,248,507	-201,237,170	-193,196,825	-182,258,923
Net change in Total Pension Liability	$149,688,486	$215,664,976	$437,504,897	$122,035,387	$122,116,940
Total Pension Liability – beginning	4,118,283,288	3,902,618,312	3,465,113,415	3,343,078,028	3,220,961,088
Total Pension Liability – ending (a)	$4,267,971,774	$4,118,283,288	$3,902,618,312	$3,465,113,415	$3,343,078,028
Plan Fiduciary Net Position					
Contributions – employer	$314,663,632	$125,910,465	$120,247,389	$113,747,925	$110,353,599
Contributions – employee	44,597,049	42,199,015	40,598,283	39,075,342	37,888,566
Net investment income	-223,275,025	512,194,450	83,105,318	109,429,147	125,566,281
Benefit payments, including refunds of employee contributions	-227,698,445	-215,248,507	-201,237,170	-193,196,825	-182,258,923
Administrative expenses	-2,715,251	-2,782,425	-2,814,955	-2,714,661	-2,083,260
Other	11,047,477	9,030,628	7,102,452	5,775,084	4,348,717
Net change in Fiduciary Net Position	-$83,380,563	$471,303,626	$47,001,317	$72,116,012	$93,814,980
Plan Fiduciary Net Position – beginning	2,422,793,508	1,951,489,882	1,904,488,565	1,832,372,553	1,738,557,573
Plan Fiduciary Net Position – ending (b)	$2,339,412,945	$2,422,793,508	$1,951,489,882	$1,904,488,565	$1,832,372,553
Net Pension Liability – ending: (a)-(b)	$1,928,558,829	$1,695,489,780	$1,951,128,430	$1,560,624,850	$1,510,705,475
Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	54.81%	58.83%	50.00%	54.96%	54.81%
Covered-employee payroll	$657,934,953	$645,902,984	$624,908,253	$612,899,069	$607,354,756
Net Pension Liability as a percentage of covered-employee payroll	293.12%	262.50%	312.23%	254.63%	248.74%

Note: Covered-employee payroll reflects actual compensation amounts from the prior Plan year.

Exhibit 2 – Schedule of changes in Net Pension Liability – last ten fiscal years *(continued)*

	Year End June 30,				
	2017	**2016**	**2015**	**2014**	**2013***
Total Pension Liability					
Service cost	$35,383,370	$34,979,249	$33,613,557	$33,143,487	
Interest	228,938,418	222,185,083	215,447,502	206,150,481	
Differences between expected and actual experience	12,523,150	3,612,809	20,002,876	0	
Changes of assumptions	185,849,013	-7,223,825	57,488,610	0	
Changes of benefit terms	0	0	0	0	
Benefit payments, including refunds of employee contributions	-172,156,063	-162,751,410	-150,732,845	-140,846,837	
Net change in Total Pension Liability	$290,537,888	$90,801,906	$175,819,700	$98,447,131	
Total Pension Liability – beginning	2,930,423,200	2,839,621,294	2,663,801,594	2,565,354,463	
Total Pension Liability – ending (a)	$3,220,961,088	$2,930,423,200	$2,839,621,294	$2,663,801,594	
Plan Fiduciary Net Position					
Contributions – employer	$78,663,674	$73,225,064	$72,908,805	$71,869,736	
Contributions – employee	36,142,411	35,408,763	34,863,531	32,558,584	
Net investment income	173,166,614	19,877,271	-7,566,696	212,338,194	
Benefit payments, including refunds of employee contributions	-172,156,063	-162,751,410	-150,732,845	-140,846,837	
Administrative expenses	-2,214,235	-1,797,512	-2,259,402	-26,115,813	
Other	4,055,423	3,821,132	538,444	1,209,177	
Net change in Fiduciary Net Position	$117,657,824	-$32,216,692	-$52,248,163	$151,013,041	
Plan Fiduciary Net Position – beginning	1,620,899,749	1,653,116,441	1,705,364,604	1,554,351,563	
Plan Fiduciary Net Position – ending (b)	$1,738,557,573	$1,620,899,749	$1,653,116,441	$1,705,364,604	
Net Pension Liability – ending: (a)-(b)	$1,482,403,515	$1,309,523,451	$1,186,504,853	$958,436,990	
Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	53.98%	55.31%	58.22%	64.02%	
Covered-employee payroll	$586,397,072	$557,708,310	$567,073,601	$563,623,421	
Net Pension Liability as a percentage of covered-employee payroll	252.80%	234.80%	209.23%	170.05%	

* Historical information prior to implementation of GASB 67/68 is not required.

Note: Covered-employee payroll reflects actual compensation amounts from the prior Plan year.

Section 2: Accounting Information

Notes to Exhibit 2:

Changes in Assumptions:	There have been no changes in assumptions since the last measurement date.
Changes in Plan Provisions:	Effective for the June 30, 2022, actuarial valuation, the following plan provisions were updated to reflect Act 114 and Act 173: • Post-Retirement Adjustments; and • Member Contribution Rates.

Exhibit 3 – Schedule of contributions – last ten fiscal years

	Year End June 30				
	2022	2021	2020	2019	2018
Actuarially determined contribution	$196,206,504	$132,141,701	$126,197,389	$105,640,777	$88,409,437
Contributions in relation to the actuarially determined contribution*	325,244,828**	134,541,278	126,941,582	119,174,913	114,598,921
Contribution deficiency (excess)	-$129,038,324	-$2,399,577	-$744,193	-$13,534,136	-$26,189,484
Covered-employee payroll	$657,934,953	$645,902,984	$624,908,253	$612,899,069	$607,354,756
Contributions as a percentage of covered-employee payroll	49.43%	20.83%	20.31%	19.44%	18.87%

	2017	2016	2015	2014	2013***
Actuarially determined contribution	$82,659,576	$76,102,909	$72,857,863	$68,352,825	
Contributions in relation to the actuarially determined contribution*	82,887,174	76,947,868	72,908,805	72,668,412	
Contribution deficiency (excess)	-$227,598	-$844,959	-$50,942	-$4,315,587	
Covered-employee payroll	$586,397,072	$557,708,310	$567,073,601	$563,623,421	
Contributions as a percentage of covered-employee payroll	14.13%	13.80%	12.86%	12.89%	

* *Includes a portion of the contribution amount denoted as "other" in Exhibit 2.*
** *Includes an additional one-time payment of $125 million per Act 114.*
*** *Historical information prior to implementation of GASB 67/68 is not required.*
Note: Actuarially determined contributions for a given fiscal year are based on results from the June 30 actuarial valuation two years prior.

Notes to Exhibit 3:

Valuation date	Actuarially determined contribution for the year ending June 30, 2022, is based on results from the June 30, 2020, actuarial valuation, and was calculated as of June 30, with appropriate interest to the middle of the fiscal year.
Actuarial cost method	Entry Age Normal actuarial cost method
Amortization method	Amortization payments calculated to fully fund unfunded actuarial accrued liability with annual increases of 3% over a closed period.
Remaining amortization period	18 years as of July 1, 2020 The amortization of unfunded actuarial accrued liability (UAAL) within the actuarially determined contribution rate calculation is based on payments increasing at 3% per year required to amortize the UAAL over the 30-year closed period that began July 1, 2008.
Asset valuation method	The amount of the assets for valuation purposes equals the preliminary asset value plus 20% of the difference between market and preliminary asset values. The preliminary asset value is equal to the previous year's asset value (for valuation purposes) adjusted for contributions less benefit payments and expenses plus expected investment income. If necessary, a further adjustment is made to ensure that the valuation assets are within 20% of the market value.
Actuarial assumptions:	
Investment rate of return	7.00%, net of pension plan investment expenses, including inflation
Inflation rate	2.30%
Projected salary increases	Ranging from 3.30% to 10.50% based on age
Mortality	• *Pre-Retirement:* PubT-2010 Teacher Employee Amount-Weighted Table with generational projection using scale MP-2019 • *Retiree Healthy Post-Retirement*: PubT-2010 Teacher Healthy Retiree Amount-Weighted Table with generational projection using scale MP-2019 • *Beneficiary Healthy Post-Retirement*: 109% of the Pub-2010 Contingent Survivor Amount-Weighted Table with generational projection using scale MP-2019 • *Disabled Post-Retirement*: PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using scale MP-2019 The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the underlying groups and estimated future experience and professional judgment. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.
Other assumptions	Same as those used in the June 30, 2020, funding actuarial valuation.

Section 3: Supplemental Information

Exhibit I: Actuarial Assumptions and Methods

Rationale for Assumptions:	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Study dated September 24, 2020 (as prepared by Segal).
Roll-forward Techniques:	The results as of June 30, 2022, are based on the results of the State Teachers' Retirement System Actuarial Valuation Report as of June 30, 2021, adjusted forward, using standard actuarial techniques.
Inflation:	2.30%
Investment Return:	7.00% The investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the System's target asset allocation.
Salary Increases:	

Age	Annual Rate of Salary Increase (%)
20	10.50%
25	9.50%
30	6.50%
35	5.95%
40	5.30%
45	4.50%
50	4.20%
55	3.80%
60	3.55%

Cost-of-Living Adjustments (COLA):	For active Group C members who are first eligible for normal retirement on or after July 1, 2022: • Assumed to occur on January 1 following two years of retirement at the rate of 1.20% per annum (beginning two years after the attainment of age 62 for members who elect reduced early retirement). The January 1, 2023, COLA is expected to be 2.00%[1]. For all other members: • Group A — Assumed to occur on January 1 following one year of retirement at the rate of 2.40% per annum. The January 1, 2022, COLA was 4.60%. The January 1, 2023, COLA is expected to be 5.00%. • Groups B/C — Assumed to occur on January 1 following one year of retirement at the rate of 1.35% per annum (beginning one year after the attainment of age 62 for Group C members who elect reduced early retirement). The January 1, 2022, COLA was 2.30%. The January 1, 2023, COLA is expected to be 2.50%. [1]This amount was required to be calculated in 2023 as a result of Act 114 and Act 173; however, it will not be applied to any members in 2023.
Mortality Rates:	*Pre-retirement:* • All Groups — PubT-2010 Teacher Employee Amount-Weighted Table with generational projection using scale MP-2019. *Healthy Post-retirement - Retirees*: • All Groups — PubT-2010 Teacher Healthy Retiree Amount-Weighted Table with generational projection using scale MP-2019. *Healthy Post-retirement - Beneficiaries*: • All Groups — 109% of the Pub-2010 Contingent Survivor Amount-Weighted Table with generational projection using scale MP-2019. *Disabled Post-retirement*: • All Groups — PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using scale MP-2019. The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Separation from Service before Retirement (Due to Withdrawal and Disability):

Representative values of the assumed annual rates of withdrawal and disability are as follows:

	Rate (%)			
	Withdrawal		Disability	
Age	Male	Female	Male	Female
25	7.80%	8.30%	0.005%	0.008%
30	5.20	5.40	0.007	0.008
35	3.10	3.25	0.009	0.008
40	2.20	2.15	0.014	0.011
45	1.85	1.66	0.023	0.024
50	1.75	1.54	0.060	0.074
55	1.60	1.50	0.040	0.050
60	1.50	1.50	0.132	0.088

Retirement Rates:

	Group A		Group C Grandfathered	
Age	**<30 Years of Service**	**30+ Years of Service**	**<30 Years of Service**	**30+ Years of Service**
50	0.00%	40.00%	0.000%	40.00%
51	0.00%	20.00%	0.000%	20.00%
52	0.00%	20.00%	0.000%	20.00%
53	0.00%	20.00%	0.000%	20.00%
54	0.00%	20.00%	0.000%	20.00%
55	7.50%	20.00%	6.125%	10.00%
56	7.50%	10.00%	6.250%	10.00%
57	7.50%	10.00%	6.250%	10.00%
58	7.50%	10.00%	6.250%	10.00%
59	12.50%	10.00%	9.375%	15.00%
60	30.00%	100.00%	18.750%	25.00%
61	25.00%	100.00%	18.750%	17.00%
62	30.00%	100.00%	20.000%	100.00%
63	30.00%	100.00%	22.000%	100.00%
64	30.00%	100.00%	22.000%	100.00%
65	40.00%	100.00%	33.000%	100.00%
66	40.00%	100.00%	33.000%	100.00%
67	40.00%	100.00%	33.000%	100.00%
68	50.00%	100.00%	22.000%	100.00%
69	50.00%	100.00%	33.000%	100.00%
70+	100.000%	100.00%	100.000%	100.00%

Retirement Rates *(continued)*:

Group C Non-Grandfathered

Age	Before Rule of 90	1st Year after Rule of 90	1+ Years after Rule of 90
<56	5.00%	30.00%	20.00%
56	5.00%	30.00%	10.00%
57	5.00%	30.00%	10.00%
58	5.00%	30.00%	10.00%
59	7.50%	30.00%	15.00%
60	10.00%	30.00%	15.00%
61	15.00%	30.00%	20.00%
62	12.50%	30.00%	22.50%
63	20.00%	30.00%	22.50%
64	20.00%	30.00%	25.00%
65	40.00%	30.00%	40.00%
66	30.00%	30.00%	30.00%
67	30.00%	30.00%	30.00%
68	30.00%	30.00%	30.00%
69	30.00%	30.00%	30.00%
70+	100.00%	100.00%	100.00%

Inactive Members as Reported by the System:

Not Vested: Valuation liability equals 100% of accumulated contributions.

Vested: Valuation liability based on accrued benefit and assumed to retire as follows:

- Group A and Group C-NGF: 10% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age.
- Group C-GF: 50% of members are assumed to retire from age 62-69, then 100% at age 70.

Deferred Members as Reported by the System:

Valuation liability based on accrued benefit and assumed to retire as follows:

- Group A and Group C-NGF: 10% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age.
- Group C-GF: 50% of members are assumed to retire from age 62-69, then 100% at age 70.

Section 3: Supplemental Information

Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	85% of male members and 35% of female members are assumed to be married.
Age of Spouse:	Females three years younger than males.
Benefit Elections:	All members are assumed to elect the single life annuity option.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary, with Normal Cost determined using the plan of benefits applicable to each member.
Changes in Actuarial Assumptions:	There were no changes in actuarial assumptions since the last valuation.

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Effective Date:	July 1, 1947.
Creditable Service:	Service as a member plus purchased service.
Average Final Compensation (AFC):	• Average annual compensation during highest 3 consecutive years.
Grandfathered Status:	• Group C members who were within five years of normal retirement eligibility as defined prior to July 1, 2010, are "grandfathered".
Normal Retirement - Eligibility:	• Group A Age 60 or 30 years of creditable service. • Group C Grandfathered Age 62 or 30 years of creditable service Non-grandfathered Age 65 or age plus creditable service equal to 90.
Normal Retirement - Amount:	• Group A Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/60th of AFC times creditable service. • Group C Grandfathered Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80th of AFC times creditable service prior to July 1, 1990, plus 1/60th of AFC times creditable service after July 1, 1990. Non-grandfathered Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80th of AFC times creditable service prior to July 1, 1990, plus 1/60th of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 1/50th of AFC for years of service after 20. If a member already has 20 or more years of service on June 30, 2010, the 1/50th will be applied to all service accrued after July 1, 2010. The minimum benefit applicable for Group A members after 30 years of creditable service (pro-rata for service less than 30 years) is subject to 16 V.S.A. § 1937(b)(2). Maximum benefit applicable to Group C: Grandfathered maximum benefit is 50% of AFC up to June 30, 2010. May continue to accrue up to 53.34% of AFC with service earned after July 1, 2010. Non-grandfathered maximum benefit is 60% of AFC.

Early Retirement – Eligibility:	• Group A Age 55. • Group C Age 55 with 5 years of creditable service.
Early Retirement – Amount:	• Group A Actuarial equivalent of normal retirement allowance using AFC and creditable service at early retirement. • Group C Grandfathered: Accrued normal benefit reduced 6% for each year prior to age 62. Non-grandfathered: Accrued normal benefit reduced by actuarial reduction from normal retirement age.
Vesting:	• All groups – 5 years of creditable service.
Disability Retirement - Eligibility:	All groups – Total and permanent disability after 5 years of creditable service (5 years preceding retirement served in State).
Disability Retirement - Amount:	All groups – Calculated as a service allowance based on AFC and creditable service at disability retirement, subject to a 25% of AFC minimum.
Death Benefit - Eligibility:	• Group A Age 60 or 30 years of creditable service; 10 years of creditable service if in service at death. • Group C Age 55 and 5 years of creditable service or 10 years of creditable service.
Death Benefit - Amount:	All groups – Accrued allowance paid under 100% survivorship option. If the eligibility requirements are not met or if beneficiary so elects, the member's accumulated contributions are paid to the beneficiary or estate. Certain children's benefits may also be payable.
Post-Retirement Adjustments:	• Group A Allowances in payment for at least one year increased on each January 1 by the net percentage increase in Consumer Price Index (CPI). The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is less than 0%, members will not receive an increase. • Group B Allowances in payment for at least one year increased on each January 1 by half of the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is less than 0%, members will not receive an increase. • Group C For active members who are first eligible for normal retirement on or after July 1, 2022: - Allowances in payment for at least two years increased on each January 1 by half of the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 4%. If the net percentage increase in CPI is less than 0%, members will not receive an increase. For members receiving a reduced early retirement allowance, the adjustment will not apply before age 62.

Post-Retirement Adjustments *(continued)*:	For all other members: - Allowances in payment for at least one year increased on each January 1 by half of the net percentage increase in CPI. The maximum net percentage increase in CPI is capped at 5%. If the net percentage increase in CPI is less than 0%, members will not receive an increase. For members receiving a reduced early retirement allowance, the adjustment will not apply before age 62.
Refund of Contributions:	If no other beneficiary is payable, a terminated member receives his accumulated contributions with interest.
Member Contribution Rates:	• Group A 5.5% of earnable compensation. Contributions stop after 25 years of creditable service. • Group C Member contributions as a percentage of earnable compensation are described in the table below:

Service as of July 1, 2014	FY22
<5 years	6.00%
5+ years	5.00%

Earnable Compensation	FY23	FY24	FY25+
$0-$40K	6.00%	6.10%	6.25%
$40K-$50K	6.05%	6.15%	$2,900.00 + 6.75% of the member's salary that is $40,000.01 or more.
$50K-$60K	6.10%	6.25%	$2,900.00 + 6.75% of the member's salary that is $40,000.01 or more.
$60K-$70K	6.20%	6.35%	$3,850.00 + 7.50% of the member's salary that is $60,000.01 or more.
$70K-$80K	6.25%	6.50%	$3,850.00 + 7.50% of the member's salary that is $60,000.01 or more.
$80K-$90K	6.35%	6.75%	$5,350.00 + 8.25% of the member's salary that is $80,000.01 or more.
$90K-$100K	6.50%	7.00%	$5,350.00 + 8.25% of the member's salary that is $80,000.01 or more.
$100K+	6.65%	7.25%	$7,000.00 + 9.00% of the member's salary that is $100,000.01 or more.

Section 3: Supplemental Information

Changes in Plan Provisions:	At the June 9, 2022, board meeting, the Actuarially Determined Contribution for the fiscal year ending June 30, 2023, calculated as part of the June 30, 2021, actuarial valuation, was recertified to reflect the additional funding and benefit changes from Act 114 and Act 173. In the determination of this recertified amount, the following plan provisions per the June 30, 2021, actuarial valuation were updated to reflect Act 114 and Act 173: • Post-Retirement Adjustments; and • Member Contribution Rates. Those updates were also used in the determination of the TPL as of June 30, 2022. Details on the specific updates can be located in the June 30, 2022, Actuarial Valuation and Review report dated October 25, 2022.

Appendix: Definition of Terms

Definitions of certain terms as they are used in Statement 68. The terms may have different meanings in other contexts.

Active Employees:	Individuals employed at the end of the reporting or measurement period, as applicable.
Actual Contributions:	Cash contributions recognized as additions to a pension Plan Fiduciary Net Position.
Actuarial Present Value of Projected Benefit Payments:	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation:	The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date:	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution:	A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.
Ad Hoc Cost-of-Living Adjustments (Ad Hoc COLAs):	Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.
Ad Hoc Postemployment Benefit Changes:	Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.
Agent Employer:	An employer whose employees are provided with pensions through an agent multiple-employer defined benefit pension plan.
Agent Multiple-Employer Defined Benefit Pension Plan (Agent Pension Plan):	A multiple-employer defined benefit pension plan in which pension plan assets are pooled for investment purposes but separate accounts are maintained for each individual employer so that each employer's share of the pooled assets is legally available to pay the benefits of only its employees.
Allocated Insurance Contract:	A contract with an insurance company under which related payments to the insurance company are currently used to purchase immediate or deferred annuities for individual employees. Also may be referred to as an annuity contract.

Appendix: Definition of Terms

Automatic Cost-of-Living Adjustments (Automatic COLAs):	Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Automatic Postemployment Benefit Changes:	Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Closed Period:	A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.
Collective Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions:	Deferred outflows of resources and deferred inflows of resources related to pensions arising from certain changes in the collective Net Pension Liability.
Collective Net Pension Liability:	The Net Pension Liability for benefits provided through (1) a cost-sharing pension plan or (2) a single-employer or agent pension plan in circumstances in which there is a special funding situation.
Collective Pension Expense:	Pension expense arising from certain changes in the collective Net Pension Liability.
Contributions:	Additions to a pension Plan Fiduciary Net Position for amounts from employers, non-employer contributing entities (for example, state government contributions to a local government pension plan), or employees. Contributions can result from cash receipts by the pension plan or from recognition by the pension plan of a receivable from one of these sources.
Cost-of-Living Adjustments:	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Employer:	An employer whose employees are provided with pensions through a cost-sharing multiple-employer defined benefit pension plan.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (Cost-Sharing Pension Plan):	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll:	The payroll of employees that are provided with pensions through the pension plan.

Appendix: Definition of Terms

Deferred Retirement Option Program (DROP):	A program that permits an employee to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The employee continues to provide service to the employer and is paid for that service by the employer after the DROP entry date; however, the pensions that would have been paid to the employee (if the employee had retired and not entered the DROP) are credited to an individual employee account within the defined benefit pension plan until the end of the DROP period.
Defined Benefit Pension Plans:	Pension plans that are used to provide defined benefit pensions.
Defined Benefit Pensions:	Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statements 67/68.)
Defined Contribution Pension Plans:	Pension plans that are used to provide defined contribution pensions.
Defined Contribution Pensions:	Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.
Discount Rate:	The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following: 1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension plan's Fiduciary Net Position is projected (under the requirements of Statements 67/68) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments. 2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Appendix: Definition of Terms

Entry Age Actuarial Cost Method:	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the actuarial accrued liability.
Inactive Employees:	Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.
Measurement Period:	The period between the prior and the current measurement dates.
Multiple-Employer Defined Benefit Pension Plan:	A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Net Pension Liability (NPL):	The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities:	Entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of Statements 67/68, employees are not considered nonemployer contributing entities.
Other Postemployment Benefits:	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits, regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Pension Plans:	Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed and benefits are paid as they come due.
Pensions:	Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.
Plan Members:	Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).
Postemployment:	The period after employment.
Postemployment Benefit Changes:	Adjustments to the pension of an inactive employee.
Postemployment Healthcare Benefits:	Medical, dental, vision, and other health-related benefits paid subsequent to the termination of employment.
Projected Benefit Payments:	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.

Appendix: Definition of Terms

Public Employee Retirement System:	A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.
Real Rate of Return:	The rate of return on an investment after adjustment to eliminate inflation.
Service Costs:	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Single Employer:	An employer whose employees are provided with pensions through a single-employer defined benefit pension plan.
Single-Employer Defined Benefit Pension Plan (Single-Employer Pension Plan):	A defined benefit pension plan that is used to provide pensions to employees of only one employer.
Special Funding Situations:	Circumstances in which a non-employer entity is legally responsible for making contributions directly to a pension plan that is used to provide pensions to the employees of another entity or entities and either of the following conditions exists: 1. The amount of contributions for which the non-employer entity legally is responsible is *not* dependent upon one or more events or circumstances unrelated to the pensions. 2. The non-employer entity is the only entity with a legal obligation to make contributions directly to a pension plan.
Termination Benefits:	Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.
Total Pension Liability (TPL):	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement.

State Teachers' Retirement System

Governmental Accounting Standards Board (GASB) Statement 68 Accounting Valuation Report for the Fiscal Year Ending June 30, 2022

Segal

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October 2022

Board of Trustees
State Teachers' Retirement System

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statement No. 68 Accounting Valuation for the fiscal year ending June 30, 2022, for the State Teachers' Retirement System, a cost-sharing multiple-employer defined benefit pension plan. It contains the actuarial information that will need to be disclosed in order to comply with GASB 68.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist the State and the member units in preparing their financial reports. The financial information on which our calculations were based was provided by the Office of the State Treasurer. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. We have not been retained to perform an analysis of the potential range of financial measurements, except where otherwise noted.

The actuarial calculations were directed under the supervision of Matthew Strom, FSA, MAAA, EA. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate.

This valuation was prepared based on the actuarial assumptions and methods used in the June 30, 2020, actuarial valuation of the System. In our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the System and are appropriate for purposes of the valuation.

We look forward to reviewing this report with you and to answering any questions.

Sincerely,

Segal

Kathleen A. Riley, FSA, MAAA, EA Senior Vice President and Actuary	Matthew A. Strom, FSA, MAAA, EA Senior Vice President and Actuary

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Section 1: Actuarial Valuation Summary

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the System. The System uses an “actuarial value of assets” that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

Section 1: Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the State Teachers' Retirement System. Segal is not responsible for the use or misuse of its report, particularly by any other party.
An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
Sections of this report may include actuarial results that are not rounded, but that does not imply precision.
If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to their other advisors for expertise in these areas.

As Segal has no discretionary authority with respect to the management or assets of the System, it is not a fiduciary in its capacity as actuaries and consultants with respect to the System.

Purpose and basis

This report has been prepared by Segal to present certain disclosure information required by Governmental Accounting Standards Board Statement No. 68 for the fiscal year ending June 30, 2022. This report is based on financial information as of June 30, 2021, provided by the Office of the State Treasurer and the State Teachers' Retirement System Actuarial Valuation Report as of June 30, 2020, dated October 28, 2020, which reflects:

- The benefit provisions of the Pension Plan, as administered by the Board; and
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of June 30, 2020, provided by the Office of the State Treasurer.

The assumptions are the same as shown in the State Teachers' Retirement System Actuarial Valuation Report as of June 30, 2020.

Highlights of the valuation

The following key findings were the result of this actuarial valuation:

- GASB 68 permits a measurement date as early as the end of the fiscal year prior to the reporting date. This report for the fiscal year ending June 30, 2022, uses a measurement date of June 30, 2021. The Net Pension Liability (NPL) measured as of June 30, 2021, was determined based upon the results of the actuarial valuation as of June 30, 2020, and adjusted forward using standard actuarial techniques. The report for the fiscal year ending June 30, 2021, used a measurement date of June 30, 2020. The NPL measured as of June 30, 2020, was determined based on the results of the actuarial valuation as of June 30, 2019.
- The NPL is equal to the difference between the Total Pension Liability (TPL) and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) on a market value basis. The NPL decreased from $1.95 billion as of June 30, 2020, to $1.70 billion as of June 30, 2021, and the Plan's Fiduciary Net Position as a percent of the TPL increased from 50.00% to 58.83%.
- The discount rate used to determine the TPL and NPL as of June 30, 2021, and June 30, 2020, was 7.00%.

Highlights of the valuation (*continued*)

- The annual pension expense arises from certain changes in the collective Net Pension Liability and changes in outstanding balances of deferred outflows and deferred inflows of resources related to pensions from the beginning of the year to the end of the year. The collective pension expense decreased from $289.1 million for fiscal year ending June 30, 2021, to $206.5 million for fiscal year ending June 30, 2022.
- Based on several recent consolidations of school districts, many employers are no longer acting as entities within the System and have had their Proportionate Share Allocation drop to 0.0%, while other employers have entered the System with relatively high Proportionate Share Allocations. These consolidations have created large, offsetting changes in proportion, to be recognized over future years as deferred inflows and outflows. The employers with no proportionate share will continue to have an Employer Pension Expense to be considered for accounting purposes until all outstanding deferred inflows and outflows have been recognized.

Section 2: GASB 68 Net Pension Liability Information

Exhibit 1 – Membership data

	June 30, 2020	June 30, 2019
Retired members and beneficiaries	9,843	9,514
Deferred members as reported by the System	887	819
Inactive members as reported by the System	2,710	2,756
Active members:		
Vested	7,463	7,424
Non-vested	2,533	2,438
Total active members	9,996	9,862
Total membership	23,436	22,951

Note: *The NPL amounts measured as of June 30, 2021, and June 30, 2020, were determined based on the membership data as of June 30, 2020, and June 30, 2019, respectively.*

Exhibit 2 – Net Pension Liability

The components of the Net Pension Liability of the State Teachers’ Retirement System are as follows:

Reporting Date for Employer Under GASB 68	June 30, 2022	June 30, 2021
Measurement Date	**June 30, 2021**	**June 30, 2020**
Total Pension Liability	$4,118,283,288	$3,902,618,312
Plan Fiduciary Net Position	2,422,793,508	1,951,489,882
System’s Net Pension Liability	1,695,489,780	1,951,128,430
Plan Fiduciary Net Position as a percentage of the Total Pension Liability*	58.83%	50.00%

* *These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan’s benefit obligation or the need for or the amount of future contributions.*

The Net Pension Liability measured as of June 30, 2021, was determined based on the June 30, 2020, actuarial valuation.

Plan provisions. The plan provisions used in the measurement of the Net Pension Liability are the same as those used in the actuarial valuation as of June 30, 2020.

Actuarial assumptions. The Total Pension Liability measured as of June 30, 2021, was determined by rolling forward the Total Pension Liability as of June 30, 2020, to June 30, 2021. The Total Pension Liability was calculated using the following actuarial assumptions:

Investment rate of return	7.00%, net of pension plan investment expenses, including inflation
Inflation	2.30%
Salary increases	Ranging from 3.30% to 10.50%
Cost of Living Adjustment	2.40% (0.00% for 2021 and 4.60% for 2022) for Group A members and 1.35% (1.00% for 2021 and 2.30% for 2022) for Group B & C members

Mortality	• *Pre-Retirement:* PubT-2010 Teacher Employee Amount-Weighted Table with generational projection using scale MP-2019 • *Retiree Healthy Post-Retirement*: PubT-2010 Teacher Healthy Retiree Amount-Weighted Table with generational projection using scale MP-2019 • *Beneficiary Healthy Post-Retirement*: 109% of the Pub-2010 Contingent Survivor Amount-Weighted Table with generational projection using scale MP-2019 • *Disabled Post-Retirement*: PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using scale MP-2019 The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the underlying groups and estimated future experience and professional judgment. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Section 2: GASB 68 Net Pension Liability Information

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of June 30, 2021, are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Passive Global Equities	24.00%	5.05%
Active Global Equities	5.00%	5.05%
Large Cap US Equities	4.00%	4.00%
Small/Mid Cap US Equities	3.00%	4.50%
Non-US Developed Market Equities	7.00%	5.50%
Private Equity	10.00%	6.75%
Emerging Market Debt	4.00%	3.00%
Private and alternative Credit	10.00%	4.75%
Non-Core Real Estate	4.00%	5.75%
Core Fixed Income	19.00%	0.00%
Core Real Estate	4.00%	3.75%
US TIPS	3.00%	-0.50%
Infrastructure/Farmland	3.00%	4.25%
	100.00%	

** Calculated as the Arithmetic Rates of Return minus the Rate of Inflation, as provided by the Vermont State Treasurers' Office*

Section 2: GASB 68 Net Pension Liability Information

Discount rate: The discount rate used to measure the Total Pension Liability was 7.00%. In accordance with paragraph 29 of GASB 68, professional judgement was applied to determine that the System's projected fiduciary net position exceeds projected benefit payments for current active and inactive members for all years. Our analysis was based on the expectation that employers will continue to contribute at the rates set by the Board, which is comprised of an employer normal cost payment and a payment to reduce the unfunded liability to zero by June 30, 2038. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability.

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability, calculated using the discount rate of 7.00%, as well as what the Net Pension Liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate:

	1% Decrease (6.00%)	**Current Discount Rate (7.00%)**	**1% Increase (8.00%)**
Net Pension Liability as of June 30, 2021	$2,220,768,990	$1,695,489,780	$1,261,019,618

Exhibit 3 – Schedule of changes in Net Pension Liability – last ten fiscal years

	Year End June 30,				
	2021	2020	2019	2018	2017
Total Pension Liability					
Service cost	$72,148,904	$40,744,545	$39,766,250	$40,117,462	$35,383,370
Interest	270,700,007	255,392,953	246,468,440	237,746,182	228,938,418
Differences between expected and actual experience	88,064,572	31,636,975	28,997,522	59,468,842	12,523,150
Changes of assumptions	0	310,967,594	0	-32,956,623	185,849,013
Changes of benefit terms	0	0	0	0	0
Benefit payments, including refunds of employee contributions	-215,248,507	-201,237,170	-193,196,825	-182,258,923	-172,156,063
Net change in Total Pension Liability	$215,664,976	$437,504,897	$122,035,387	$122,116,940	$290,537,888
Total Pension Liability – beginning	3,902,618,312	3,465,113,415	3,343,078,028	3,220,961,088	2,930,423,200
Total Pension Liability – ending (a)	$4,118,283,288	$3,902,618,312	$3,465,113,415	$3,343,078,028	$3,220,961,088
Plan Fiduciary Net Position					
Contributions – employer	$125,910,465	$120,247,389	$113,747,925	$110,353,599	$78,663,674
Contributions – employee	42,199,015	40,598,283	39,075,342	37,888,566	36,142,411
Net investment income	512,194,450	83,105,318	109,429,147	125,566,281	173,166,614
Benefit payments, including refunds of employee contributions	-215,248,507	-201,237,170	-193,196,825	-182,258,923	-172,156,063
Administrative expenses	-2,782,425	-2,814,955	-2,714,661	-2,083,260	-2,214,235
Other	9,030,628	7,102,452	5,775,084	4,348,717	4,055,423
Net change in Fiduciary Net Position	$471,303,626	$47,001,317	$72,116,012	$93,814,980	$117,657,824
Plan Fiduciary Net Position – beginning	1,951,489,882	1,904,488,565	1,832,372,553	1,738,557,573	1,620,899,749
Plan Fiduciary Net Position – ending (b)	$2,422,793,508	$1,951,489,882	$1,904,488,565	$1,832,372,553	$1,738,557,573
Net Pension Liability – ending: (a)-(b)	$1,695,489,780	$1,951,128,430	$1,560,624,850	$1,510,705,475	$1,482,403,515
Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	58.83%	50.00%	54.96%	54.81%	53.98%
Covered-employee payroll	$645,902,984	$624,908,253	$612,899,069	$607,354,756	$586,397,072
Net Pension Liability as a percentage of covered-employee payroll	262.50%	312.23%	254.63%	248.74%	252.80%

Note: Covered-employee payroll reflects actual compensation amounts from the prior Plan year.

Exhibit 3 – Schedule of changes in Net Pension Liability – last ten fiscal years *(continued)*

	Year End June 30,				
	2016	2015	2014	2013*	2012*
Total Pension Liability					
Service cost	$34,979,249	$33,613,557	$33,143,487		
Interest	222,185,083	215,447,502	206,150,481		
Differences between expected and actual experience	3,612,809	20,002,876	0		
Changes of assumptions	-7,223,825	57,488,610	0		
Changes of benefit terms	0	0	0		
Benefit payments, including refunds of employee contributions	-162,751,410	-150,732,845	-140,846,837		
Net change in Total Pension Liability	$90,801,906	$175,819,700	$98,447,131		
Total Pension Liability – beginning	2,839,621,294	2,663,801,594	2,565,354,463		
Total Pension Liability – ending (a)	$2,930,423,200	$2,839,621,294	$2,663,801,594		
Plan Fiduciary Net Position					
Contributions – employer	$73,225,064	$72,908,805	$71,869,736		
Contributions – employee	35,408,763	34,863,531	32,558,584		
Net investment income	19,877,271	-7,566,696	212,338,194		
Benefit payments, including refunds of employee contributions	-162,751,410	-150,732,845	-140,846,837		
Administrative expenses	-1,797,512	-2,259,402	-26,115,813		
Other	3,821,132	538,444	1,209,177		
Net change in Fiduciary Net Position	-$32,216,692	-$52,248,163	$151,013,041		
Plan Fiduciary Net Position – beginning	1,653,116,441	1,705,364,604	1,554,351,563		
Plan Fiduciary Net Position – ending (b)	$1,620,899,749	$1,653,116,441	$1,705,364,604		
Net Pension Liability – ending: (a)-(b)	$1,309,523,451	$1,186,504,853	$958,436,990		
Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	55.31%	58.22%	64.02%		
Covered-employee payroll	$557,708,310	$567,073,601	$563,623,421		
Net Pension Liability as a percentage of covered-employee payroll	234.80%	209.23%	170.05%		

* Historical information prior to implementation of GASB 67/68 is not required.

Note: Covered-employee payroll reflects actual compensation amounts from the prior Plan year.

Notes to Exhibit 3 – Schedule of changes in Net Pension Liability – last ten fiscal years (*continued*)

Notes to Exhibit 3:

Changes in Assumptions:	There have been no changes in assumptions since the last measurement date.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last measurement date.

Exhibit 4 – Schedule of contributions – last ten fiscal years

	Year End June 30				
	2021	**2020**	**2019**	**2018**	**2017**
Actuarially determined contribution	$132,141,701	$126,197,389	$105,640,777	$88,409,437	$82,659,576
Contributions in relation to the actuarially determined contribution*	134,541,278	126,941,582	119,174,913	114,598,921	82,887,174
Contribution deficiency (excess)	-$2,399,577	-$744,193	-$13,534,136	-$26,189,484	-$227,598
Covered-employee payroll	$645,902,984	$624,908,253	$612,899,069	$607,354,756	$586,397,072
Contributions as a percentage of covered-employee payroll	20.83%	20.31%	19.44%	18.87%	14.13%

	2016	**2015**	**2014**	**2013****	**2012****
Actuarially determined contribution	$76,102,909	$72,857,863	$68,352,825		
Contributions in relation to the actuarially determined contribution*	76,947,868	72,908,805	72,668,412		
Contribution deficiency (excess)	-$844,959	-$50,942	-$4,315,587		
Covered-employee payroll	$557,708,310	$567,073,601	$563,623,421		
Contributions as a percentage of covered-employee payroll	13.80%	12.86%	12.89%		

* *Includes a portion of the contribution amount denoted as "other" in Exhibit 2.*

** *Historical information prior to implementation of GASB 67/68 is not required.*

Note: Actuarially determined contributions for a given fiscal year are based on results from the June 30 actuarial valuation two years prior.

Section 2: GASB 68 Net Pension Liability Information

Notes to Exhibit 4:

Valuation date	Actuarially determined contribution for the year ending June 30, 2021, is based on results from the June 30, 2019, actuarial valuation, and was calculated as of June 30, with appropriate interest to the middle of the fiscal year.
Actuarial cost method	Entry Age Normal actuarial cost method
Amortization method	Amortization payments calculated to fully fund unfunded actuarial accrued liability with annual increases of 3% over a closed period.
Remaining amortization period	19 years as of July 1, 2019 The amortization of unfunded actuarial accrued liability (UAAL) within the actuarially determined contribution rate calculation is based on payments increasing at 3% per year required to amortize the UAAL over the 30-year closed period that began July 1, 2008.
Asset valuation method	The amount of the assets for valuation purposes equals the preliminary asset value plus 20% of the difference between market and preliminary asset values. The preliminary asset value is equal to the previous year's asset value (for valuation purposes) adjusted for contributions less benefit payments and expenses plus expected investment income. If necessary, a further adjustment is made to ensure that the valuation assets are within 20% of the market value.
Actuarial assumptions:	
Investment rate of return	7.50%, net of pension plan investment expenses, including inflation
Inflation rate	2.50%
Projected salary increases	Ranging from 3.75% to 9.09% based on age

Mortality	• Death in Active Service: 98% of RP-2006 White Collar Employee Table with generational projection using scale SSA-2017 • Healthy Post-retirement: 98% of RP-2006 White Collar Annuitant Table with generational projection using scale SSA-2017 • Disabled Post-retirement: RP-2006 Disabled Mortality Table with generational projection using scale SSA-2017 The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the underlying groups and estimated future experience and professional judgment. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.
Other assumptions	Same as those used in the June 30, 2019, funding actuarial valuation.

Section 3: Additional Information for GASB 68

Changes in the collective Net Pension Liability from the prior measurement date to the current measurement date arise from the net difference between changes in the Total Pension Liability and Plan Fiduciary Net Position that occurred during the year. Changes in Net Pension Liability will be recognized immediately as pension expense or reported as deferred outflows of resources related to pensions or deferred inflows of resources related to pensions, depending on the nature of the change.

Differences between actual and expected investment-related experience are recognized over a closed five-year period. Differences between actual and expected non-investment-related experience and changes of assumptions are recognized over the average of the expected remaining service lives of all members who are provided with pensions through the pension plan (active teachers and inactive teachers). The amounts below that are not included in pension expense for the current year are included in deferred outflows of resources or deferred inflows of resources related to pensions.

Exhibit A – Reconciliation of Collective Net Pension Liability

	Increase/(Decrease) From June 30, 2020, to June 30, 2021		
	Total Pension Liability (a)	**Plan Fiduciary Net Position (b)**	**Net Pension Liability (a) – (b)**
Balances at beginning of year	$3,902,618,312	$1,951,489,882	$1,951,128,430
Changes for the year			
Service cost	72,148,904		72,148,904
Interest	270,700,007		270,700,007
Differences between expected and actual experience	88,064,572		88,064,572
Contributions – employer		125,910,465	-125,910,465
Contributions – member		42,199,015	-42,199,015
Net investment income		512,194,450	-512,194,450
Benefit payments, including refunds of employee contributions	-215,248,507	-215,248,507	0
Administrative expense		-2,782,425	2,782,425
Other		9,030,628	-9,030,628
Changes of assumptions	0		0
Change of benefit terms	0		0
Net changes	$215,664,976	$471,303,626	-$255,638,650
Balances at end of year	$4,118,283,288	$2,422,793,508	$1,695,489,780

As shown in Exhibit A, the change in Net Pension Liability due to differences between expected and actual demographic experience is an increase of $88,064,572. The average expected remaining service lives of all members is 6 years, determined as of July 1, 2020 (the beginning of the measurement period ending June 30, 2021). Therefore, of the $88,064,572 demographic loss, $14,677,427 is recognized in pension expense in the current year and $73,387,145 is reflected as a deferred outflow of resources related to pensions. There was no change in Net Pension Liability due to assumption changes or changes in plan provisions.

Based on the assumed investment return of 7.00%, the expected net investment income for the year was $135,173,113. As shown in Exhibit A, the actual net investment income for the year was $512,194,450. The difference between actual and expected investment experience is a decrease in Net Pension Liability of $377,021,337, which is recognized over a 5-year period. Of this amount, $75,404,269 is reflected in the current year and $301,617,068 is reflected as a deferred inflow of resources related to pensions.

Exhibit B – Collective deferred outflows of resources and deferred inflows of resources related to pensions

	Measurement Date Year Established	Original Balance	Original Amortization Period	Amortization Amount During 2021	Outstanding Balance at June 30, 2021
Outflows					
Demographics	2018	$59,468,842	4 years	$14,867,212	$0
Investments	2018	3,634,863	5 years	726,972	726,975
Demographics	2019	28,997,522	4 years	7,249,381	7,249,381
Investments	2019	26,599,552	5 years	5,319,910	10,639,820
Demographics	2020	31,636,975	4 years	7,909,244	15,818,488
Assumptions	2020	310,967,594	4 years	77,741,899	155,483,798
Investments	2020	58,377,424	5 years	11,675,485	35,026,455
Demographics	2021	88,064,572	6 years	14,677,427	73,387,145
Total outflows				$140,167,530	$298,332,062
Inflows					
Investments	2017	$46,511,558	5 years	$9,302,314	$0
Assumptions	2018	32,956,623	4 years	8,239,158	0
Investments	2021	377,021,337	5 years	75,404,269	301,617,068
Total inflows				$92,945,741	$301,617,068

Exhibit B – Collective deferred outflows of resources and deferred inflows of resources related to pensions (*continued*)

Reporting Date for Employer Under GASB 68	June 30, 2022	June 30, 2021
Measurement Date	**June 30, 2021**	**June 30, 2020**
Deferred Outflows of Resources		
Difference between expected and actual experience in the Total Pension Liability	$96,455,014	$53,093,706
Changes of assumptions	155,483,798	233,225,697
Net difference between projected and actual earnings on pension plan investments	N/A	54,813,303
Total Deferred Outflows of Resources	$251,938,812	$341,132,706
Deferred Inflows of Resources		
Difference between expected and actual experience in the Total Pension Liability	$0	$0
Changes of assumptions	0	8,239,158
Net difference between projected and actual earnings on pension plan investments	255,223,818	N/A
Total Deferred Inflows of Resources	$255,223,818	$8,239,158
Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:		
Year Ended June 30:		
2022	N/A	$107,948,631
2023	$49,896,056	110,622,894
2024	41,919,700	102,646,538
2025	-49,051,353	11,675,485
2026	-60,726,838	0
2027	14,677,429	0
Thereafter	0	0

Section 3: Additional Information for GASB 68

Exhibit C below shows the individual components of collective pension expense, which totaled $206,450,369 for the fiscal year that ended June 30, 2022.

Annual pension expense for the year can also be viewed as the change in Net Pension Liability, plus employer contributions for the year, less the change in outstanding balances of deferred outflows and deferred inflows of resources from the end of the prior fiscal year to end of the current fiscal year. From Exhibit A, the change in Net Pension Liability during the year was -$255,638,650 and employer contributions were $125,910,465. The net value of deferred outflows and deferred inflows of resources as of the end of the current fiscal year is -$3,285,006 compared to the net value as of the end of the prior fiscal year of $332,893,548 for a change of -$336,178,554. Therefore, the pension expense for the fiscal year that ended June 30, 2021, is -$255,638,650 + $125,910,465 + $336,178,554 or $206,450,369.

Exhibit C – Collective Pension Expense

Reporting Date for Employer under GASB 68	**June 30, 2022**	**June 30, 2021**
Measurement Date	**June 30, 2021**	**June 30, 2020**
Components of Pension Expense		
Service cost	$72,148,904	$40,744,545
Interest on the Total Pension Liability	270,700,007	255,392,953
Projected earnings on plan investments	-135,173,113	-141,482,742
Contributions – member	-42,199,015	-40,598,283
Administrative expense	2,782,425	2,814,955
Other	-9,030,628	-7,102,452
Current-year recognition of:		
• Changes of assumptions	0	77,741,897
• Difference between expected and actual experience	14,677,427	7,909,243
• Difference between projected and actual earnings on pension plan investments	-75,404,269	11,675,484
Current year change in benefit terms	0	0
Recognition of beginning of year's deferred outflows of resources as pension expense	125,490,103	99,659,384
Recognition of beginning of year's deferred inflows of resources as pension expense	-17,541,472	-17,541,466
Total Pension Expense	$206,450,369	$289,213,518

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VSTRS is classified as a cost-sharing multiple-employer defined benefit pension plan for GASB accounting purposes. As specified in GASB 68, employers that participate in VSTRS are required to recognize their proportionate share of the collective pension amounts for all benefits provided through the System. Pension amounts to be recognized by employers include the Net Pension Liability, deferred outflows of resources related to pensions, deferred inflows of resources related to pensions, and pension expense. In addition, the effects of (1) a change in the employer's proportion of the collective Net Pension Liability and (2) differences during the measurement period between the employer's contributions and its proportionate share of the total of contributions from employers included in the collective Net Pension Liability are required to be determined and recognized.

The basis of an employer's allocation of the collective pension amounts should be consistent with the manner in which contributions to the plan are determined. Since contributions to VSTRS are collected as a percentage of payroll, covered employee payroll for the fiscal year ending June 30, 2021, is used as the proportionate share allocation basis. The Office of the State Treasurer supplied covered employee payroll for each employer.

The net effect of the change on an employer's proportionate share of the collective Net Pension Liability and collective deferred outflows of resources and deferred inflows of resources is recognized over the average of the expected remaining service lives of all members who are provided with pensions through VSTRS.

In addition, the difference between the actual employer contributions and the proportionate share of the employer contributions is recognized over the same period. However, since VSTRS contributions are collected on the same basis as the proportionate share allocation, there is no difference between the actual employer contributions and the proportionate share of the employer contributions. If employers no longer report to VSTRS, they will continue to remain on the schedule until their deferral balances are depleted.

Exhibits D and E that follow show the proportionate share information for employers of VSTRS for the fiscal year ending June 30, 2022.

Exhibit D – Schedule of Employer Allocation for the Fiscal Year Ending June 30, 2022

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Addison Central SU	$0	0.00000000%
Addison Central Unified USD	15,193,917	2.09484672%
Addison NE SU	0	0.00000000%
Addison Northwest SU	0	0.00000000%
Addison NW Unified USD	7,621,595	1.05082010%
Addison Rutland SU	0	0.00000000%
Addison School	0	0.00000000%
Albany School	0	0.00000000%
Alburg School	1,282,160	0.17677658%
Arlington School	3,373,506	0.46511890%
Bakersfield School	0	0.00000000%
Barnard School	0	0.00000000%
Barnet School	0	0.00000000%
Barre City School	0	0.00000000%
Barre SU	0	0.00000000%
Barre Town School	0	0.00000000%
Barre Unified USD	18,731,600	2.58260137%
Barstow Unified USD	1,256,433	0.17322949%
Barton School	0	0.00000000%
Bellows Free Academy	0	0.00000000%
Bennington School	0	0.00000000%
Bennington-Rutland SU	3,907,031	0.53867815%
Benson School	0	0.00000000%

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Berkshire School	0	0.00000000%
Berlin School	0	0.00000000%
Bethel School	0	0.00000000%
Blue Mtn Union #21	2,711,609	0.37386049%
Bradford School	0	0.00000000%
Braintree School	0	0.00000000%
Brattleboro Town School	0	0.00000000%
Brattleboro Union #6	0	0.00000000%
Bridport School	0	0.00000000%
Brighton School	784,760	0.10819803%
Bristol School	0	0.00000000%
Brookfield School	0	0.00000000%
Brownington School	0	0.00000000%
Burke School	0	0.00000000%
Burlington School	34,154,643	4.70903862%
Burr & Burton Seminary	5,503,906	0.75884576%
Cabot School	1,330,174	0.18339646%
Calais School	0	0.00000000%
Caledonia Cooperative SD	3,204,976	0.44188299%
Caledonia -Fed	2,551,597	0.35179899%
Caledonia North SU	0	0.00000000%
Cambridge School	1,691,197	0.23317216%
Canaan School	1,854,868	0.25573815%
Castleton/Hubbardton SD 42	0	0.00000000%
Cavendish School	0	0.00000000%
Central VT SU	2,605,808	0.35927328%
Champlain Islands Unified USD	1,507,872	0.20789640%

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Champlain Valley SD	36,021,284	4.96639998%
Champlain Valley Union #15	0	0.00000000%
Charleston School	885,839	0.12213420%
Charlotte School	0	0.00000000%
Chelsea School	0	0.00000000%
Chittenden Central SU	0	0.00000000%
Chittenden East SU	0	0.00000000%
Chittenden South SU	0	0.00000000%
Colchester School	18,467,090	2.54613231%
Concord School	0	0.00000000%
Cornwall School	0	0.00000000%
Coventry School	836,090	0.11527511%
Craftsbury School	1,098,293	0.15142609%
Danville School	2,435,924	0.33585068%
Dept Of Education	96,553	0.01331215%
Dept Of Social & Rehab Serv	0	0.00000000%
Derby School	2,137,218	0.29466688%
Dorset School	0	0.00000000%
Dover School	0	0.00000000%
Dummerston School	0	0.00000000%
East Montpelier School	0	0.00000000%
Echo Valley Community SD	995,642	0.13727319%
Eden School	0	0.00000000%
Elmore Morristown Unified USD	0	0.00000000%
Enosburg School	0	0.00000000%
Enosburgh Richford Unified USD	6,729,341	0.92780143%
Essex Caledonia SU	0	0.00000000%

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Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Essex Comm. Ed # 46	0	0.00000000%
Essex Jct Id School	0	0.00000000%
Essex Town School	0	0.00000000%
Essex Westford Ed Com UUSD	37,420,697	5.15934268%
Fair Haven School	0	0.00000000%
Fair Haven Union #16	0	0.00000000%
Fairfax School	5,195,096	0.71626887%
Fairfield School	0	0.00000000%
Fayston School	0	0.00000000%
Ferrisburg School	0	0.00000000%
First Branch Unified SD	1,885,626	0.25997887%
Fletcher School	750,132	0.10342373%
Franklin Ctl SU - Spec Ed	0	0.00000000%
Franklin Esea	3,314,315	0.45695800%
Franklin NW SU	0	0.00000000%
Franklin School	0	0.00000000%
Franklin West SU	2,248,996	0.31007810%
Georgia School	3,917,084	0.54006420%
Glover School	0	0.00000000%
Grafton School	0	0.00000000%
Grand Isle School	0	0.00000000%
Grand Isle SU	1,252,097	0.17263167%
Greater Rutland County SU	3,109,579	0.42873022%
Green Mtn Uhs Union #35	0	0.00000000%
Green Mtn USD	4,186,671	0.57723325%
Guilford School	0	0.00000000%
Halifax School	0	0.00000000%

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Hannaford Regional Tech SD	1,437,786	0.19823336%
Hardwick School	0	0.00000000%
Hartford School	16,128,039	2.22363790%
Hartland School	1,871,830	0.25807676%
Harwood Unified USD	16,191,029	2.23232258%
Harwood Union #19	0	0.00000000%
Hazen Union #26	2,073,495	0.28588113%
Highgate School	0	0.00000000%
Hinesburg School	0	0.00000000%
Holland School	0	0.00000000%
Huntington School	0	0.00000000%
Hyde Park School	0	0.00000000%
Irasburg School	0	0.00000000%
Isle Lamotte School	0	0.00000000%
Jamaica School	0	0.00000000%
Jay/Westfield School	623,255	0.08593068%
Johnson School	0	0.00000000%
Kingdom East Unified USD	10,861,930	1.49757817%
Lake Region Uhs #24	2,304,795	0.31777140%
Lake Region Union EMSD	4,409,241	0.60791987%
Lakeview Uhs #43	0	0.00000000%
Lamoille North Modified UUSD	9,803,912	1.35170496%
Lamoille North SU	2,309,622	0.31843692%
Lamoille So SU	0	0.00000000%
Lamoille South Unified USD	12,597,563	1.73687691%
Lamoille Uhs #18	0	0.00000000%
Leland & Gray Union #34	0	0.00000000%

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Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Lincoln School	0	0.00000000%
Lowell School	640,880	0.08836071%
Ludlow Mt Holly Unified USD	1,612,337	0.22229942%
Ludlow School	0	0.00000000%
Lunenburg School	0	0.00000000%
Lyndon Institute	2,514,682	0.34670937%
Lyndon Town School	0	0.00000000%
Manchester School	0	0.00000000%
Maple Run Unified SD	22,840,363	3.14909313%
Marlboro School	730,358	0.10069741%
Mettawee SD	1,195,325	0.16480429%
Middlebury Id School	0	0.00000000%
Middlebury Union #3	0	0.00000000%
Middlesex School	0	0.00000000%
Middletown Springs School	0	0.00000000%
Mill River Unified USD	7,544,849	1.04023881%
Milton School	12,829,810	1.76889774%
Missisquoi Valley SD	14,208,108	1.95892925%
Missisquoi Valley Union #7	0	0.00000000%
Monkton School	0	0.00000000%
Montgomery School	0	0.00000000%
Montpelier Roxbury SD	9,946,696	1.37139116%
Montpelier School	0	0.00000000%
Moretown School	0	0.00000000%
Mount Ascutney SD	3,911,605	0.53930878%
Mountain Towns Regional SD	0	0.00000000%
Mt Abraham Unified SD	12,238,243	1.68733601%

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Mt Abraham Union #28	0	0.00000000%
Mt Anthony Union #14	7,651,417	1.05493177%
Mt Holly School	0	0.00000000%
Mt Mansfield Unified USD	20,055,982	2.76519927%
New Haven School	0	0.00000000%
Newark School	0	0.00000000%
Newbrook Elementary School	0	0.00000000%
Newbury School	0	0.00000000%
Newport City School	2,166,098	0.29864868%
Newport Town School	714,335	0.09848825%
North Country Union #22	7,029,869	0.96923644%
North Hero School	0	0.00000000%
Northern Mountain Valley UUSD	4,165,539	0.57431969%
Northfield School	0	0.00000000%
Norwich School	2,873,204	0.39614024%
Orange East SU	2,948,925	0.40658020%
Orange North S. U.	0	0.00000000%
Orange School	0	0.00000000%
Orange SW SU	0	0.00000000%
Orange SW Unified USD	8,557,803	1.17989887%
Orleans Central SU	1,907,826	0.26303968%
Orleans Essex N SU	5,121,682	0.70614699%
Orleans Id School	0	0.00000000%
Orleans SW SU	2,583,516	0.35619979%
Orleans SW Union ESD	1,915,672	0.26412144%
Orwell School	0	0.00000000%
Otter Valley Unified USD	7,353,454	1.01385041%

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Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Ox Bow Union #30	0	0.00000000%
Oxbow Unified USD	5,264,614	0.72585360%
Paine Mtn SD	5,844,621	0.80582151%
Peacham School	470,276	0.06483885%
Poultney School	0	0.00000000%
Pownal School	0	0.00000000%
Proctor School	0	0.00000000%
Prosper Valley School	0	0.00000000%
Putney School	0	0.00000000%
Quarry Valley Unified USD	6,900,889	0.95145345%
Randolph School	0	0.00000000%
Reading School	0	0.00000000%
Readsboro School	0	0.00000000%
Richford School	0	0.00000000%
Ripton School	0	0.00000000%
Rivendell Interstate School	3,116,796	0.42972526%
River Valley Technical Center	1,568,570	0.21626508%
River Valleys USD	1,097,829	0.15136212%
Rochester School	0	0.00000000%
Rochester Stockbridge Unified	1,062,322	0.14646663%
Rockingham School	3,123,653	0.43067066%
Roxbury School	0	0.00000000%
Royalton School	0	0.00000000%
Rutland Central SU	0	0.00000000%
Rutland City School	20,347,932	2.80545159%
Rutland Northeast SU	3,687,498	0.50841025%
Rutland South West SU	0	0.00000000%

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Rutland Town School	2,329,380	0.32116103%
Salisbury School	0	0.00000000%
Shaftsbury School	0	0.00000000%
Sharon School	825,656	0.11383653%
Shelburne School	0	0.00000000%
Sheldon School	0	0.00000000%
Sherburne School	0	0.00000000%
Shoreham School	0	0.00000000%
Slate Valley Unified USD	10,004,544	1.37936690%
South Burlington School	23,475,476	3.23665872%
South Hero School	944,703	0.13025002%
Southern Valley Unified USD	870,038	0.11995565%
Southwest Vt Regional Tech SD	1,186,535	0.16359237%
Southwest Vt SU	6,042,188	0.83306092%
Southwest Vt SU - Title I	1,707,777	0.23545811%
Southwest VT Union ESD	6,530,379	0.90036974%
Spaulding Uhs	0	0.00000000%
Springfield School	10,171,077	1.40232748%
St Albans City School	0	0.00000000%
St Albans Town School	0	0.00000000%
St Johnsbury Academy	5,469,947	0.75416369%
St Johnsbury School	5,558,429	0.76636306%
Stamford School	376,802	0.05195121%
Starksboro School	0	0.00000000%
Stockbridge School	0	0.00000000%
Stowe School	0	0.00000000%
Strafford School	848,499	0.11698599%

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Sunderland School	0	0.00000000%
Sutton School	0	0.00000000%
Swanton School	0	0.00000000%
Taconic And Green Regional SD	6,606,258	0.91083148%
Thetford Academy	2,366,999	0.32634772%
Thetford School	1,469,631	0.20262396%
Townshend School	0	0.00000000%
Troy School	1,021,267	0.14080621%
Tunbridge School	0	0.00000000%
Twin Valley Unified USD	3,003,463	0.41409958%
Twinfield Union #33	2,501,091	0.34483552%
Two Rivers SU	2,115,248	0.29163779%
Union #23	0	0.00000000%
Union #27	2,375,541	0.32752544%
Union #29	0	0.00000000%
Union #32	0	0.00000000%
Union #36	1,529,542	0.21088414%
Union #37	0	0.00000000%
Union #39	0	0.00000000%
Union 22 Dresden	6,168,237	0.85043976%
Union District #47	0	0.00000000%
Union High #2	0	0.00000000%
Vac School	143,682	0.01981002%
Vergennes School	0	0.00000000%
Vergennes Union #5	0	0.00000000%
Vernon School	1,176,686	0.16223445%
Waitsfield School	0	0.00000000%

Section 3: Additional Information for GASB 68

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Walden School	0	0.00000000%
Wardsboro School	0	0.00000000%
Warren School	0	0.00000000%
Washington Central SU	0	0.00000000%
Washington Central Unified USD	14,187,714	1.95611745%
Washington NE SU	0	0.00000000%
Washington School	0	0.00000000%
Washington So SU	0	0.00000000%
Washington West SU	0	0.00000000%
Waterbury/Duxbury School	0	0.00000000%
Waterford School	0	0.00000000%
Waterville School	0	0.00000000%
Weathersfield School	1,368,998	0.18874929%
Wells School	0	0.00000000%
Wells Springs Unified USD	1,121,437	0.15461705%
West River Modified UED	3,598,257	0.49610623%
West Rutland School	0	0.00000000%
West Windsor School	0	0.00000000%
Westford School	0	0.00000000%
Westminster School	0	0.00000000%
Weybridge School	0	0.00000000%
White River Unified District	4,201,923	0.57933610%
White River Valley SU	1,978,598	0.27279730%
Williamstown Elem School	0	0.00000000%
Williamstown High School	0	0.00000000%
Williston School	0	0.00000000%
Windham Central	2,758,324	0.38030127%

Section 3: Additional Information for GASB 68

Employer Name	Allocable Payroll	Employer's Proportionate Share Allocation
Windham NE SU	4,155,610	0.57295077%
Windham NE Union ESD	1,494,918	0.20611038%
Windham School	90,007	0.01240963%
Windham SE SD	16,214,071	2.23549948%
Windham SE SU	5,220,186	0.71972813%
Windham SW SU	1,374,810	0.18955061%
Windsor Central Modified UUSD	6,717,398	0.92615480%
Windsor Central SU	1,917,867	0.26442407%
Windsor School	0	0.00000000%
Windsor SE SU	2,138,993	0.29491162%
Winooski School	8,540,801	1.17755474%
Wolcott School	793,419	0.10939188%
Woodbury School	0	0.00000000%
Woodford School	0	0.00000000%
Woodstock School	0	0.00000000%
Woodstock Union #4	0	0.00000000%
Worcester School	0	0.00000000%
Grand Totals:	$725,299,700	100.0000000%

Note: Columns may not foot due to rounding.

Exhibit E – Schedule of Pension Amounts by Employer for the Fiscal Year Ending June 30, 2022

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity: 1% Decrease (6.00%) (4)	Discount Rate Sensitivity: Current Discount Rate (7.00%) (5)	Discount Rate Sensitivity: 1% Increase (8.00%) (6)
Addison Central SU	0.00000000%	$0	$0	$0	$0	$0
Addison Central Unified USD	2.09484672%	35,517,912	15,193,917	46,521,706	35,517,912	26,416,428
Addison NE SU	0.00000000%	0	0	0	0	0
Addison Northwest SU	0.00000000%	0	0	0	0	0
Addison NW Unified USD	1.05082010%	17,816,547	7,621,595	23,336,287	17,816,547	13,251,048
Addison Rutland SU	0.00000000%	0	0	0	0	0
Addison School	0.00000000%	0	0	0	0	0
Albany School	0.00000000%	0	0	0	0	0
Alburg School	0.17677658%	2,997,229	1,282,160	3,925,799	2,997,229	2,229,187
Arlington School	0.46511890%	7,886,043	3,373,506	10,329,216	7,886,043	5,865,241
Bakersfield School	0.00000000%	0	0	0	0	0
Barnard School	0.00000000%	0	0	0	0	0
Barnet School	0.00000000%	0	0	0	0	0
Barre City School	0.00000000%	0	0	0	0	0
Barre SU	0.00000000%	0	0	0	0	0
Barre Town School	0.00000000%	0	0	0	0	0
Barre Unified USD	2.58260137%	43,787,742	18,731,600	57,353,610	43,787,742	32,567,110
Barstow Unified USD	0.17322949%	2,937,088	1,256,433	3,847,027	2,937,088	2,184,458
Barton School	0.00000000%	0	0	0	0	0
Bellows Free Academy	0.00000000%	0	0	0	0	0
Bennington School	0.00000000%	0	0	0	0	0
Bennington-Rutland SU	0.53867815%	9,133,233	3,907,031	11,962,797	9,133,233	6,792,837
Benson School	0.00000000%	0	0	0	0	0
Berkshire School	0.00000000%	0	0	0	0	0
Berlin School	0.00000000%	0	0	0	0	0
Bethel School	0.00000000%	0	0	0	0	0
Blue Mtn Union #21	0.37386049%	6,338,766	2,711,609	8,302,578	6,338,766	4,714,454
Bradford School	0.00000000%	0	0	0	0	0
Braintree School	0.00000000%	0	0	0	0	0

Section 3: Additional Information for GASB 68

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity: 1% Decrease (6.00%) (4)	Discount Rate Sensitivity: Current Discount Rate (7.00%) (5)	Discount Rate Sensitivity: 1% Increase (8.00%) (6)
Brattleboro Town School	0.00000000%	0	0	0	0	0
Brattleboro Union #6	0.00000000%	0	0	0	0	0
Bridport School	0.00000000%	0	0	0	0	0
Brighton School	0.10819803%	1,834,487	784,760	2,402,828	1,834,487	1,364,398
Bristol School	0.00000000%	0	0	0	0	0
Brookfield School	0.00000000%	0	0	0	0	0
Brownington School	0.00000000%	0	0	0	0	0
Burke School	0.00000000%	0	0	0	0	0
Burlington School	4.70903862%	79,841,269	34,154,643	104,576,869	79,841,269	59,381,901
Burr & Burton Seminary	0.75884576%	12,866,152	5,503,906	16,852,211	12,866,152	9,569,194
Cabot School	0.18339646%	3,109,468	1,330,174	4,072,812	3,109,468	2,312,665
Calais School	0.00000000%	0	0	0	0	0
Caledonia Cooperative SD	0.44188299%	7,492,081	3,204,976	9,813,200	7,492,081	5,572,231
Caledonia -Fed	0.35179899%	5,964,716	2,551,597	7,812,643	5,964,716	4,436,254
Caledonia North SU	0.00000000%	0	0	0	0	0
Cambridge School	0.23317216%	3,953,410	1,691,197	5,178,215	3,953,410	2,940,347
Canaan School	0.25573815%	4,336,014	1,854,868	5,679,354	4,336,014	3,224,908
Castleton/Hubbardton SD 42	0.00000000%	0	0	0	0	0
Cavendish School	0.00000000%	0	0	0	0	0
Central VT SU	0.35927328%	6,091,442	2,605,808	7,978,630	6,091,442	4,530,507
Champlain Islands Unified USD	0.20789640%	3,524,862	1,507,872	4,616,899	3,524,862	2,621,614
Champlain Valley SD	4.96639998%	84,204,804	36,021,284	110,292,271	84,204,804	62,627,278
Champlain Valley Union #15	0.00000000%	0	0	0	0	0
Charleston School	0.12213420%	2,070,773	885,839	2,712,318	2,070,773	1,540,136
Charlotte School	0.00000000%	0	0	0	0	0
Chelsea School	0.00000000%	0	0	0	0	0
Chittenden Central SU	0.00000000%	0	0	0	0	0
Chittenden East SU	0.00000000%	0	0	0	0	0
Chittenden South SU	0.00000000%	0	0	0	0	0
Colchester School	2.54613231%	43,169,413	18,467,090	56,543,717	43,169,413	32,107,228
Concord School	0.00000000%	0	0	0	0	0
Cornwall School	0.00000000%	0	0	0	0	0
Coventry School	0.11527511%	1,954,478	836,090	2,559,994	1,954,478	1,453,642
Craftsbury School	0.15142609%	2,567,414	1,098,293	3,362,824	2,567,414	1,909,513
Danville School	0.33585068%	5,694,314	2,435,924	7,458,468	5,694,314	4,235,143
Dept Of Education	0.01331215%	225,706	96,553	295,632	225,706	167,869
Dept Of Social & Rehab Serv	0.00000000%	0	0	0	0	0
Derby School	0.29466688%	4,996,047	2,137,218	6,543,871	4,996,047	3,715,807

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity: 1% Decrease (6.00%) (4)	Discount Rate Sensitivity: Current Discount Rate (7.00%) (5)	Discount Rate Sensitivity: 1% Increase (8.00%) (6)
Dorset School	0.00000000%	0	0	0	0	0
Dover School	0.00000000%	0	0	0	0	0
Dummerston School	0.00000000%	0	0	0	0	0
East Montpelier School	0.00000000%	0	0	0	0	0
Echo Valley Community SD	0.13727319%	2,327,453	995,642	3,048,520	2,327,453	1,731,042
Eden School	0.00000000%	0	0	0	0	0
Elmore Morristown Unified USD	0.00000000%	0	0	0	0	0
Enosburg School	0.00000000%	0	0	0	0	0
Enosburgh Richford Unified USD	0.92780143%	15,730,778	6,729,341	20,604,326	15,730,778	11,699,758
Essex Caledonia SU	0.00000000%	0	0	0	0	0
Essex Comm. Ed # 46	0.00000000%	0	0	0	0	0
Essex Jct Id School	0.00000000%	0	0	0	0	0
Essex Town School	0.00000000%	0	0	0	0	0
Essex Westford Ed Com UUSD	5.15934268%	87,476,128	37,420,697	114,577,082	87,476,128	65,060,323
Fair Haven School	0.00000000%	0	0	0	0	0
Fair Haven Union #16	0.00000000%	0	0	0	0	0
Fairfax School	0.71626887%	12,144,265	5,195,096	15,906,677	12,144,265	9,032,291
Fairfield School	0.00000000%	0	0	0	0	0
Fayston School	0.00000000%	0	0	0	0	0
Ferrisburg School	0.00000000%	0	0	0	0	0
First Branch Unified SD	0.25997887%	4,407,915	1,885,626	5,773,530	4,407,915	3,278,385
Fletcher School	0.10342373%	1,753,539	750,132	2,296,802	1,753,539	1,304,194
Franklin Ctl SU - Spec Ed	0.00000000%	0	0	0	0	0
Franklin Esea	0.45695800%	7,747,676	3,314,315	10,147,982	7,747,676	5,762,330
Franklin NW SU	0.00000000%	0	0	0	0	0
Franklin School	0.00000000%	0	0	0	0	0
Franklin West SU	0.31007810%	5,257,342	2,248,996	6,886,118	5,257,342	3,910,146
Georgia School	0.54006420%	9,156,733	3,917,084	11,993,578	9,156,733	6,810,316
Glover School	0.00000000%	0	0	0	0	0
Grafton School	0.00000000%	0	0	0	0	0
Grand Isle School	0.00000000%	0	0	0	0	0
Grand Isle SU	0.17263167%	2,926,952	1,252,097	3,833,751	2,926,952	2,176,919
Greater Rutland County SU	0.42873022%	7,269,077	3,109,579	9,521,108	7,269,077	5,406,372
Green Mtn Uhs Union #35	0.00000000%	0	0	0	0	0
Green Mtn USD	0.57723325%	9,786,931	4,186,671	12,819,017	9,786,931	7,279,025
Guilford School	0.00000000%	0	0	0	0	0
Halifax School	0.00000000%	0	0	0	0	0
Hannaford Regional Tech SD	0.19823336%	3,361,026	1,437,786	4,402,305	3,361,026	2,499,762

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity 1% Decrease (6.00%) (4)	Current Discount Rate (7.00%) (5)	1% Increase (8.00%) (6)
Hardwick School	0.00000000%	0	0	0	0	0
Hartford School	2.22363790%	37,701,553	16,128,039	49,381,861	37,701,553	28,040,510
Hartland School	0.25807676%	4,375,665	1,871,830	5,731,289	4,375,665	3,254,399
Harwood Unified USD	2.23232258%	37,848,801	16,191,029	49,574,728	37,848,801	28,150,026
Harwood Union #19	0.00000000%	0	0	0	0	0
Hazen Union #26	0.28588113%	4,847,085	2,073,495	6,348,759	4,847,085	3,605,017
Highgate School	0.00000000%	0	0	0	0	0
Hinesburg School	0.00000000%	0	0	0	0	0
Holland School	0.00000000%	0	0	0	0	0
Huntington School	0.00000000%	0	0	0	0	0
Hyde Park School	0.00000000%	0	0	0	0	0
Irasburg School	0.00000000%	0	0	0	0	0
Isle Lamotte School	0.00000000%	0	0	0	0	0
Jamaica School	0.00000000%	0	0	0	0	0
Jay/Westfield School	0.08593068%	1,456,946	623,255	1,908,322	1,456,946	1,083,603
Johnson School	0.00000000%	0	0	0	0	0
Kingdom East Unified USD	1.49757817%	25,391,285	10,861,930	33,257,752	25,391,285	18,884,755
Lake Region Uhs #24	0.31777140%	5,387,782	2,304,795	7,056,969	5,387,782	4,007,160
Lake Region Union EMSD	0.60791987%	10,307,219	4,409,241	13,500,496	10,307,219	7,665,989
Lakeview Uhs #43	0.00000000%	0	0	0	0	0
Lamoille North Modified UUSD	1.35170496%	22,918,019	9,803,912	30,018,245	22,918,019	17,045,265
Lamoille North SU	0.31843692%	5,399,065	2,309,622	7,071,748	5,399,065	4,015,552
Lamoille So SU	0.00000000%	0	0	0	0	0
Lamoille South Unified USD	1.73687691%	29,448,571	12,597,563	38,572,024	29,448,571	21,902,359
Lamoille Uhs #18	0.00000000%	0	0	0	0	0
Leland & Gray Union #34	0.00000000%	0	0	0	0	0
Lincoln School	0.00000000%	0	0	0	0	0
Lowell School	0.08836071%	1,498,147	640,880	1,962,287	1,498,147	1,114,246
Ludlow Mt Holly Unified USD	0.22229942%	3,769,064	1,612,337	4,936,757	3,769,064	2,803,239
Ludlow School	0.00000000%	0	0	0	0	0
Lunenburg School	0.00000000%	0	0	0	0	0
Lyndon Institute	0.34670937%	5,878,422	2,514,682	7,699,614	5,878,422	4,372,073
Lyndon Town School	0.00000000%	0	0	0	0	0
Manchester School	0.00000000%	0	0	0	0	0
Maple Run Unified SD	3.14909313%	53,392,552	22,840,363	69,934,084	53,392,552	39,710,682
Marlboro School	0.10069741%	1,707,314	730,358	2,236,257	1,707,314	1,269,814
Mettawee SD	0.16480429%	2,794,240	1,195,325	3,659,923	2,794,240	2,078,214
Middlebury Id School	0.00000000%	0	0	0	0	0

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity: 1% Decrease (6.00%) (4)	Discount Rate Sensitivity: Current Discount Rate (7.00%) (5)	Discount Rate Sensitivity: 1% Increase (8.00%) (6)
Middlebury Union #3	0.00000000%	0	0	0	0	0
Middlesex School	0.00000000%	0	0	0	0	0
Middletown Springs School	0.00000000%	0	0	0	0	0
Mill River Unified USD	1.04023881%	17,637,143	7,544,849	23,101,301	17,637,143	13,117,615
Milton School	1.76889774%	29,991,480	12,829,810	39,283,132	29,991,480	22,306,148
Missisquoi Valley SD	1.95892925%	33,213,445	14,208,108	43,503,293	33,213,445	24,702,482
Missisquoi Valley Union #7	0.00000000%	0	0	0	0	0
Monkton School	0.00000000%	0	0	0	0	0
Montgomery School	0.00000000%	0	0	0	0	0
Montpelier Roxbury SD	1.37139116%	23,251,797	9,946,696	30,455,430	23,251,797	17,293,512
Montpelier School	0.00000000%	0	0	0	0	0
Moretown School	0.00000000%	0	0	0	0	0
Mount Ascutney SD	0.53930878%	9,143,925	3,911,605	11,976,802	9,143,925	6,800,790
Mountain Towns Regional SD	0.00000000%	0	0	0	0	0
Mt Abraham Unified SD	1.68733601%	28,608,610	12,238,243	37,471,835	28,608,610	21,277,638
Mt Abraham Union #28	0.00000000%	0	0	0	0	0
Mt Anthony Union #14	1.05493177%	17,886,260	7,651,417	23,427,598	17,886,260	13,302,897
Mt Holly School	0.00000000%	0	0	0	0	0
Mt Mansfield Unified USD	2.76519927%	46,883,671	20,055,982	61,408,688	46,883,671	34,869,705
New Haven School	0.00000000%	0	0	0	0	0
Newark School	0.00000000%	0	0	0	0	0
Newbrook Elementary School	0.00000000%	0	0	0	0	0
Newbury School	0.00000000%	0	0	0	0	0
Newport City School	0.29864868%	5,063,558	2,166,098	6,632,297	5,063,558	3,766,018
Newport Town School	0.09848825%	1,669,858	714,335	2,187,197	1,669,858	1,241,956
North Country Union #22	0.96923644%	16,433,305	7,029,869	21,524,502	16,433,305	12,222,262
North Hero School	0.00000000%	0	0	0	0	0
Northern Mountain Valley UUSD	0.57431969%	9,737,532	4,165,539	12,754,314	9,737,532	7,242,284
Northfield School	0.00000000%	0	0	0	0	0
Norwich School	0.39614024%	6,716,517	2,873,204	8,797,360	6,716,517	4,995,406
Orange East SU	0.40658020%	6,893,526	2,948,925	9,029,207	6,893,526	5,127,056
Orange North S. U.	0.00000000%	0	0	0	0	0
Orange School	0.00000000%	0	0	0	0	0
Orange SW SU	0.00000000%	0	0	0	0	0
Orange SW Unified USD	1.17989887%	20,005,065	8,557,803	26,202,828	20,005,065	14,878,756
Orleans Central SU	0.26303968%	4,459,811	1,907,826	5,841,504	4,459,811	3,316,982
Orleans Essex N SU	0.70614699%	11,972,650	5,121,682	15,681,893	11,972,650	8,904,652
Orleans Id School	0.00000000%	0	0	0	0	0

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity 1% Decrease (6.00%) (4)	Current Discount Rate (7.00%) (5)	1% Increase (8.00%) (6)
Orleans SW SU	0.35619979%	6,039,331	2,583,516	7,910,374	6,039,331	4,491,749
Orleans SW Union ESD	0.26412144%	4,478,152	1,915,672	5,865,527	4,478,152	3,330,623
Orwell School	0.00000000%	0	0	0	0	0
Otter Valley Unified USD	1.01385041%	17,189,730	7,353,454	22,515,276	17,189,730	12,784,853
Ox Bow Union #30	0.00000000%	0	0	0	0	0
Oxbow Unified USD	0.72585360%	12,306,774	5,264,614	16,119,532	12,306,774	9,153,156
Paine Mtn SD	0.80582151%	13,662,621	5,844,621	17,895,434	13,662,621	10,161,567
Peacham School	0.06483885%	1,099,336	470,276	1,439,921	1,099,336	817,631
Poultney School	0.00000000%	0	0	0	0	0
Pownal School	0.00000000%	0	0	0	0	0
Proctor School	0.00000000%	0	0	0	0	0
Prosper Valley School	0.00000000%	0	0	0	0	0
Putney School	0.00000000%	0	0	0	0	0
Quarry Valley Unified USD	0.95145345%	16,131,796	6,900,889	21,129,583	16,131,796	11,998,015
Randolph School	0.00000000%	0	0	0	0	0
Reading School	0.00000000%	0	0	0	0	0
Readsboro School	0.00000000%	0	0	0	0	0
Richford School	0.00000000%	0	0	0	0	0
Ripton School	0.00000000%	0	0	0	0	0
Rivendell Interstate School	0.42972526%	7,285,948	3,116,796	9,543,205	7,285,948	5,418,920
River Valley Technical Center	0.21626508%	3,666,752	1,568,570	4,802,748	3,666,752	2,727,145
River Valleys USD	0.15136212%	2,566,329	1,097,829	3,361,403	2,566,329	1,908,706
Rochester School	0.00000000%	0	0	0	0	0
Rochester Stockbridge Unified	0.14646663%	2,483,327	1,062,322	3,252,685	2,483,327	1,846,973
Rockingham School	0.43067066%	7,301,977	3,123,653	9,564,200	7,301,977	5,430,842
Roxbury School	0.00000000%	0	0	0	0	0
Royalton School	0.00000000%	0	0	0	0	0
Rutland Central SU	0.00000000%	0	0	0	0	0
Rutland City School	2.80545159%	47,566,145	20,347,932	62,302,599	47,566,145	35,377,295
Rutland Northeast SU	0.50841025%	8,620,044	3,687,498	11,290,617	8,620,044	6,411,153
Rutland South West SU	0.00000000%	0	0	0	0	0
Rutland Town School	0.32116103%	5,445,252	2,329,380	7,132,245	5,445,252	4,049,904
Salisbury School	0.00000000%	0	0	0	0	0
Shaftsbury School	0.00000000%	0	0	0	0	0
Sharon School	0.11383653%	1,930,087	825,656	2,528,046	1,930,087	1,435,501
Shelburne School	0.00000000%	0	0	0	0	0
Sheldon School	0.00000000%	0	0	0	0	0
Sherburne School	0.00000000%	0	0	0	0	0

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity 1% Decrease (6.00%) (4)	Discount Rate Sensitivity Current Discount Rate (7.00%) (5)	Discount Rate Sensitivity 1% Increase (8.00%) (6)
Shoreham School	0.00000000%	0	0	0	0	0
Slate Valley Unified USD	1.37936690%	23,387,025	10,004,544	30,632,552	23,387,025	17,394,087
South Burlington School	3.23665872%	54,877,218	23,475,476	71,878,713	54,877,218	40,814,901
South Hero School	0.13025002%	2,208,376	944,703	2,892,552	2,208,376	1,642,478
Southern Valley Unified USD	0.11995565%	2,033,836	870,038	2,663,938	2,033,836	1,512,664
Southwest Vt Regional Tech SD	0.16359237%	2,773,692	1,186,535	3,633,009	2,773,692	2,062,932
Southwest Vt SU	0.83306092%	14,124,463	6,042,188	18,500,359	14,124,463	10,505,062
Southwest Vt SU - Title I	0.23545811%	3,992,168	1,707,777	5,228,981	3,992,168	2,969,173
Southwest VT Union ESD	0.90036974%	15,265,677	6,530,379	19,995,132	15,265,677	11,353,839
Spaulding Uhs	0.00000000%	0	0	0	0	0
Springfield School	1.40232748%	23,776,319	10,171,077	31,142,454	23,776,319	17,683,625
St Albans City School	0.00000000%	0	0	0	0	0
St Albans Town School	0.00000000%	0	0	0	0	0
St Johnsbury Academy	0.75416369%	12,786,768	5,469,947	16,748,233	12,786,768	9,510,152
St Johnsbury School	0.76636306%	12,993,607	5,558,429	17,019,153	12,993,607	9,663,989
Stamford School	0.05195121%	880,827	376,802	1,153,716	880,827	655,115
Starksboro School	0.00000000%	0	0	0	0	0
Stockbridge School	0.00000000%	0	0	0	0	0
Stowe School	0.00000000%	0	0	0	0	0
Strafford School	0.11698599%	1,983,486	848,499	2,597,989	1,983,486	1,475,216
Sunderland School	0.00000000%	0	0	0	0	0
Sutton School	0.00000000%	0	0	0	0	0
Swanton School	0.00000000%	0	0	0	0	0
Taconic And Green Regional SD	0.91083148%	15,443,055	6,606,258	20,227,463	15,443,055	11,485,764
Thetford Academy	0.32634772%	5,533,192	2,366,999	7,247,429	5,533,192	4,115,309
Thetford School	0.20262396%	3,435,469	1,469,631	4,499,810	3,435,469	2,555,128
Townshend School	0.00000000%	0	0	0	0	0
Troy School	0.14080621%	2,387,355	1,021,267	3,126,981	2,387,355	1,775,594
Tunbridge School	0.00000000%	0	0	0	0	0
Twin Valley Unified USD	0.41409958%	7,021,016	3,003,463	9,196,195	7,021,016	5,221,877
Twinfield Union #33	0.34483552%	5,846,651	2,501,091	7,658,000	5,846,651	4,348,444
Two Rivers SU	0.29163779%	4,944,689	2,115,248	6,476,602	4,944,689	3,677,610
Union #23	0.00000000%	0	0	0	0	0
Union #27	0.32752544%	5,553,160	2,375,541	7,273,583	5,553,160	4,130,160
Union #29	0.00000000%	0	0	0	0	0
Union #32	0.00000000%	0	0	0	0	0
Union #36	0.21088414%	3,575,519	1,529,542	4,683,250	3,575,519	2,659,290
Union #37	0.00000000%	0	0	0	0	0

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity 1% Decrease (6.00%) (4)	Current Discount Rate (7.00%) (5)	1% Increase (8.00%) (6)
Union #39	0.00000000%	0	0	0	0	0
Union 22 Dresden	0.85043976%	14,419,119	6,168,237	18,886,302	14,419,119	10,724,212
Union District #47	0.00000000%	0	0	0	0	0
Union High #2	0.00000000%	0	0	0	0	0
Vac School	0.01981002%	335,877	143,682	439,935	335,877	249,808
Vergennes School	0.00000000%	0	0	0	0	0
Vergennes Union #5	0.00000000%	0	0	0	0	0
Vernon School	0.16223445%	2,750,669	1,176,686	3,602,852	2,750,669	2,045,808
Waitsfield School	0.00000000%	0	0	0	0	0
Walden School	0.00000000%	0	0	0	0	0
Wardsboro School	0.00000000%	0	0	0	0	0
Warren School	0.00000000%	0	0	0	0	0
Washington Central SU	0.00000000%	0	0	0	0	0
Washington Central Unified USD	1.95611745%	33,165,771	14,187,714	43,440,850	33,165,771	24,667,025
Washington NE SU	0.00000000%	0	0	0	0	0
Washington School	0.00000000%	0	0	0	0	0
Washington So SU	0.00000000%	0	0	0	0	0
Washington West SU	0.00000000%	0	0	0	0	0
Waterbury/Duxbury School	0.00000000%	0	0	0	0	0
Waterford School	0.00000000%	0	0	0	0	0
Waterville School	0.00000000%	0	0	0	0	0
Weathersfield School	0.18874929%	3,200,225	1,368,998	4,191,686	3,200,225	2,380,166
Wells School	0.00000000%	0	0	0	0	0
Wells Springs Unified USD	0.15461705%	2,621,516	1,121,437	3,433,687	2,621,516	1,949,751
West River Modified UED	0.49610623%	8,411,430	3,598,257	11,017,373	8,411,430	6,255,997
West Rutland School	0.00000000%	0	0	0	0	0
West Windsor School	0.00000000%	0	0	0	0	0
Westford School	0.00000000%	0	0	0	0	0
Westminster School	0.00000000%	0	0	0	0	0
Weybridge School	0.00000000%	0	0	0	0	0
White River Unified District	0.57933610%	9,822,584	4,201,923	12,865,716	9,822,584	7,305,542
White River Valley SU	0.27279730%	4,625,250	1,978,598	6,058,198	4,625,250	3,440,027
Williamstown Elem School	0.00000000%	0	0	0	0	0
Williamstown High School	0.00000000%	0	0	0	0	0
Williston School	0.00000000%	0	0	0	0	0
Windham Central	0.38030127%	6,447,969	2,758,324	8,445,613	6,447,969	4,795,674
Windham NE SU	0.57295077%	9,714,322	4,155,610	12,723,913	9,714,322	7,225,022
Windham NE Union ESD	0.20611038%	3,494,580	1,494,918	4,577,235	3,494,580	2,599,092

Section 3: Additional Information for GASB 68

Employer Name	Employer's Proportionate Share Allocation (1)	Net Pension Liability (2)	Allocable Employee Payroll (3)	Discount Rate Sensitivity: 1% Decrease (6.00%) (4)	Discount Rate Sensitivity: Current Discount Rate (7.00%) (5)	Discount Rate Sensitivity: 1% Increase (8.00%) (6)
Windham School	0.01240963%	210,404	90,007	275,589	210,404	156,488
Windham SE SD	2.23549948%	37,902,665	16,214,071	49,645,279	37,902,665	28,190,087
Windham SE SU	0.71972813%	12,202,917	5,220,186	15,983,499	12,202,917	9,075,913
Windham SW SU	0.18955061%	3,213,811	1,374,810	4,209,481	3,213,811	2,390,270
Windsor Central Modified UUSD	0.92615480%	15,702,860	6,717,398	20,567,759	15,702,860	11,678,994
Windsor Central SU	0.26442407%	4,483,283	1,917,867	5,872,248	4,483,283	3,334,439
Windsor School	0.00000000%	0	0	0	0	0
Windsor SE SU	0.29491162%	5,000,196	2,138,993	6,549,306	5,000,196	3,718,893
Winooski School	1.17755474%	19,965,320	8,540,801	26,150,771	19,965,320	14,849,196
Wolcott School	0.10939188%	1,854,728	793,419	2,429,341	1,854,728	1,379,453
Woodbury School	0.00000000%	0	0	0	0	0
Woodford School	0.00000000%	0	0	0	0	0
Woodstock School	0.00000000%	0	0	0	0	0
Woodstock Union #4	0.00000000%	0	0	0	0	0
Worcester School	0.00000000%	0	0	0	0	0
Grand Totals:	100.00000000%	$1,695,489,780	$725,299,700	$2,220,768,990	$1,695,489,780	$1,261,019,618

Note: Columns may not foot due to rounding.

Employer Name	Schedule of Contributions: Statutory Required Contribution (7)	Contributions In Relation to the Statutory Required Contribution (8)	Contribution Deficiency/ (Excess) (9)	Contributions as a Percentage of Allocable Payroll (10)	Pension Expense: Proportionate Share of Plan Pension Expense (11)	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (12)	Total Employer Pension Expense (13)
Addison Central SU	$0	$0	$0	0.00%	$0	($1,614,820)	($1,614,820)
Addison Central Unified USD	2,637,631	(2,637,631)	0	17.36%	4,324,819	6,567,673	10,892,492
Addison NE SU	0	0	0	0.00%	0	(1,203,685)	(1,203,685)
Addison Northwest SU	0	0	0	0.00%	0	(1,049,625)	(1,049,625)
Addison NW Unified USD	1,323,092	(1,323,092)	0	17.36%	2,169,422	3,298,293	5,467,715
Addison Rutland SU	0	0	0	0.00%	0	(1,325,679)	(1,325,679)
Addison School	0	0	0	0.00%	0	(237,681)	(237,681)
Albany School	0	0	0	0.00%	0	(286,693)	(286,693)
Alburg School	222,580	(222,580)	0	17.36%	364,956	35,105	400,061
Arlington School	585,633	(585,633)	0	17.36%	960,240	(228,754)	731,486
Bakersfield School	0	0	0	0.00%	0	(401,775)	(401,775)
Barnard School	0	0	0	0.00%	0	(176,760)	(176,760)
Barnet School	0	0	0	0.00%	0	(631,295)	(631,295)
Barre City School	0	0	0	0.00%	0	(2,379,068)	(2,379,068)
Barre SU	0	0	0	0.00%	0	(1,842,755)	(1,842,755)
Barre Town School	0	0	0	0.00%	0	(2,024,561)	(2,024,561)
Barre Unified USD	3,251,765	(3,251,765)	0	17.36%	5,331,790	9,390,585	14,722,375
Barstow Unified USD	218,114	(218,114)	0	17.36%	357,633	(99,933)	257,700
Barton School	0	0	0	0.00%	0	(487,035)	(487,035)
Bellows Free Academy	0	0	0	0.00%	0	(3,448,495)	(3,448,495)
Bennington School	0	0	0	0.00%	0	(1,985,426)	(1,985,426)
Bennington-Rutland SU	678,252	(678,252)	0	17.36%	1,112,103	270,240	1,382,343
Benson School	0	0	0	0.00%	0	(233,749)	(233,749)
Berkshire School	0	0	0	0.00%	0	(463,813)	(463,813)
Berlin School	0	0	0	0.00%	0	(687,403)	(687,403)
Bethel School	0	0	0	0.00%	0	(929,308)	(929,308)
Blue Mtn Union #21	470,729	(470,729)	0	17.36%	771,836	(394,511)	377,325
Bradford School	0	0	0	0.00%	0	(724,336)	(724,336)
Braintree School	0	0	0	0.00%	0	(192,900)	(192,900)
Brattleboro Town School	0	0	0	0.00%	0	(2,576,590)	(2,576,590)
Brattleboro Union #6	0	0	0	0.00%	0	(3,937,771)	(3,937,771)
Bridport School	0	0	0	0.00%	0	(262,735)	(262,735)

Employer Name	Schedule of Contributions: Statutory Required Contribution (7)	Contributions In Relation to the Statutory Required Contribution (8)	Contribution Deficiency/ (Excess) (9)	Contributions as a Percentage of Allocable Payroll (10)	Pension Expense: Proportionate Share of Plan Pension Expense (11)	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (12)	Total Employer Pension Expense (13)
Brighton School	136,233	(136,233)	0	17.36%	223,375	36,298	259,673
Bristol School	0	0	0	0.00%	0	(861,342)	(861,342)
Brookfield School	0	0	0	0.00%	0	(154,149)	(154,149)
Brownington School	0	0	0	0.00%	0	(315,119)	(315,119)
Burke School	0	0	0	0.00%	0	(577,212)	(577,212)
Burlington School	5,929,172	(5,929,172)	0	17.36%	9,721,828	496,655	10,218,483
Burr & Burton Seminary	955,466	(955,466)	0	17.36%	1,566,640	(37,098)	1,529,542
Cabot School	230,915	(230,915)	0	17.36%	378,623	(14,265)	364,358
Calais School	0	0	0	0.00%	0	(432,991)	(432,991)
Caledonia Cooperative SD	556,377	(556,377)	0	17.36%	912,269	1,519,237	2,431,506
Caledonia -Fed	442,952	(442,952)	0	17.36%	726,290	610,200	1,336,490
Caledonia North SU	0	0	0	0.00%	0	(974,265)	(974,265)
Cambridge School	293,588	(293,588)	0	17.36%	481,385	(75,715)	405,670
Canaan School	322,001	(322,001)	0	17.36%	527,972	81,851	609,823
Castleton/Hubbardton SD 42	0	0	0	0.00%	0	(938,151)	(938,151)
Cavendish School	0	0	0	0.00%	0	(302,470)	(302,470)
Central VT SU	452,363	(452,363)	0	17.36%	741,721	1,217,197	1,958,918
Champlain Islands Unified USD	261,763	(261,763)	0	17.36%	429,203	784,674	1,213,877
Champlain Valley SD	6,253,217	(6,253,217)	0	17.36%	10,253,151	15,484,736	25,737,887
Champlain Valley Union #15	0	0	0	0.00%	0	(3,700,868)	(3,700,868)
Charleston School	153,780	(153,780)	0	17.36%	252,147	37,785	289,932
Charlotte School	0	0	0	0.00%	0	(1,252,141)	(1,252,141)
Chelsea School	0	0	0	0.00%	0	(595,374)	(595,374)
Chittenden Central SU	0	0	0	0.00%	0	(198,889)	(198,889)
Chittenden East SU	0	0	0	0.00%	0	(2,503,845)	(2,503,845)
Chittenden South SU	0	0	0	0.00%	0	(3,498,768)	(3,498,768)
Colchester School	3,205,847	(3,205,847)	0	17.36%	5,256,500	343,502	5,600,002
Concord School	0	0	0	0.00%	0	(404,116)	(404,116)
Cornwall School	0	0	0	0.00%	0	(290,098)	(290,098)
Coventry School	145,143	(145,143)	0	17.36%	237,986	47,341	285,327
Craftsbury School	190,661	(190,661)	0	17.36%	312,620	(7,982)	304,638
Danville School	422,871	(422,871)	0	17.36%	693,365	112,079	805,444
Dept Of Education	16,761	(16,761)	0	17.36%	27,483	(38,597)	(11,114)

Employer Name	Schedule of Contributions: Statutory Required Contribution (7)	Contributions In Relation to the Statutory Required Contribution (8)	Contribution Deficiency/ (Excess) (9)	Contributions as a Percentage of Allocable Payroll (10)	Pension Expense: Proportionate Share of Plan Pension Expense (11)	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (12)	Total Employer Pension Expense (13)
Dept Of Social & Rehab Serv	0	0	0	0.00%	0	(15,498)	(15,498)
Derby School	371,016	(371,016)	0	17.36%	608,341	(47,198)	561,143
Dorset School	0	0	0	0.00%	0	(623,219)	(623,219)
Dover School	0	0	0	0.00%	0	(349,925)	(349,925)
Dummerston School	0	0	0	0.00%	0	(625,480)	(625,480)
East Montpelier School	0	0	0	0.00%	0	(718,584)	(718,584)
Echo Valley Community SD	172,841	(172,841)	0	17.36%	283,401	459,149	742,550
Eden School	0	0	0	0.00%	0	(384,586)	(384,586)
Elmore Morristown Unified USD	0	0	0	0.00%	0	(2,667,166)	(2,667,166)
Enosburg School	0	0	0	0.00%	0	(2,147,217)	(2,147,217)
Enosburgh Richford Unified USD	1,168,199	(1,168,199)	0	17.36%	1,915,449	3,349,802	5,265,251
Essex Caledonia SU	0	0	0	0.00%	0	(629,079)	(629,079)
Essex Comm. Ed # 46	0	0	0	0.00%	0	(6,381,149)	(6,381,149)
Essex Jct Id School	0	0	0	0.00%	0	(3,967,258)	(3,967,258)
Essex Town School	0	0	0	0.00%	0	(4,842,319)	(4,842,319)
Essex Westford Ed Com UUSD	6,496,152	(6,496,152)	0	17.36%	10,651,482	16,088,770	26,740,252
Fair Haven School	0	0	0	0.00%	0	(928,596)	(928,596)
Fair Haven Union #16	0	0	0	0.00%	0	(1,343,974)	(1,343,974)
Fairfax School	901,857	(901,857)	0	17.36%	1,478,740	172,985	1,651,725
Fairfield School	0	0	0	0.00%	0	(586,683)	(586,683)
Fayston School	0	0	0	0.00%	0	(356,308)	(356,308)
Ferrisburg School	0	0	0	0.00%	0	(490,956)	(490,956)
First Branch Unified SD	327,341	(327,341)	0	17.36%	536,727	882,466	1,419,193
Fletcher School	130,221	(130,221)	0	17.36%	213,519	(83,033)	130,486
Franklin Ctl SU - Spec Ed	0	0	0	0.00%	0	(2,266,583)	(2,266,583)
Franklin Esea	575,358	(575,358)	0	17.36%	943,391	235,892	1,179,283
Franklin NW SU	0	0	0	0.00%	0	(1,944,138)	(1,944,138)
Franklin School	0	0	0	0.00%	0	(304,624)	(304,624)
Franklin West SU	390,421	(390,421)	0	17.36%	640,157	70,902	711,059
Georgia School	679,997	(679,997)	0	17.36%	1,114,965	15,321	1,130,286
Glover School	0	0	0	0.00%	0	(343,793)	(343,793)
Grafton School	0	0	0	0.00%	0	(304,004)	(304,004)
Grand Isle School	0	0	0	0.00%	0	(611,471)	(611,471)

Employer Name	Schedule of Contributions: Statutory Required Contribution (7)	Contributions In Relation to the Statutory Required Contribution (8)	Contribution Deficiency/ (Excess) (9)	Contributions as a Percentage of Allocable Payroll (10)	Pension Expense: Proportionate Share of Plan Pension Expense (11)	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (12)	Total Employer Pension Expense (13)
Grand Isle SU	217,361	(217,361)	0	17.36%	356,399	21,431	377,830
Greater Rutland County SU	539,816	(539,816)	0	17.36%	885,115	1,450,297	2,335,412
Green Mtn Uhs Union #35	0	0	0	0.00%	0	(1,020,721)	(1,020,721)
Green Mtn USD	726,797	(726,797)	0	17.36%	1,191,700	1,938,412	3,130,112
Guilford School	0	0	0	0.00%	0	(496,552)	(496,552)
Halifax School	0	0	0	0.00%	0	(145,470)	(145,470)
Hannaford Regional Tech SD	249,597	(249,597)	0	17.36%	409,254	(5,982)	403,272
Hardwick School	0	0	0	0.00%	0	(663,750)	(663,750)
Hartford School	2,799,793	(2,799,793)	0	17.36%	4,590,709	(49,307)	4,541,402
Hartland School	324,946	(324,946)	0	17.36%	532,800	(42,542)	490,258
Harwood Unified USD	2,810,728	(2,810,728)	0	17.36%	4,608,638	6,983,944	11,592,582
Harwood Union #19	0	0	0	0.00%	0	(2,135,424)	(2,135,424)
Hazen Union #26	359,954	(359,954)	0	17.36%	590,203	(79,519)	510,684
Highgate School	0	0	0	0.00%	0	(977,957)	(977,957)
Hinesburg School	0	0	0	0.00%	0	(1,407,343)	(1,407,343)
Holland School	0	0	0	0.00%	0	(149,913)	(149,913)
Huntington School	0	0	0	0.00%	0	(352,050)	(352,050)
Hyde Park School	0	0	0	0.00%	0	(528,533)	(528,533)
Irasburg School	0	0	0	0.00%	0	(364,606)	(364,606)
Isle Lamotte School	0	0	0	0.00%	0	(118,299)	(118,299)
Jamaica School	0	0	0	0.00%	0	(208,097)	(208,097)
Jay/Westfield School	108,196	(108,196)	0	17.36%	177,404	36,881	214,285
Johnson School	0	0	0	0.00%	0	(575,306)	(575,306)
Kingdom East Unified USD	1,885,608	(1,885,608)	0	17.36%	3,091,756	5,003,543	8,095,299
Lake Region Uhs #24	400,107	(400,107)	0	17.36%	656,040	16,371	672,411
Lake Region Union EMSD	765,435	(765,435)	0	17.36%	1,255,053	2,163,671	3,418,724
Lakeview Uhs #43	0	0	0	0.00%	0	(244,766)	(244,766)
Lamoille North Modified UUSD	1,701,938	(1,701,938)	0	17.36%	2,790,600	4,246,036	7,036,636
Lamoille North SU	400,945	(400,945)	0	17.36%	657,414	(5,960)	651,454
Lamoille So SU	0	0	0	0.00%	0	(1,063,499)	(1,063,499)
Lamoille South Unified USD	2,186,910	(2,186,910)	0	17.36%	3,585,789	6,305,800	9,891,589
Lamoille Uhs #18	0	0	0	0.00%	0	(2,530,092)	(2,530,092)
Leland & Gray Union #34	0	0	0	0.00%	0	(1,212,982)	(1,212,982)

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Employer Name	Schedule of Contributions: Statutory Required Contribution (7)	Contributions In Relation to the Statutory Required Contribution (8)	Contribution Deficiency/ (Excess) (9)	Contributions as a Percentage of Allocable Payroll (10)	Pension Expense: Proportionate Share of Plan Pension Expense (11)	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (12)	Total Employer Pension Expense (13)
Lincoln School	0	0	0	0.00%	0	(366,646)	(366,646)
Lowell School	111,255	(111,255)	0	17.36%	182,421	(68,406)	114,015
Ludlow Mt Holly Unified USD	279,898	(279,898)	0	17.36%	458,938	830,135	1,289,073
Ludlow School	0	0	0	0.00%	0	(388,727)	(388,727)
Lunenburg School	0	0	0	0.00%	0	(282,870)	(282,870)
Lyndon Institute	436,543	(436,543)	0	17.36%	715,783	(158,051)	557,732
Lyndon Town School	0	0	0	0.00%	0	(1,244,331)	(1,244,331)
Manchester School	0	0	0	0.00%	0	(1,294,818)	(1,294,818)
Maple Run Unified SD	3,965,038	(3,965,038)	0	17.36%	6,501,314	9,860,828	16,362,142
Marlboro School	126,789	(126,789)	0	17.36%	207,890	(826)	207,064
Mettawee SD	207,506	(207,506)	0	17.36%	340,239	557,167	897,406
Middlebury Id School	0	0	0	0.00%	0	(1,108,045)	(1,108,045)
Middlebury Union #3	0	0	0	0.00%	0	(2,757,313)	(2,757,313)
Middlesex School	0	0	0	0.00%	0	(573,107)	(573,107)
Middletown Springs School	0	0	0	0.00%	0	(220,038)	(220,038)
Mill River Unified USD	1,309,770	(1,309,770)	0	17.36%	2,147,577	(228,925)	1,918,652
Milton School	2,227,227	(2,227,227)	0	17.36%	3,651,896	96,304	3,748,200
Missisquoi Valley SD	2,466,497	(2,466,497)	0	17.36%	4,044,217	7,108,933	11,153,150
Missisquoi Valley Union #7	0	0	0	0.00%	0	(2,681,205)	(2,681,205)
Monkton School	0	0	0	0.00%	0	(458,150)	(458,150)
Montgomery School	0	0	0	0.00%	0	(319,607)	(319,607)
Montpelier Roxbury SD	1,726,725	(1,726,725)	0	17.36%	2,831,242	4,574,948	7,406,190
Montpelier School	0	0	0	0.00%	0	(3,846,758)	(3,846,758)
Moretown School	0	0	0	0.00%	0	(380,144)	(380,144)
Mount Ascutney SD	679,046	(679,046)	0	17.36%	1,113,405	1,950,367	3,063,772
Mountain Towns Regional SD	0	0	0	0.00%	0	(899,624)	(899,624)
Mt Abraham Unified SD	2,124,533	(2,124,533)	0	17.36%	3,483,511	5,700,326	9,183,837
Mt Abraham Union #28	0	0	0	0.00%	0	(2,257,283)	(2,257,283)
Mt Anthony Union #14	1,328,269	(1,328,269)	0	17.36%	2,177,911	(375,972)	1,801,939
Mt Holly School	0	0	0	0.00%	0	(321,411)	(321,411)
Mt Mansfield Unified USD	3,481,675	(3,481,675)	0	17.36%	5,708,764	2,684,144	8,392,908
New Haven School	0	0	0	0.00%	0	(322,065)	(322,065)
Newark School	0	0	0	0.00%	0	(194,585)	(194,585)

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Newbrook Elementary School	0	0	0	0.00%	0	(330,537)	(330,537)
Newbury School	0	0	0	0.00%	0	(411,721)	(411,721)
Newport City School	376,030	(376,030)	0	17.36%	616,561	108,317	724,878
Newport Town School	124,007	(124,007)	0	17.36%	203,329	(8,628)	194,701
North Country Union #22	1,220,370	(1,220,370)	0	17.36%	2,000,992	(51,810)	1,949,182
North Hero School	0	0	0	0.00%	0	(174,645)	(174,645)
Northern Mountain Valley UUSD	723,129	(723,129)	0	17.36%	1,185,685	2,075,892	3,261,577
Northfield School	0	0	0	0.00%	0	(1,671,800)	(1,671,800)
Norwich School	498,782	(498,782)	0	17.36%	817,833	55,631	873,464
Orange East SU	511,927	(511,927)	0	17.36%	839,386	660,373	1,499,759
Orange North S. U.	0	0	0	0.00%	0	(589,567)	(589,567)
Orange School	0	0	0	0.00%	0	(332,710)	(332,710)
Orange SW SU	0	0	0	0.00%	0	(804,335)	(804,335)
Orange SW Unified USD	1,485,616	(1,485,616)	0	17.36%	2,435,906	3,723,198	6,159,104
Orleans Central SU	331,194	(331,194)	0	17.36%	543,046	(34,724)	508,322
Orleans Essex N SU	889,113	(889,113)	0	17.36%	1,457,843	270,640	1,728,483
Orleans Id School	0	0	0	0.00%	0	(313,998)	(313,998)
Orleans SW SU	448,493	(448,493)	0	17.36%	735,376	16,773	752,149
Orleans SW Union ESD	332,557	(332,557)	0	17.36%	545,280	970,137	1,515,417
Orwell School	0	0	0	0.00%	0	(354,414)	(354,414)
Otter Valley Unified USD	1,276,544	(1,276,544)	0	17.36%	2,093,098	(316,738)	1,776,360
Ox Bow Union #30	0	0	0	0.00%	0	(1,583,383)	(1,583,383)
Oxbow Unified USD	913,926	(913,926)	0	17.36%	1,498,527	2,586,898	4,085,425
Paine Mtn SD	1,014,614	(1,014,614)	0	17.36%	1,663,621	2,718,017	4,381,638
Peacham School	81,639	(81,639)	0	17.36%	133,860	31,295	165,155
Poultney School	0	0	0	0.00%	0	(1,261,927)	(1,261,927)
Pownal School	0	0	0	0.00%	0	(737,533)	(737,533)
Proctor School	0	0	0	0.00%	0	(889,410)	(889,410)
Prosper Valley School	0	0	0	0.00%	0	(310,709)	(310,709)
Putney School	0	0	0	0.00%	0	(654,030)	(654,030)
Quarry Valley Unified USD	1,197,979	(1,197,979)	0	17.36%	1,964,279	3,275,549	5,239,828
Randolph School	0	0	0	0.00%	0	(681,648)	(681,648)
Reading School	0	0	0	0.00%	0	(185,138)	(185,138)

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Readsboro School	0	0	0	0.00%	0	(179,465)	(179,465)
Richford School	0	0	0	0.00%	0	(1,148,700)	(1,148,700)
Ripton School	0	0	0	0.00%	0	(157,908)	(157,908)
Rivendell Interstate School	541,069	(541,069)	0	17.36%	887,169	38,598	925,767
River Valley Technical Center	272,300	(272,300)	0	17.36%	446,480	6,143	452,623
River Valleys USD	190,581	(190,581)	0	17.36%	312,488	548,097	860,585
Rochester School	0	0	0	0.00%	0	(532,403)	(532,403)
Rochester Stockbridge Unified	184,417	(184,417)	0	17.36%	302,381	486,562	788,943
Rockingham School	542,259	(542,259)	0	17.36%	889,121	(122,985)	766,136
Roxbury School	0	0	0	0.00%	0	(167,630)	(167,630)
Royalton School	0	0	0	0.00%	0	(1,030,870)	(1,030,870)
Rutland Central SU	0	0	0	0.00%	0	(975,138)	(975,138)
Rutland City School	3,532,357	(3,532,357)	0	17.36%	5,791,865	658,871	6,450,736
Rutland Northeast SU	640,142	(640,142)	0	17.36%	1,049,615	146,769	1,196,384
Rutland South West SU	0	0	0	0.00%	0	(588,385)	(588,385)
Rutland Town School	404,375	(404,375)	0	17.36%	663,038	45,307	708,345
Salisbury School	0	0	0	0.00%	0	(362,186)	(362,186)
Shaftsbury School	0	0	0	0.00%	0	(646,492)	(646,492)
Sharon School	143,332	(143,332)	0	17.36%	235,016	(33,060)	201,956
Shelburne School	0	0	0	0.00%	0	(2,080,127)	(2,080,127)
Sheldon School	0	0	0	0.00%	0	(822,632)	(822,632)
Sherburne School	0	0	0	0.00%	0	(351,838)	(351,838)
Shoreham School	0	0	0	0.00%	0	(271,185)	(271,185)
Slate Valley Unified USD	1,736,767	(1,736,767)	0	17.36%	2,847,708	4,803,930	7,651,638
South Burlington School	4,075,292	(4,075,292)	0	17.36%	6,682,094	136,051	6,818,145
South Hero School	163,998	(163,998)	0	17.36%	268,902	44,742	313,644
Southern Valley Unified USD	151,037	(151,037)	0	17.36%	247,649	388,416	636,065
Southwest Vt Regional Tech SD	205,980	(205,980)	0	17.36%	337,737	(17,193)	320,544
Southwest Vt SU	1,048,911	(1,048,911)	0	17.36%	1,719,857	(150,404)	1,569,453
Southwest Vt SU - Title I	296,466	(296,466)	0	17.36%	486,104	(62,669)	423,435
Southwest VT Union ESD	1,133,660	(1,133,660)	0	17.36%	1,858,817	3,305,472	5,164,289
Spaulding Uhs	0	0	0	0.00%	0	(2,611,980)	(2,611,980)
Springfield School	1,765,677	(1,765,677)	0	17.36%	2,895,110	7,153	2,902,263

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St Albans City School	0	0	0	0.00%	0	(2,042,748)	(2,042,748)
St Albans Town School	0	0	0	0.00%	0	(1,877,573)	(1,877,573)
St Johnsbury Academy	949,571	(949,571)	0	17.36%	1,556,974	(234,239)	1,322,735
St Johnsbury School	964,931	(964,931)	0	17.36%	1,582,159	111,727	1,693,886
Stamford School	65,412	(65,412)	0	17.36%	107,253	(2,124)	105,129
Starksboro School	0	0	0	0.00%	0	(551,239)	(551,239)
Stockbridge School	0	0	0	0.00%	0	(168,218)	(168,218)
Stowe School	0	0	0	0.00%	0	(2,525,934)	(2,525,934)
Strafford School	147,298	(147,298)	0	17.36%	241,518	4,488	246,006
Sunderland School	0	0	0	0.00%	0	(260,586)	(260,586)
Sutton School	0	0	0	0.00%	0	(305,662)	(305,662)
Swanton School	0	0	0	0.00%	0	(1,562,262)	(1,562,262)
Taconic And Green Regional SD	1,146,832	(1,146,832)	0	17.36%	1,880,415	3,073,171	4,953,586
Thetford Academy	410,906	(410,906)	0	17.36%	673,746	(185,197)	488,549
Thetford School	255,125	(255,125)	0	17.36%	418,318	(126,720)	291,598
Townshend School	0	0	0	0.00%	0	(241,227)	(241,227)
Troy School	177,290	(177,290)	0	17.36%	290,695	(12,842)	277,853
Tunbridge School	0	0	0	0.00%	0	(427,329)	(427,329)
Twin Valley Unified USD	521,395	(521,395)	0	17.36%	854,910	(249,163)	605,747
Twinfield Union #33	434,184	(434,184)	0	17.36%	711,914	(135,879)	576,035
Two Rivers SU	367,202	(367,202)	0	17.36%	602,087	(95,749)	506,338
Union #23	0	0	0	0.00%	0	(309,425)	(309,425)
Union #27	412,389	(412,389)	0	17.36%	676,177	17,544	693,721
Union #29	0	0	0	0.00%	0	(603,578)	(603,578)
Union #32	0	0	0	0.00%	0	(2,615,597)	(2,615,597)
Union #36	265,525	(265,525)	0	17.36%	435,371	(89,475)	345,896
Union #37	0	0	0	0.00%	0	(312,812)	(312,812)
Union #39	0	0	0	0.00%	0	(579,218)	(579,218)
Union 22 Dresden	1,070,793	(1,070,793)	0	17.36%	1,755,736	27,182	1,782,918
Union District #47	0	0	0	0.00%	0	(576,269)	(576,269)
Union High #2	0	0	0	0.00%	0	(1,679,350)	(1,679,350)
Vac School	24,943	(24,943)	0	17.36%	40,898	(19,849)	21,049
Vergennes School	0	0	0	0.00%	0	(612,562)	(612,562)

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Vergennes Union #5	0	0	0	0.00%	0	(1,227,037)	(1,227,037)
Vernon School	204,270	(204,270)	0	17.36%	334,934	356	335,290
Waitsfield School	0	0	0	0.00%	0	(415,173)	(415,173)
Walden School	0	0	0	0.00%	0	(277,889)	(277,889)
Wardsboro School	0	0	0	0.00%	0	(163,647)	(163,647)
Warren School	0	0	0	0.00%	0	(441,342)	(441,342)
Washington Central SU	0	0	0	0.00%	0	(1,322,747)	(1,322,747)
Washington Central Unified USD	2,462,957	(2,462,957)	0	17.36%	4,038,412	6,955,070	10,993,482
Washington NE SU	0	0	0	0.00%	0	(504,208)	(504,208)
Washington School	0	0	0	0.00%	0	(266,299)	(266,299)
Washington So SU	0	0	0	0.00%	0	(421,587)	(421,587)
Washington West SU	0	0	0	0.00%	0	(1,371,331)	(1,371,331)
Waterbury/Duxbury School	0	0	0	0.00%	0	(1,873,999)	(1,873,999)
Waterford School	0	0	0	0.00%	0	(348,538)	(348,538)
Waterville School	0	0	0	0.00%	0	(227,818)	(227,818)
Weathersfield School	237,655	(237,655)	0	17.36%	389,674	12,047	401,721
Wells School	0	0	0	0.00%	0	(293,493)	(293,493)
Wells Springs Unified USD	194,679	(194,679)	0	17.36%	319,207	530,857	850,064
West River Modified UED	624,650	(624,650)	0	17.36%	1,024,213	1,792,775	2,816,988
West Rutland School	0	0	0	0.00%	0	(1,105,977)	(1,105,977)
West Windsor School	0	0	0	0.00%	0	(304,740)	(304,740)
Westford School	0	0	0	0.00%	0	(679,358)	(679,358)
Westminster School	0	0	0	0.00%	0	(631,380)	(631,380)
Weybridge School	0	0	0	0.00%	0	(201,269)	(201,269)
White River Unified District	729,445	(729,445)	0	17.36%	1,196,042	1,973,698	3,169,740
White River Valley SU	343,480	(343,480)	0	17.36%	563,191	127,194	690,385
Williamstown Elem School	0	0	0	0.00%	0	(537,249)	(537,249)
Williamstown High School	0	0	0	0.00%	0	(728,829)	(728,829)
Williston School	0	0	0	0.00%	0	(2,919,197)	(2,919,197)
Windham Central	478,839	(478,839)	0	17.36%	785,133	384,034	1,169,167
Windham NE SU	721,405	(721,405)	0	17.36%	1,182,859	208,538	1,391,397
Windham NE Union ESD	259,515	(259,515)	0	17.36%	425,516	770,757	1,196,273
Windham School	15,625	(15,625)	0	17.36%	25,620	(19,629)	5,991

Employer Name	Schedule of Contributions: Statutory Required Contribution (7)	Contributions In Relation to the Statutory Required Contribution (8)	Contribution Deficiency/ (Excess) (9)	Contributions as a Percentage of Allocable Payroll (10)	Pension Expense: Proportionate Share of Plan Pension Expense (11)	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (12)	Total Employer Pension Expense (13)
Windham SE SD	2,814,728	(2,814,728)	0	17.36%	4,615,197	8,109,522	12,724,719
Windham SE SU	906,213	(906,213)	0	17.36%	1,485,881	4,107	1,489,988
Windham SW SU	238,664	(238,664)	0	17.36%	391,328	18,925	410,253
Windsor Central Modified UUSD	1,166,126	(1,166,126)	0	17.36%	1,912,050	3,046,880	4,958,930
Windsor Central SU	332,938	(332,938)	0	17.36%	545,904	211,725	757,629
Windsor School	0	0	0	0.00%	0	(1,600,682)	(1,600,682)
Windsor SE SU	371,325	(371,325)	0	17.36%	608,846	242,294	851,140
Winooski School	1,482,665	(1,482,665)	0	17.36%	2,431,066	429,454	2,860,520
Wolcott School	137,736	(137,736)	0	17.36%	225,840	27,572	253,412
Woodbury School	0	0	0	0.00%	0	(118,353)	(118,353)
Woodford School	0	0	0	0.00%	0	(111,708)	(111,708)
Woodstock School	0	0	0	0.00%	0	(593,209)	(593,209)
Woodstock Union #4	0	0	0	0.00%	0	(1,814,112)	(1,814,112)
Worcester School	0	0	0	0.00%	0	(299,726)	(299,726)
Grand Totals:	$125,910,465	($125,910,465)	$0	17.36%	$206,450,369	$0	$206,450,369

Note: Columns may not foot due to rounding.

Employer Name	Deferred Outflows of Resources: Differences Between Expected and Actual Experience (14)	Deferred Outflows of Resources: Changes of Assumptions (15)	Deferred Outflows of Resources: Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (16)	Deferred Outflows of Resources: Total Deferred Outflows of Resources (17)	Deferred Inflows of Resources: Differences Between Expected and Actual Experience (18)	Deferred Inflows of Resources: Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments (19)	Deferred Inflows of Resources: Changes of Assumptions (20)	Deferred Inflows of Resources: Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (21)	Deferred Inflows of Resources: Total Deferred Inflows of Resources (22)
Addison Central SU	$0	$0	$0	$0	$0	$0	$0	$0	$0
Addison Central Unified USD	2,020,585	3,257,147	335,170	5,612,902	0	5,346,548	0	778,660	6,125,208
Addison NE SU	0	0	0	0	0	0	0	1,295,319	1,295,319
Addison Northwest SU	0	0	0	0	0	0	0	0	0
Addison NW Unified USD	1,013,569	1,633,855	84,719	2,732,143	0	2,681,943	0	1,632,053	4,313,996
Addison Rutland SU	0	0	222,407	222,407	0	0	0	3,341,602	3,341,602
Addison School	0	0	0	0	0	0	0	1,202	1,202
Albany School	0	0	2,060	2,060	0	0	0	463,638	463,638
Alburg School	170,510	274,859	74,412	519,781	0	451,176	0	23,925	475,101
Arlington School	448,631	723,185	0	1,171,816	0	1,187,094	0	387,439	1,574,533
Bakersfield School	0	0	0	0	0	0	0	753,150	753,150
Barnard School	0	0	14,162	14,162	0	0	0	1,008,095	1,008,095
Barnet School	0	0	0	0	0	0	0	637,914	637,914
Barre City School	0	0	75,877	75,877	0	0	0	4,923,972	4,923,972
Barre SU	0	0	104,624	104,624	0	0	0	4,109,452	4,109,452
Barre Town School	0	0	10,253	10,253	0	0	0	4,145,318	4,145,318
Barre Unified USD	2,491,049	4,015,527	18,975,554	25,482,130	0	6,591,414	0	485,970	7,077,384
Barstow Unified USD	167,089	269,344	163,780	600,213	0	442,123	0	74,492	516,615
Barton School	0	0	0	0	0	0	0	752,555	752,555
Bellows Free Academy	0	0	0	0	0	0	0	0	0
Bennington School	0	0	39,055	39,055	0	0	0	3,933,030	3,933,030
Bennington-Rutland SU	519,582	837,557	235,943	1,593,082	0	1,374,835	0	229,404	1,604,239
Benson School	0	0	0	0	0	0	0	231,585	231,585
Berkshire School	0	0	17,907	17,907	0	0	0	995,026	995,026
Berlin School	0	0	3,978	3,978	0	0	0	1,366,234	1,366,234
Bethel School	0	0	0	0	0	0	0	934,531	934,531
Blue Mtn Union #21	360,607	581,292	0	941,899	0	954,181	0	891,606	1,845,787
Bradford School	0	0	0	0	0	0	0	1,497,597	1,497,597
Braintree School	0	0	0	0	0	0	0	0	0
Brattleboro Town School	0	0	9,531	9,531	0	0	0	5,180,992	5,180,992

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Brattleboro Union #6	0	0	22,657	22,657	0	0	0	7,985,829	7,985,829
Bridport School	0	0	0	0	0	0	0	0	0
Brighton School	104,362	168,230	157,186	429,778	0	276,147	0	21,751	297,898
Bristol School	0	0	0	0	0	0	0	750,986	750,986
Brookfield School	0	0	0	0	0	0	0	0	0
Brownington School	0	0	9,684	9,684	0	0	0	627,330	627,330
Burke School	0	0	0	0	0	0	0	593,052	593,052
Burlington School	4,542,104	7,321,792	1,835,575	13,699,471	0	12,018,588	0	0	12,018,588
Burr & Burton Seminary	731,945	1,179,882	156,894	2,068,721	0	1,936,755	0	562,923	2,499,678
Cabot School	176,895	285,152	97,082	559,129	0	468,071	0	223,885	691,956
Calais School	0	0	0	0	0	0	0	833,313	833,313
Caledonia Cooperative SD	426,218	687,056	1,787,002	2,900,276	0	1,127,791	0	400,605	1,528,396
Caledonia -Fed	339,328	546,990	1,160,001	2,046,319	0	897,875	0	0	897,875
Caledonia North SU	0	0	0	0	0	0	0	955,701	955,701
Cambridge School	224,906	362,545	140,385	727,836	0	595,111	0	155,607	750,718
Canaan School	246,672	397,631	92,394	736,697	0	652,705	0	28,370	681,075
Castleton/Hubbardton SD 42	0	0	0	0	0	0	0	893,223	893,223
Cavendish School	0	0	0	0	0	0	0	305,867	305,867
Central VT SU	346,537	558,612	1,318,511	2,223,660	0	916,951	0	49,820	966,771
Champlain Islands Unified USD	200,527	323,245	1,752,414	2,276,186	0	530,601	0	457,660	988,261
Champlain Valley SD	4,790,342	7,721,947	2,647,917	15,160,206	0	12,675,436	0	0	12,675,436
Champlain Valley Union #15	0	0	0	0	0	0	0	0	0
Charleston School	117,805	189,899	34,465	342,169	0	311,716	0	0	311,716
Charlotte School	0	0	0	0	0	0	0	0	0
Chelsea School	0	0	0	0	0	0	0	597,648	597,648
Chittenden Central SU	0	0	0	0	0	0	0	0	0
Chittenden East SU	0	0	59,705	59,705	0	0	0	5,054,440	5,054,440
Chittenden South SU	0	0	0	0	0	0	0	0	0
Colchester School	2,455,872	3,958,823	1,427,337	7,842,032	0	6,498,336	0	44,360	6,542,696
Concord School	0	0	0	0	0	0	0	403,132	403,132

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Cornwall School	0	0	0	0	0	0	0	0	0
Coventry School	111,189	179,234	59,728	350,151	0	294,210	0	25,987	320,197
Craftsbury School	146,058	235,443	22,445	403,946	0	386,475	0	34,397	420,872
Danville School	323,945	522,193	248,255	1,094,393	0	857,171	0	253,295	1,110,466
Dept Of Education	12,840	20,698	6,485	40,023	0	33,976	0	42,868	76,844
Dept Of Social & Rehab Serv	0	0	2,192	2,192	0	0	0	99,801	99,801
Derby School	284,221	458,159	328,485	1,070,865	0	752,060	0	96,062	848,122
Dorset School	0	0	0	0	0	0	0	626,280	626,280
Dover School	0	0	34,640	34,640	0	0	0	773,034	773,034
Dummerston School	0	0	12,334	12,334	0	0	0	1,227,408	1,227,408
East Montpelier School	0	0	14,010	14,010	0	0	0	1,385,800	1,385,800
Echo Valley Community SD	132,407	213,438	496,116	841,961	0	350,354	0	75,624	425,978
Eden School	0	0	0	0	0	0	0	0	0
Elmore Morristown Unified USD	0	0	0	0	0	0	0	5,474,015	5,474,015
Enosburg School	0	0	0	0	0	0	0	4,316,827	4,316,827
Enosburgh Richford Unified USD	894,911	1,442,581	6,802,544	9,140,036	0	2,367,970	0	0	2,367,970
Essex Caledonia SU	0	0	0	0	0	0	0	568,697	568,697
Essex Comm. Ed # 46	0	0	0	0	0	0	0	0	0
Essex Jct Id School	0	0	0	0	0	0	0	0	0
Essex Town School	0	0	0	0	0	0	0	45,695	45,695
Essex Westford Ed Com UUSD	4,976,445	8,021,942	1,309,776	14,308,163	0	13,167,871	0	754,976	13,922,847
Fair Haven School	0	0	0	0	0	0	0	938,219	938,219
Fair Haven Union #16	0	0	0	0	0	0	0	1,279,623	1,279,623
Fairfax School	690,877	1,113,682	139,729	1,944,288	0	1,828,089	0	51,725	1,879,814
Fairfield School	0	0	0	0	0	0	0	0	0
Fayston School	0	0	0	0	0	0	0	0	0
Ferrisburg School	0	0	0	0	0	0	0	0	0
First Branch Unified SD	250,763	404,225	923,826	1,578,814	0	663,528	0	149,405	812,933
Fletcher School	99,757	160,807	59,500	320,064	0	263,962	0	138,069	402,031
Franklin Ctl SU - Spec Ed	0	0	0	0	0	0	0	0	0

Employer Name	Deferred Outflows of Resources				Deferred Inflows of Resources				
	Differences Between Expected and Actual Experience (14)	Changes of Assumptions (15)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (16)	Total Deferred Outflows of Resources (17)	Differences Between Expected and Actual Experience (18)	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments (19)	Changes of Assumptions (20)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (21)	Total Deferred Inflows of Resources (22)
Franklin Esea	440,759	710,496	709,694	1,860,949	0	1,166,266	0	13,790	1,180,056
Franklin NW SU	0	0	0	0	0	0	0	4,232,484	4,232,484
Franklin School	0	0	2,009	2,009	0	0	0	599,550	599,550
Franklin West SU	299,086	482,121	202,378	983,585	0	791,393	0	34,152	825,545
Georgia School	520,919	839,712	74,860	1,435,491	0	1,378,372	0	61,902	1,440,274
Glover School	0	0	0	0	0	0	0	640,429	640,429
Grafton School	0	0	7,034	7,034	0	0	0	597,882	597,882
Grand Isle School	0	0	0	0	0	0	0	1,171,226	1,171,226
Grand Isle SU	166,512	268,414	131,877	566,803	0	440,597	0	28,004	468,601
Greater Rutland County SU	413,532	666,606	1,551,218	2,631,356	0	1,094,222	0	350,597	1,444,819
Green Mtn Uhs Union #35	0	0	0	0	0	0	0	1,003,617	1,003,617
Green Mtn USD	556,770	897,504	2,000,968	3,455,242	0	1,473,237	0	0	1,473,237
Guilford School	0	0	2,674	2,674	0	0	0	994,292	994,292
Halifax School	0	0	0	0	0	0	0	153,777	153,777
Hannaford Regional Tech SD	191,206	308,221	120,653	620,080	0	505,939	0	449,015	954,954
Hardwick School	0	0	0	0	0	0	0	1,281,825	1,281,825
Hartford School	2,144,810	3,457,397	249,665	5,851,872	0	5,675,254	0	173,473	5,848,727
Hartland School	248,928	401,268	159,070	809,266	0	658,673	0	128,834	787,507
Harwood Unified USD	2,153,187	3,470,900	194,873	5,818,960	0	5,697,419	0	572,599	6,270,018
Harwood Union #19	0	0	83,678	83,678	0	0	0	155,720	155,720
Hazen Union #26	275,747	444,499	288,971	1,009,217	0	729,637	0	51,323	780,960
Highgate School	0	0	54,299	54,299	0	0	0	1,912,478	1,912,478
Hinesburg School	0	0	0	0	0	0	0	0	0
Holland School	0	0	0	0	0	0	0	276,825	276,825
Huntington School	0	0	860	860	0	0	0	718,992	718,992
Hyde Park School	0	0	0	0	0	0	0	0	0
Irasburg School	0	0	8,142	8,142	0	0	0	668,074	668,074
Isle Lamotte School	0	0	0	0	0	0	0	234,261	234,261
Jamaica School	0	0	4,432	4,432	0	0	0	428,278	428,278
Jay/Westfield School	82,884	133,608	136,587	353,079	0	219,316	0	3,761	223,077

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Johnson School	0	0	0	0	0	0	0	0	0
Kingdom East Unified USD	1,444,489	2,328,491	5,848,887	9,621,867	0	3,822,176	0	0	3,822,176
Lake Region Uhs #24	306,506	494,083	84,594	885,183	0	811,028	0	71,671	882,699
Lake Region Union EMSD	586,369	945,217	4,667,425	6,199,011	0	1,551,556	0	0	1,551,556
Lakeview Uhs #43	0	0	0	0	0	0	0	478,956	478,956
Lamoille North Modified UUSD	1,303,787	2,101,682	22,609	3,428,078	0	3,449,873	0	273,199	3,723,072
Lamoille North SU	307,148	495,118	149,405	951,671	0	812,727	0	47,220	859,947
Lamoille So SU	0	0	12,267	12,267	0	0	0	2,256,342	2,256,342
Lamoille South Unified USD	1,675,305	2,700,562	12,686,140	17,062,007	0	4,432,924	0	186,345	4,619,269
Lamoille Uhs #18	0	0	0	0	0	0	0	0	0
Leland & Gray Union #34	0	0	0	0	0	0	0	2,306,408	2,306,408
Lincoln School	0	0	0	0	0	0	0	372,984	372,984
Lowell School	85,228	137,387	141,980	364,595	0	225,518	0	65,445	290,963
Ludlow Mt Holly Unified USD	214,419	345,640	1,171,291	1,731,350	0	567,361	0	1,659,080	2,226,441
Ludlow School	0	0	0	0	0	0	0	364,031	364,031
Lunenburg School	0	0	0	0	0	0	0	291,051	291,051
Lyndon Institute	334,419	539,077	236,576	1,110,072	0	884,885	0	965,315	1,850,200
Lyndon Town School	0	0	0	0	0	0	0	1,287,827	1,287,827
Manchester School	0	0	0	0	0	0	0	1,304,374	1,304,374
Maple Run Unified SD	3,037,458	4,896,330	0	7,933,788	0	8,037,236	0	975,868	9,013,104
Marlboro School	97,128	156,568	74,298	327,994	0	257,004	0	12,221	269,225
Mettawee SD	158,962	256,244	575,507	990,713	0	420,620	0	76,938	497,558
Middlebury Id School	0	0	0	0	0	0	0	0	0
Middlebury Union #3	0	0	0	0	0	0	0	0	0
Middlesex School	0	0	23,215	23,215	0	0	0	1,144,096	1,144,096
Middletown Springs School	0	0	0	0	0	0	0	227,525	227,525
Mill River Unified USD	1,003,362	1,617,403	153,962	2,774,727	0	2,654,937	0	107,700	2,762,637
Milton School	1,706,191	2,750,349	1,108,513	5,565,053	0	4,514,648	0	302,328	4,816,976
Missisquoi Valley SD	1,889,485	3,045,818	14,284,216	19,219,519	0	4,999,654	0	165,890	5,165,544
Missisquoi Valley Union #7	0	0	93,182	93,182	0	0	0	5,414,880	5,414,880

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Monkton School	0	0	0	0	0	0	0	466,419	466,419
Montgomery School	0	0	6,785	6,785	0	0	0	680,764	680,764
Montpelier Roxbury SD	1,322,776	2,132,291	5,378,412	8,833,479	0	3,500,117	0	0	3,500,117
Montpelier School	0	0	0	0	0	0	0	4,029,795	4,029,795
Moretown School	0	0	0	0	0	0	0	0	0
Mount Ascutney SD	520,190	838,538	3,932,534	5,291,262	0	1,376,444	0	0	1,376,444
Mountain Towns Regional SD	0	0	0	0	0	0	0	931,509	931,509
Mt Abraham Unified SD	1,627,520	2,623,534	5,979,281	10,230,335	0	4,306,483	0	992,337	5,298,820
Mt Abraham Union #28	0	0	0	0	0	0	0	2,277,004	2,277,004
Mt Anthony Union #14	1,017,535	1,640,248	32,504	2,690,287	0	2,692,437	0	1,316,087	4,008,524
Mt Holly School	0	0	0	0	0	0	0	316,511	316,511
Mt Mansfield Unified USD	2,667,173	4,299,437	5,924,140	12,890,750	0	7,057,447	0	1,237,395	8,294,842
New Haven School	0	0	0	0	0	0	0	280,832	280,832
Newark School	0	0	0	0	0	0	0	192,483	192,483
Newbrook Elementary School	0	0	29,253	29,253	0	0	0	749,072	749,072
Newbury School	0	0	10,229	10,229	0	0	0	938,496	938,496
Newport City School	288,062	464,350	326,560	1,078,972	0	762,223	0	241,430	1,003,653
Newport Town School	94,997	153,133	36,690	284,820	0	251,365	0	28,621	279,986
North Country Union #22	934,877	1,507,006	633,620	3,075,503	0	2,473,722	0	124,544	2,598,266
North Hero School	0	0	2,389	2,389	0	0	0	356,042	356,042
Northern Mountain Valley UUSD	553,960	892,974	4,195,193	5,642,127	0	1,465,801	0	0	1,465,801
Northfield School	0	0	0	0	0	0	0	1,758,077	1,758,077
Norwich School	382,097	615,934	403,985	1,402,016	0	1,011,044	0	46,513	1,057,557
Orange East SU	392,167	632,166	841,850	1,866,183	0	1,037,690	0	173,730	1,211,420
Orange North S. U.	0	0	0	0	0	0	0	647,673	647,673
Orange School	0	0	0	0	0	0	0	320,442	320,442
Orange SW SU	0	0	0	0	0	0	0	0	0
Orange SW Unified USD	1,138,072	1,834,552	699,578	3,672,202	0	3,011,383	0	101,350	3,112,733
Orleans Central SU	253,715	408,984	399,475	1,062,174	0	671,340	0	391,581	1,062,921
Orleans Essex N SU	681,114	1,097,944	1,381,481	3,160,539	0	1,802,255	0	91,962	1,894,217

Employer Name	Deferred Outflows of Resources				Deferred Inflows of Resources				
	Differences Between Expected and Actual Experience (14)	Changes of Assumptions (15)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (16)	Total Deferred Outflows of Resources (17)	Differences Between Expected and Actual Experience (18)	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments (19)	Changes of Assumptions (20)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (21)	Total Deferred Inflows of Resources (22)
Orleans Id School	0	0	0	0	0	0	0	587,013	587,013
Orleans SW SU	343,573	553,833	1,229,041	2,126,447	0	909,107	0	176,522	1,085,629
Orleans SW Union ESD	254,758	410,666	2,017,054	2,682,478	0	674,101	0	191,940	866,041
Orwell School	0	0	12,454	12,454	0	0	0	708,882	708,882
Otter Valley Unified USD	977,910	1,576,373	5,500	2,559,783	0	2,587,588	0	267,265	2,854,853
Ox Bow Union #30	0	0	0	0	0	0	0	3,045,140	3,045,140
Oxbow Unified USD	700,122	1,128,585	5,549,411	7,378,118	0	1,852,551	0	0	1,852,551
Paine Mtn SD	777,255	1,252,922	2,781,791	4,811,968	0	2,056,648	0	102,690	2,159,338
Peacham School	62,540	100,814	87,778	251,132	0	165,484	0	224,135	389,619
Poultney School	0	0	0	0	0	0	0	1,280,922	1,280,922
Pownal School	0	0	0	0	0	0	0	1,404,588	1,404,588
Proctor School	0	0	0	0	0	0	0	937,933	937,933
Prosper Valley School	0	0	0	0	0	0	0	294,738	294,738
Putney School	0	0	0	0	0	0	0	1,274,087	1,274,087
Quarry Valley Unified USD	917,725	1,479,356	3,788,314	6,185,395	0	2,428,336	0	1,118,110	3,546,446
Randolph School	0	0	0	0	0	0	0	0	0
Reading School	0	0	0	0	0	0	0	173,077	173,077
Readsboro School	0	0	0	0	0	0	0	164,902	164,902
Richford School	0	0	0	0	0	0	0	2,253,341	2,253,341
Ripton School	0	0	0	0	0	0	0	0	0
Rivendell Interstate School	414,492	668,153	520,935	1,603,580	0	1,096,761	0	97,191	1,193,952
River Valley Technical Center	208,599	336,257	70,417	615,273	0	551,960	0	41,555	593,515
River Valleys USD	145,996	235,344	1,098,931	1,480,271	0	386,312	0	0	386,312
Rochester School	0	0	0	0	0	0	0	443,753	443,753
Rochester Stockbridge Unified	141,274	227,732	582,411	951,417	0	373,818	0	12,422	386,240
Rockingham School	415,403	669,623	14,095	1,099,121	0	1,099,174	0	486,259	1,585,433
Roxbury School	0	0	0	0	0	0	0	162,883	162,883
Royalton School	0	0	0	0	0	0	0	1,055,474	1,055,474
Rutland Central SU	0	0	0	0	0	0	0	1,008,377	1,008,377
Rutland City School	2,705,999	4,362,023	1,642,739	8,710,761	0	7,160,181	0	120,500	7,280,681

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Employer Name	Deferred Outflows of Resources: Differences Between Expected and Actual Experience (14)	Changes of Assumptions (15)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (16)	Total Deferred Outflows of Resources (17)	Deferred Inflows of Resources: Differences Between Expected and Actual Experience (18)	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments (19)	Changes of Assumptions (20)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (21)	Total Deferred Inflows of Resources (22)
Rutland Northeast SU	490,387	790,496	336,607	1,617,490	0	1,297,584	0	5,166	1,302,750
Rutland South West SU	0	0	0	0	0	0	0	549,753	549,753
Rutland Town School	309,776	499,353	246,138	1,055,267	0	819,679	0	81,708	901,387
Salisbury School	0	0	0	0	0	0	0	0	0
Shaftsbury School	0	0	0	0	0	0	0	1,309,192	1,309,192
Sharon School	109,801	176,997	41,229	328,027	0	290,538	0	74,804	365,342
Shelburne School	0	0	0	0	0	0	0	0	0
Sheldon School	0	0	2,663	2,663	0	0	0	1,601,198	1,601,198
Sherburne School	0	0	0	0	0	0	0	341,094	341,094
Shoreham School	0	0	0	0	0	0	0	0	0
Slate Valley Unified USD	1,330,469	2,144,692	6,838,741	10,313,902	0	3,520,473	0	547,090	4,067,563
South Burlington School	3,121,920	5,032,480	365,039	8,519,439	0	8,260,724	0	655,855	8,916,579
South Hero School	125,633	202,518	99,905	428,056	0	332,429	0	10,966	343,395
Southern Valley Unified USD	115,703	186,512	631,643	933,858	0	306,155	0	0	306,155
Southwest Vt Regional Tech SD	157,793	254,360	28,336	440,489	0	417,527	0	277,194	694,721
Southwest Vt SU	803,529	1,295,275	80,630	2,179,434	0	2,126,170	0	834,842	2,961,012
Southwest Vt SU - Title I	227,111	366,099	65,725	658,935	0	600,945	0	75,185	676,130
Southwest VT Union ESD	868,452	1,399,929	6,863,000	9,131,381	0	2,297,958	0	630,150	2,928,108
Spaulding Uhs	0	0	160,186	160,186	0	0	0	5,469,412	5,469,412
Springfield School	1,352,615	2,180,392	92,490	3,625,497	0	3,579,074	0	181,814	3,760,888
St Albans City School	0	0	0	0	0	0	0	0	0
St Albans Town School	0	0	0	0	0	0	0	0	0
St Johnsbury Academy	727,429	1,172,602	76,549	1,976,580	0	1,924,805	0	1,268,725	3,193,530
St Johnsbury School	739,196	1,191,570	519,495	2,450,261	0	1,955,941	0	87,691	2,043,632
Stamford School	50,110	80,776	31,211	162,097	0	132,592	0	218,019	350,611
Starksboro School	0	0	0	0	0	0	0	518,381	518,381
Stockbridge School	0	0	0	0	0	0	0	185,013	185,013
Stowe School	0	0	69,222	69,222	0	0	0	5,285,134	5,285,134
Strafford School	112,839	181,894	221,690	516,423	0	298,576	0	81,961	380,537
Sunderland School	0	0	0	0	0	0	0	262,965	262,965

Employer Name	Deferred Outflows of Resources: Differences Between Expected and Actual Experience (14)	Changes of Assumptions (15)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (16)	Total Deferred Outflows of Resources (17)	Deferred Inflows of Resources: Differences Between Expected and Actual Experience (18)	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments (19)	Changes of Assumptions (20)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (21)	Total Deferred Inflows of Resources (22)
Sutton School	0	0	0	0	0	0	0	310,727	310,727
Swanton School	0	0	33,913	33,913	0	0	0	3,146,920	3,146,920
Taconic And Green Regional SD	878,543	1,416,195	3,274,618	5,569,356	0	2,324,659	0	635,172	2,959,831
Thetford Academy	314,779	507,418	0	822,197	0	832,917	0	402,181	1,235,098
Thetford School	195,441	315,047	229,184	739,672	0	517,145	0	84,306	601,451
Townshend School	0	0	0	0	0	0	0	435,909	435,909
Troy School	135,815	218,931	70,028	424,774	0	359,371	0	179,337	538,708
Tunbridge School	0	0	0	0	0	0	0	442,969	442,969
Twin Valley Unified USD	399,420	643,858	0	1,043,278	0	1,056,881	0	873,769	1,930,650
Twinfield Union #33	332,611	536,163	19,804	888,578	0	880,102	0	716,414	1,596,516
Two Rivers SU	281,299	453,450	89,955	824,704	0	744,329	0	425,915	1,170,244
Union #23	0	0	0	0	0	0	0	324,368	324,368
Union #27	315,915	509,249	23,799	848,963	0	835,923	0	154,242	990,165
Union #29	0	0	0	0	0	0	0	583,435	583,435
Union #32	0	0	98,497	98,497	0	0	0	5,309,444	5,309,444
Union #36	203,408	327,891	128,878	660,177	0	538,227	0	53,741	591,968
Union #37	0	0	0	0	0	0	0	269,245	269,245
Union #39	0	0	0	0	0	0	0	518,913	518,913
Union 22 Dresden	820,292	1,322,296	234,798	2,377,386	0	2,170,525	0	98,172	2,268,697
Union District #47	0	0	0	0	0	0	0	571,218	571,218
Union High #2	0	0	0	0	0	0	0	0	0
Vac School	19,108	30,801	11,526	61,435	0	50,560	0	102,732	153,292
Vergennes School	0	0	0	0	0	0	0	0	0
Vergennes Union #5	0	0	0	0	0	0	0	0	0
Vernon School	156,483	252,248	67,081	475,812	0	414,061	0	107,740	521,801
Waitsfield School	0	0	0	0	0	0	0	0	0
Walden School	0	0	0	0	0	0	0	313,256	313,256
Wardsboro School	0	0	0	0	0	0	0	288,247	288,247
Warren School	0	0	0	0	0	0	0	0	0
Washington Central SU	0	0	103,031	103,031	0	0	0	2,768,322	2,768,322

Employer Name	Deferred Outflows of Resources				Deferred Inflows of Resources				
	Differences Between Expected and Actual Experience (14)	Changes of Assumptions (15)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (16)	Total Deferred Outflows of Resources (17)	Differences Between Expected and Actual Experience (18)	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments (19)	Changes of Assumptions (20)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (21)	Total Deferred Inflows of Resources (22)
Washington Central Unified USD	1,886,773	3,041,446	15,065,829	19,994,048	0	4,992,478	0	0	4,992,478
Washington NE SU	0	0	3,498	3,498	0	0	0	946,142	946,142
Washington School	0	0	0	0	0	0	0	270,325	270,325
Washington So SU	0	0	0	0	0	0	0	362,702	362,702
Washington West SU	0	0	0	0	0	0	0	0	0
Waterbury/Duxbury School	0	0	0	0	0	0	0	0	0
Waterford School	0	0	0	0	0	0	0	365,979	365,979
Waterville School	0	0	0	0	0	0	0	0	0
Weathersfield School	182,058	293,475	89,880	565,413	0	481,733	0	21,402	503,135
Wells School	0	0	0	0	0	0	0	249,373	249,373
Wells Springs Unified USD	149,136	240,404	605,774	995,314	0	394,620	0	157,810	552,430
West River Modified UED	478,519	771,365	3,626,655	4,876,539	0	1,266,181	0	0	1,266,181
West Rutland School	0	0	0	0	0	0	0	1,083,339	1,083,339
West Windsor School	0	0	11,904	11,904	0	0	0	614,616	614,616
Westford School	0	0	0	0	0	0	0	0	0
Westminster School	0	0	0	0	0	0	0	1,263,844	1,263,844
Weybridge School	0	0	0	0	0	0	0	0	0
White River Unified District	558,799	900,774	2,111,484	3,571,057	0	1,478,604	0	445,510	1,924,114
White River Valley SU	263,127	424,156	301,483	988,766	0	696,244	0	540,100	1,236,344
Williamstown Elem School	0	0	0	0	0	0	0	549,658	549,658
Williamstown High School	0	0	0	0	0	0	0	734,975	734,975
Williston School	0	0	0	0	0	0	0	0	0
Windham Central	366,820	591,307	762,214	1,720,341	0	970,619	0	0	970,619
Windham NE SU	552,640	890,846	704,565	2,148,051	0	1,462,307	0	0	1,462,307
Windham NE Union ESD	198,804	320,468	1,681,192	2,200,464	0	526,043	0	349,205	875,248
Windham School	11,970	19,295	1,840	33,105	0	31,672	0	122,330	154,002
Windham SE SD	2,156,251	3,475,839	16,276,826	21,908,916	0	5,705,527	0	144,465	5,849,992
Windham SE SU	694,214	1,119,061	81,494	1,894,769	0	1,836,918	0	244,363	2,081,281
Windham SW SU	182,831	294,720	50,692	528,243	0	483,778	0	96,920	580,698
Windsor Central Modified UUSD	893,323	1,440,021	4,093,432	6,426,776	0	2,363,768	0	598,164	2,961,932

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Employer Name	Deferred Outflows of Resources: Differences Between Expected and Actual Experience (14)	Changes of Assumptions (15)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (16)	Total Deferred Outflows of Resources (17)	Deferred Inflows of Resources: Differences Between Expected and Actual Experience (18)	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments (19)	Changes of Assumptions (20)	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions (21)	Total Deferred Inflows of Resources (22)
Windsor Central SU	255,050	411,137	383,550	1,049,737	0	674,873	0	80,176	755,049
Windsor School	0	0	0	0	0	0	0	3,398,703	3,398,703
Windsor SE SU	284,457	458,540	551,647	1,294,644	0	752,685	0	8,576	761,261
Winooski School	1,135,811	1,830,907	673,921	3,640,639	0	3,005,400	0	0	3,005,400
Wolcott School	105,514	170,087	149,547	425,148	0	279,194	0	5,601	284,795
Woodbury School	0	0	0	0	0	0	0	258,208	258,208
Woodford School	0	0	3,301	3,301	0	0	0	229,040	229,040
Woodstock School	0	0	0	0	0	0	0	579,461	579,461
Woodstock Union #4	0	0	0	0	0	0	0	1,853,146	1,853,146
Worcester School	0	0	8,696	8,696	0	0	0	615,174	615,174
Grand Totals:	$96,455,014	$155,483,798	$208,856,580	$460,795,392	$0	$255,223,818	$0	$208,856,580	$464,080,398

Note: Columns may not foot due to rounding.

Employer Name	2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
	Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30)					
Addison Central SU	$0	$0	$0	$0	$0	$0
Addison Central Unified USD	687,659	982,366	(1,090,923)	(1,335,506)	244,098	0
Addison NE SU	(1,295,319)	0	0	0	0	0
Addison Northwest SU	0	0	0	0	0	0
Addison NW Unified USD	120,090	(48,446)	(733,494)	(856,183)	(63,820)	0
Addison Rutland SU	(1,448,394)	(1,670,801)	0	0	0	0
Addison School	(1,202)	0	0	0	0	0
Albany School	(229,759)	(231,819)	0	0	0	0
Alburg School	92,492	102,316	(80,715)	(101,355)	31,942	0
Arlington School	103,827	99,697	(282,784)	(337,089)	13,630	0
Bakersfield School	(380,631)	(372,519)	0	0	0	0
Barnard School	(199,830)	(193,215)	(200,296)	(200,296)	(200,296)	0
Barnet School	(637,914)	0	0	0	0	0
Barre City School	(2,386,109)	(2,461,986)	0	0	0	0
Barre SU	(1,950,102)	(2,054,726)	0	0	0	0
Barre Town School	(2,062,406)	(2,072,659)	0	0	0	0
Barre Unified USD	10,679,199	10,473,202	(1,363,995)	(1,665,526)	281,865	0
Barstow Unified USD	55,184	94,888	(52,215)	(72,441)	58,182	0
Barton School	(381,942)	(370,613)	0	0	0	0
Bellows Free Academy	0	0	0	0	0	0
Bennington School	(1,927,460)	(1,966,515)	0	0	0	0
Bennington-Rutland SU	420,026	141,116	(284,233)	(347,126)	59,060	0
Benson School	(231,585)	0	0	0	0	0
Berkshire School	(479,606)	(497,513)	0	0	0	0
Berlin School	(679,139)	(683,117)	0	0	0	0
Bethel School	(934,531)	0	0	0	0	0
Blue Mtn Union #21	(220,800)	(199,560)	(226,045)	(269,695)	12,212	0
Bradford School	(765,038)	(732,559)	0	0	0	0
Braintree School	0	0	0	0	0	0
Brattleboro Town School	(2,580,965)	(2,590,496)	0	0	0	0
Brattleboro Union #6	(3,970,256)	(3,992,913)	(1)	(1)	(1)	0
Bridport School	0	0	0	0	0	0
Brighton School	78,174	91,294	(31,303)	(43,935)	37,651	0
Bristol School	(750,986)	0	0	0	0	0
Brookfield School	0	0	0	0	0	0
Brownington School	(303,981)	(313,665)	0	0	0	0
Burke School	(593,052)	0	0	0	0	0

Employer Name	2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
	Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30)					
Burlington School	3,013,276	2,327,776	(2,037,126)	(2,586,929)	963,887	0
Burr & Burton Seminary	405,097	187,675	(472,911)	(561,510)	10,692	0
Cabot School	86,644	82,800	(132,578)	(153,991)	(15,702)	0
Calais School	(424,544)	(408,769)	0	0	0	0
Caledonia Cooperative SD	1,739,719	292,759	(296,871)	(348,463)	(15,264)	0
Caledonia -Fed	802,368	620,904	(152,650)	(193,724)	71,547	0
Caledonia North SU	(955,701)	0	0	0	0	0
Cambridge School	57,956	56,680	(86,297)	(113,521)	62,301	0
Canaan School	182,789	133,065	(131,117)	(160,976)	31,862	0
Castleton/Hubbardton SD 42	(893,223)	0	0	0	0	0
Cavendish School	(305,867)	0	0	0	0	0
Central VT SU	1,396,461	231,991	(186,192)	(228,139)	42,768	0
Champlain Islands Unified USD	888,407	871,825	(193,508)	(217,781)	(61,018)	0
Champlain Valley SD	3,029,884	2,611,887	(1,914,058)	(2,493,910)	1,250,968	0
Champlain Valley Union #15	0	0	0	0	0	0
Charleston School	77,424	66,002	(58,849)	(73,109)	18,985	0
Charlotte School	0	0	0	0	0	0
Chelsea School	(597,648)	0	0	0	0	0
Chittenden Central SU	0	0	0	0	0	0
Chittenden East SU	(2,467,515)	(2,527,220)	0	0	0	0
Chittenden South SU	0	0	0	0	0	0
Colchester School	1,565,510	1,406,781	(999,433)	(1,296,707)	623,186	0
Concord School	(403,132)	0	0	0	0	0
Cornwall School	0	0	0	0	0	0
Coventry School	71,959	75,546	(59,185)	(72,644)	14,278	0
Craftsbury School	49,493	64,121	(69,788)	(87,467)	26,714	0
Danville School	244,786	210,515	(215,398)	(254,610)	(1,365)	0
Dept Of Education	(32,158)	4,106	(5,233)	(6,787)	3,251	0
Dept Of Social & Rehab Serv	(24,869)	(17,363)	(18,459)	(18,459)	(18,459)	0
Derby School	147,898	157,984	(78,841)	(113,245)	108,947	0
Dorset School	(626,280)	0	0	0	0	0
Dover School	(351,877)	(386,517)	0	0	0	0
Dummerston School	(601,370)	(613,704)	0	0	0	0
East Montpelier School	(678,890)	(692,900)	0	0	0	0
Echo Valley Community SD	527,644	20,579	(67,898)	(83,926)	19,584	0
Eden School	0	0	0	0	0	0
Elmore Morristown Unified USD	(2,741,383)	(2,732,632)	0	0	0	0

Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30)

Employer Name	2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
Enosburg School	(2,175,959)	(2,140,868)	0	0	0	0
Enosburgh Richford Unified USD	3,812,737	3,738,733	(420,785)	(529,110)	170,491	0
Essex Caledonia SU	(568,697)	0	0	0	0	0
Essex Comm. Ed # 46	0	0	0	0	0	0
Essex Jct Id School	0	0	0	0	0	0
Essex Town School	(45,695)	0	0	0	0	0
Essex Westford Ed Com UUSD	2,543,081	2,026,172	(2,289,848)	(2,892,227)	998,138	0
Fair Haven School	(938,219)	0	0	0	0	0
Fair Haven Union #16	(1,279,623)	0	0	0	0	0
Fairfax School	429,167	347,520	(361,685)	(445,312)	94,785	0
Fairfield School	0	0	0	0	0	0
Fayston School	0	0	0	0	0	0
Ferrisburg School	0	0	0	0	0	0
First Branch Unified SD	1,012,185	90,580	(157,404)	(187,758)	8,277	0
Fletcher School	(36,312)	17,002	(38,831)	(50,906)	27,080	0
Franklin Ctl SU - Spec Ed	0	0	0	0	0	0
Franklin Esea	532,782	510,123	(199,958)	(253,310)	91,256	0
Franklin NW SU	(2,118,710)	(2,113,774)	0	0	0	0
Franklin School	(297,766)	(299,775)	0	0	0	0
Franklin West SU	216,459	143,798	(121,208)	(157,411)	76,401	0
Georgia School	264,636	207,628	(252,723)	(315,778)	91,454	0
Glover School	(322,199)	(318,230)	0	0	0	0
Grafton School	(291,907)	(298,941)	0	0	0	0
Grand Isle School	(605,091)	(566,135)	0	0	0	0
Grand Isle SU	89,137	103,372	(61,389)	(81,545)	48,627	0
Greater Rutland County SU	1,664,216	78,801	(259,883)	(309,939)	13,342	0
Green Mtn Uhs Union #35	(1,003,617)	0	0	0	0	0
Green Mtn USD	2,226,432	264,006	(269,634)	(337,029)	98,230	0
Guilford School	(494,472)	(497,146)	0	0	0	0
Halifax School	(153,777)	0	0	0	0	0
Hannaford Regional Tech SD	81,633	41,424	(187,039)	(210,184)	(60,707)	0
Hardwick School	(647,804)	(634,021)	0	0	0	0
Hartford School	1,037,642	930,401	(1,040,791)	(1,300,412)	376,306	0
Hartland School	94,232	77,517	(94,776)	(124,908)	69,693	0
Harwood Unified USD	1,059,259	686,328	(1,119,547)	(1,380,182)	303,085	0
Harwood Union #19	10,695	10,695	(31,144)	(31,144)	(31,144)	0
Hazen Union #26	218,821	247,342	(128,906)	(162,284)	53,283	0

Employer Name	2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
	Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30)					
Highgate School	(901,940)	(956,239)	0	0	0	0
Hinesburg School	0	0	0	0	0	0
Holland School	(149,934)	(126,891)	0	0	0	0
Huntington School	(358,636)	(359,496)	0	0	0	0
Hyde Park School	0	0	0	0	0	0
Irasburg School	(325,895)	(334,037)	0	0	0	0
Isle Lamotte School	(119,137)	(115,124)	0	0	0	0
Jamaica School	(209,707)	(214,139)	0	0	0	0
Jay/Westfield School	93,973	90,880	(33,193)	(43,226)	21,569	0
Johnson School	0	0	0	0	0	0
Kingdom East Unified USD	5,750,777	949,262	(559,962)	(734,812)	394,426	0
Lake Region Uhs #24	173,493	164,428	(166,949)	(204,051)	35,563	0
Lake Region Union EMSD	2,467,002	2,418,512	(184,834)	(255,812)	202,586	0
Lakeview Uhs #43	(243,418)	(235,538)	0	0	0	0
Lamoille North Modified UUSD	638,848	508,423	(715,291)	(873,109)	146,135	0
Lamoille North SU	175,370	137,206	(128,870)	(166,049)	74,066	0
Lamoille So SU	(1,115,904)	(1,128,171)	0	0	0	0
Lamoille South Unified USD	7,172,434	7,033,895	(889,231)	(1,092,019)	217,660	0
Lamoille Uhs #18	0	0	0	0	0	0
Leland & Gray Union #34	(1,183,104)	(1,123,304)	0	0	0	0
Lincoln School	(372,984)	0	0	0	0	0
Lowell School	13,577	58,900	(14,946)	(25,263)	41,365	0
Ludlow Mt Holly Unified USD	941,054	(229,289)	(440,857)	(466,811)	(299,188)	0
Ludlow School	(364,031)	0	0	0	0	0
Lunenburg School	(291,051)	0	0	0	0	0
Lyndon Institute	140,742	(123,488)	(312,619)	(353,099)	(91,665)	0
Lyndon Town School	(1,287,827)	0	0	0	0	0
Manchester School	(1,304,374)	0	0	0	0	0
Maple Run Unified SD	1,163,085	1,089,508	(1,657,039)	(2,024,711)	349,840	0
Marlboro School	62,065	66,254	(40,655)	(52,412)	23,518	0
Mettawee SD	639,399	50,746	(94,259)	(113,500)	10,769	0
Middlebury Id School	0	0	0	0	0	0
Middlebury Union #3	0	0	0	0	0	0
Middlesex School	(548,833)	(572,048)	0	0	0	0
Middletown Springs School	(227,525)	0	0	0	0	0
Mill River Unified USD	571,115	492,347	(530,950)	(652,403)	131,981	0
Milton School	1,090,351	777,755	(680,266)	(886,794)	447,031	0

Employer Name	Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30) 2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
Missisquoi Valley SD	8,086,358	7,930,107	(994,059)	(1,222,774)	254,342	0
Missisquoi Valley Union #7	(2,614,258)	(2,707,440)	0	0	0	0
Monkton School	(466,419)	0	0	0	0	0
Montgomery School	(333,597)	(340,382)	0	0	0	0
Montpelier Roxbury SD	5,259,221	847,527	(495,747)	(655,863)	378,224	0
Montpelier School	(4,029,795)	0	0	0	0	0
Moretown School	0	0	0	0	0	0
Mount Ascutney SD	2,219,464	2,176,447	(253,940)	(316,907)	89,755	0
Mountain Towns Regional SD	(931,509)	0	0	0	0	0
Mt Abraham Unified SD	6,542,237	428,368	(972,468)	(1,169,473)	102,851	0
Mt Abraham Union #28	(2,277,004)	0	0	0	0	0
Mt Anthony Union #14	265,415	148,766	(760,515)	(883,684)	(88,220)	0
Mt Holly School	(316,511)	0	0	0	0	0
Mt Mansfield Unified USD	4,025,528	3,890,951	(1,586,650)	(1,909,500)	175,578	0
New Haven School	(280,832)	0	0	0	0	0
Newark School	(192,483)	0	0	0	0	0
Newbrook Elementary School	(345,283)	(374,536)	0	0	0	0
Newbury School	(459,019)	(469,248)	0	0	0	0
Newport City School	202,580	255,544	(179,420)	(214,289)	10,905	0
Newport Town School	28,404	48,079	(40,972)	(52,471)	21,794	0
North Country Union #22	556,003	603,237	(395,508)	(508,671)	222,175	0
North Hero School	(175,632)	(178,021)	0	0	0	0
Northern Mountain Valley UUSD	2,362,453	2,316,643	(267,241)	(334,295)	98,766	0
Northfield School	(1,758,077)	0	0	0	0	0
Norwich School	238,122	253,038	(117,635)	(163,886)	134,820	0
Orange East SU	636,237	509,425	(234,179)	(281,649)	24,930	0
Orange North S. U.	(647,673)	0	0	0	0	0
Orange School	(320,442)	0	0	0	0	0
Orange SW SU	0	0	0	0	0	0
Orange SW Unified USD	790,863	798,100	(547,890)	(685,649)	204,045	0
Orleans Central SU	(7,821)	17,541	(49,130)	(79,841)	118,502	0
Orleans Essex N SU	615,716	651,354	(122,774)	(205,220)	327,245	0
Orleans Id School	(293,679)	(293,334)	0	0	0	0
Orleans SW SU	309,067	457,177	29,720	(11,868)	256,722	0
Orleans SW Union ESD	1,101,925	1,080,858	(167,943)	(198,781)	378	0
Orwell School	(341,987)	(354,441)	0	0	0	0
Otter Valley Unified USD	250,962	414,847	(496,207)	(614,579)	149,907	0

Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30)

Employer Name	2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
Ox Bow Union #30	(1,568,246)	(1,476,894)	0	0	0	0
Oxbow Unified USD	2,949,073	2,891,177	(230,838)	(315,585)	231,740	0
Paine Mtn SD	3,120,087	360,499	(415,804)	(509,888)	97,736	0
Peacham School	47,018	10,638	(76,631)	(84,202)	(35,310)	0
Poultney School	(1,280,922)	0	0	0	0	0
Pownal School	(715,093)	(689,495)	0	0	0	0
Proctor School	(937,933)	0	0	0	0	0
Prosper Valley School	(294,738)	0	0	0	0	0
Putney School	(645,928)	(628,159)	0	0	0	0
Quarry Valley Unified USD	3,750,289	464,365	(690,323)	(801,410)	(83,973)	0
Randolph School	0	0	0	0	0	0
Reading School	(173,077)	0	0	0	0	0
Readsboro School	(164,902)	0	0	0	0	0
Richford School	(1,129,683)	(1,123,658)	0	0	0	0
Ripton School	0	0	0	0	0	0
Rivendell Interstate School	248,871	311,786	(124,905)	(175,078)	148,954	0
River Valley Technical Center	147,443	104,918	(114,392)	(139,642)	23,431	0
River Valleys USD	623,623	611,550	(73,334)	(91,006)	23,127	0
Rochester School	(443,379)	(374)	0	0	0	0
Rochester Stockbridge Unified	559,645	77,596	(49,435)	(66,536)	43,907	0
Rockingham School	102,834	54,387	(289,237)	(339,520)	(14,776)	0
Roxbury School	(162,883)	0	0	0	0	0
Royalton School	(1,055,474)	0	0	0	0	0
Rutland Central SU	(1,008,377)	0	0	0	0	0
Rutland City School	1,829,459	1,403,997	(1,087,902)	(1,415,452)	699,978	0
Rutland Northeast SU	376,508	341,121	(222,511)	(281,870)	101,493	0
Rutland South West SU	(549,753)	0	0	0	0	0
Rutland Town School	169,799	225,890	(136,328)	(173,825)	68,344	0
Salisbury School	0	0	0	0	0	0
Shaftsbury School	(656,615)	(652,577)	0	0	0	0
Sharon School	32,895	17,251	(48,905)	(62,196)	23,641	0
Shelburne School	0	0	0	0	0	0
Sheldon School	(797,936)	(800,599)	0	0	0	0
Sherburne School	(341,094)	0	0	0	0	0
Shoreham School	0	0	0	0	0	0
Slate Valley Unified USD	5,492,182	2,394,199	(786,016)	(947,064)	93,038	0
South Burlington School	1,761,663	1,312,797	(1,718,796)	(2,096,691)	343,887	0

Employer Name	2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
	Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30)					
South Hero School	83,929	84,505	(50,524)	(65,732)	32,482	0
Southern Valley Unified USD	448,269	111,289	1,901	(12,104)	78,347	0
Southwest Vt Regional Tech SD	39,792	(1,593)	(125,862)	(144,962)	(21,607)	0
Southwest Vt SU	216,542	240,681	(557,479)	(654,743)	(26,579)	0
Southwest Vt SU - Title I	141,159	110,679	(130,532)	(158,023)	19,522	0
Southwest VT Union ESD	3,754,719	3,682,902	(567,674)	(672,796)	6,121	0
Spaulding Uhs	(2,574,520)	(2,734,706)	0	0	0	0
Springfield School	617,624	525,115	(669,363)	(833,091)	224,324	0
St Albans City School	0	0	0	0	0	0
St Albans Town School	0	0	0	0	0	0
St Johnsbury Academy	192,520	68,980	(623,672)	(711,725)	(143,053)	0
St Johnsbury School	444,961	471,524	(302,924)	(392,401)	185,469	0
Stamford School	2,953	(32,402)	(62,036)	(68,101)	(28,928)	0
Starksboro School	(518,381)	0	0	0	0	0
Stockbridge School	(185,013)	0	0	0	0	0
Stowe School	(2,573,345)	(2,642,567)	0	0	0	0
Strafford School	51,658	62,468	(13,045)	(26,704)	61,509	0
Sunderland School	(262,965)	0	0	0	0	0
Sutton School	(310,727)	0	0	0	0	0
Swanton School	(1,539,547)	(1,573,460)	0	0	0	0
Taconic And Green Regional SD	3,527,637	180,368	(524,199)	(630,543)	56,263	0
Thetford Academy	(64,334)	18,651	(179,031)	(217,134)	28,946	0
Thetford School	72,266	140,410	(59,976)	(83,633)	69,154	0
Townshend School	(224,166)	(211,743)	0	0	0	0
Troy School	54,082	62,003	(101,104)	(117,544)	(11,370)	0
Tunbridge School	(442,969)	0	0	0	0	0
Twin Valley Unified USD	(74,959)	(35,982)	(330,661)	(379,010)	(66,761)	0
Twinfield Union #33	(20,292)	(67,601)	(266,514)	(306,776)	(46,755)	0
Two Rivers SU	107,417	79,942	(228,235)	(262,285)	(42,378)	0
Union #23	(324,368)	0	0	0	0	0
Union #27	122,385	72,462	(168,846)	(207,086)	39,882	0
Union #29	(583,435)	0	0	0	0	0
Union #32	(2,556,225)	(2,654,722)	0	0	0	0
Union #36	134,169	148,279	(108,004)	(132,625)	26,390	0
Union #37	(269,245)	0	0	0	0	0
Union #39	(518,913)	0	0	0	0	0
Union 22 Dresden	477,696	340,504	(384,064)	(483,357)	157,911	0

Employer Name	Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30) 2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
Union District #47	(571,218)	0	0	0	0	0
Union High #2	0	0	0	0	0	0
Vac School	(14,281)	(4,134)	(27,918)	(30,231)	(15,293)	0
Vergennes School	0	0	0	0	0	0
Vergennes Union #5	0	0	0	0	0	0
Vernon School	114,726	58,216	(101,126)	(120,068)	2,264	0
Waitsfield School	0	0	0	0	0	0
Walden School	(313,256)	0	0	0	0	0
Wardsboro School	(154,731)	(133,516)	0	0	0	0
Warren School	0	0	0	0	0	0
Washington Central SU	(1,281,130)	(1,384,161)	0	0	0	0
Washington Central Unified USD	7,931,096	7,775,070	(574,273)	(802,659)	672,337	0
Washington NE SU	(469,573)	(473,071)	0	0	0	0
Washington School	(270,325)	0	0	0	0	0
Washington So SU	(362,702)	0	0	0	0	0
Washington West SU	0	0	0	0	0	0
Waterbury/Duxbury School	0	0	0	0	0	0
Waterford School	(365,979)	0	0	0	0	0
Waterville School	0	0	0	0	0	0
Weathersfield School	100,792	87,059	(74,608)	(96,645)	45,680	0
Wells School	(249,373)	0	0	0	0	0
Wells Springs Unified USD	608,005	76,608	(107,404)	(125,456)	(8,868)	0
West River Modified UED	2,040,310	2,000,739	(229,644)	(287,567)	86,519	0
West Rutland School	(1,083,339)	0	0	0	0	0
West Windsor School	(295,404)	(307,308)	0	0	0	0
Westford School	0	0	0	0	0	0
Westminster School	(655,880)	(607,964)	0	0	0	0
Weybridge School	0	0	0	0	0	0
White River Unified District	2,262,766	202,436	(373,274)	(440,914)	(4,070)	0
White River Valley SU	267,513	68,401	(241,831)	(273,681)	(67,980)	0
Williamstown Elem School	(549,658)	0	0	0	0	0
Williamstown High School	(734,975)	0	0	0	0	0
Williston School	0	0	0	0	0	0
Windham Central	597,847	423,855	(156,647)	(201,049)	85,714	0
Windham NE SU	534,907	395,678	(181,027)	(247,922)	184,107	0
Windham NE Union ESD	873,596	857,156	(170,941)	(195,005)	(39,589)	0
Windham School	(16,760)	(18,938)	(30,553)	(32,002)	(22,645)	0

Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Measurement Date Year Ended June 30)

Employer Name	2022 (23)	2023 (24)	2024 (25)	2025 (26)	2026 (27)	Thereafter (28)
Windham SE SD	9,224,946	9,046,635	(1,125,436)	(1,386,441)	299,221	0
Windham SE SU	332,764	193,862	(362,593)	(446,625)	96,081	0
Windham SW SU	118,098	67,863	(112,361)	(134,492)	8,437	0
Windsor Central Modified UUSD	3,508,993	276,027	(267,423)	(375,557)	322,804	0
Windsor Central SU	247,376	301,661	(130,664)	(161,536)	37,851	0
Windsor School	(1,699,620)	(1,699,083)	0	0	0	0
Windsor SE SU	401,404	192,614	(71,382)	(105,815)	116,561	0
Winooski School	851,073	661,085	(496,626)	(634,111)	253,816	0
Wolcott School	100,254	97,130	(37,991)	(50,763)	31,723	0
Woodbury School	(130,526)	(127,682)	0	0	0	0
Woodford School	(111,219)	(114,520)	0	0	0	0
Woodstock School	(579,461)	0	0	0	0	0
Woodstock Union #4	(1,853,146)	0	0	0	0	0
Worcester School	(298,891)	(307,587)	0	0	0	0
Grand Totals:	$49,896,056	$41,919,700	($49,051,343)	($60,726,838)	$14,677,429	$0

Note: Columns may not foot due to rounding.

Section 4: Supplemental Information

Exhibit I: Actuarial Assumptions* and Actuarial Cost Method

Rationale for Assumptions:	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Study dated September 24, 2020 (as prepared by Segal).
Roll-forward Techniques:	The results as of June 30, 2021, are based on the results of the State Teachers' Retirement System Actuarial Valuation Report as of June 30, 2020, adjusted forward, using standard actuarial techniques.
Inflation:	2.30%
Investment Return:	7.00% The investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation.
Salary Increases:	

Age	Annual Rate of Salary Increase %
20	10.50%
25	9.50%
30	6.50%
35	5.95%
40	5.30%
45	4.50%
50	4.20%
55	3.80%
60	3.55%
65	3.40%
70	3.30%

* Same assumptions used in the June 30, 2021 Actuarial Valuation and Review

Cost-of-Living Adjustments:	Assumed to occur on January 1 following one year of retirement at the rate of 2.40% per annum for Group A members and 1.35% per annum for Group B and C members (beginning at age 62 for Group C members who elect reduced early retirement). The January 1, 2021, and January 1, 2022, COLAs are 0.00% and 4.60%, respectively, for group A, and 1.00% and 2.30%, respectively, for groups B & C.
Mortality Rates:	*Pre-Retirement:* • All Groups PubT-2010 Teacher Employee Amount-Weighted Table with generational projection using scale MP-2019. *Healthy Post-Retirement - Retirees*: • All Groups PubT-2010 Teacher Healthy Retiree Amount-Weighted Table with generational projection using scale MP-2019. *Healthy Post-Retirement - Beneficiaries*: • All Groups 109% of the Pub-2010 Contingent Survivor Amount-Weighted Table with generational projection using scale MP-2019. *Disabled Post-Retirement*: • All Groups PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using scale MP-2019. The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date. The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the underlying groups and estimated future experience and professional judgment. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Separation from Service before Retirement (Due to Withdrawal and Disability)

Representative values of the assumed annual rates of withdrawal and disability are as follows:

	Rate (%)			
	Withdrawal		Disability	
Age	**Male**	**Female**	**Male**	**Female**
25	7.80	8.30	0.005	0.008
30	5.20	5.40	0.007	0.008
35	3.10	3.25	0.009	0.008
40	2.20	2.15	0.014	0.011
45	1.85	1.66	0.023	0.024
50	1.75	1.54	0.060	0.074
55	1.60	1.50	0.040	0.050
60	1.50	1.50	0.132	0.088

Retirement Rates:

	Group A		Group C Grandfathered	
Age	**<30 Years of Service**	**30+ Years of Service**	**<30 Years of Service**	**30+ Years of Service**
50	0.00%	40.00%	0.000%	40.00%
51	0.00%	20.00%	0.000%	20.00%
52	0.00%	20.00%	0.000%	20.00%
53	0.00%	20.00%	0.000%	20.00%
54	0.00%	20.00%	0.000%	20.00%
55	7.50%	20.00%	6.125%	10.00%
56	7.50%	10.00%	6.250%	10.00%
57	7.50%	10.00%	6.250%	10.00%
58	7.50%	10.00%	6.250%	10.00%
59	12.50%	10.00%	9.375%	15.00%
60	30.00%	100.00%	18.750%	25.00%
61	25.00%	100.00%	18.750%	17.00%
62	30.00%	100.00%	20.000%	100.00%
63	30.00%	100.00%	22.000%	100.00%
64	30.00%	100.00%	22.000%	100.00%
65	40.00%	100.00%	33.000%	100.00%
66	40.00%	100.00%	33.000%	100.00%
67	40.00%	100.00%	33.000%	100.00%
68	50.00%	100.00%	22.000%	100.00%
69	50.00%	100.00%	33.000%	100.00%
70+	100.000%	100.00%	100.000%	100.00%

Retirement Rates:
(continued)

Group C Non-Grandfathered			
Age	**Before Rule of 90**	**1st Year after Rule of 90**	**1+ Years after Rule of 90**
<56	5.00%	30.00%	20.00%
56	5.00%	30.00%	10.00%
57	5.00%	30.00%	10.00%
58	5.00%	30.00%	10.00%
59	7.50%	30.00%	15.00%
60	10.00%	30.00%	15.00%
61	15.00%	30.00%	20.00%
62	12.50%	30.00%	22.50%
63	20.00%	30.00%	22.50%
64	20.00%	30.00%	25.00%
65	40.00%	30.00%	40.00%
66	30.00%	30.00%	30.00%
67	30.00%	30.00%	30.00%
68	30.00%	30.00%	30.00%
69	30.00%	30.00%	30.00%
70+	100.00%	100.00%	100.00%

Deferred Members as Reported by the System:

Valuation liability based on accrued benefit and assumed to retire as follows:

- Group A and Group C-NGF: 10% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age.
- Group C-GF: 50% of members are assumed to retire from age 62-69, then 100% at age 70.

Inactive Members as Reported by the System:

Not Vested: Valuation liability equals 100% of accumulated contributions.

Vested: Valuation liability based on accrued benefit and assumed to retire as follows:

- Group A and Group C-NGF: 10% of members are assumed to retire from Early Retirement Age for each year until Normal Retirement Age, then 100% of members are assumed to retire at their Normal Retirement Age.
- Group C-GF: 50% of members are assumed to retire from age 62-69, then 100% at age 70.

Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	85% of male members and 35% of female members are assumed to be married.
Age of Spouse:	Females three years younger than males.
Benefit Election:	All members are assumed to elect the single life annuity option.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary, with Normal Cost determined using the plan of benefits applicable to each member.
Modeling:	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 a 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 direction of the supervising actuary.
Changes in Actuarial Assumptions:	There were no changes in actuarial assumptions since the last valuation.

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Effective Date:	July 1, 1947.
Credible Service:	Service as a member plus purchased service.
Average Final Compensation (AFC):	Average annual compensation during highest 3 consecutive years.
Grandfathered Status:	Group C members who were within five years of normal retirement eligibility as defined prior to July 1, 2010, are "grandfathered".
Normal Retirement – Eligibility:	• Group A: Age 60 or 30 years of creditable service. • Group C: Grandfathered – Age 62 or 30 years of creditable service Non-grandfathered – Age 65 or age plus creditable service equal to 90
Normal Retirement – Amount:	• Group A: Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/60th of AFC times creditable service. • Group C: Grandfathered – Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80th of AFC times creditable service prior to July 1, 1990, plus 1/60th of AFC times creditable service after July 1, 1990. Non-grandfathered – Member annuity based on accumulated contributions plus a pension, which, with member annuity, equals 1/80th of AFC times creditable service prior to July 1, 1990, plus 1/60th of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 1/50th of AFC for years of service after 20. If a member already has 20 or more years of service on June 30, 2010, the 1/50th will be applied to all service accrued after July 1, 2010. Minimum benefit applicable to Group A of $6,600 after 30 years of creditable service (pro-rata for service less than 30 years). Maximum benefit applicable to Group C: Grandfathered maximum benefit is 50% of AFC up to June 30, 2010. May continue to accrue up to 53.34% of AFC with service earned after July 1, 2010. Non-grandfathered maximum benefit is 60% of AFC.
Early Retirement – Eligibility:	• Group A: Age 55 • Group C Age 55 with 5 years of creditable service..

Early Retirement – Amount:	• Group A: Actuarial equivalent of normal retirement allowance using AFC and creditable service at early retirement. • Group C: Grandfathered – Accrued normal benefit reduced 6% for each year prior to age 62. Non-grandfathered – Accrued normal benefit reduced by actuarial reduction from normal retirement age.
Vesting:	All groups – 5 years of creditable service. Allowance beginning at age 60 calculated as a normal retirement allowance based on AFC and creditable service at termination.
Disability Retirement – Eligibility:	All groups – Total and permanent disability after 5 years of creditable service (5 years preceding retirement served in State).
Disability Retirement – Amount:	All groups – Calculated as a service allowance based on AFC and creditable service at disability retirement, subject to a 25% of AFC minimum.
Death Benefit – Eligibility:	• Group A: Age 60 or 30 years of creditable service; 10 years of creditable service if in service at death. • Group C: Age 55 and 5 years of creditable service or 10 years of creditable service.
Death Benefit – Amount:	All groups – Accrued allowance paid under 100% survivorship option. If the eligibility requirements are not met or if beneficiary so elects, the member's accumulated contributions are paid to the beneficiary or estate. Certain children's benefits may also be payable.
Post-Retirement Adjustments:	• Group A: Allowances in payment for at least one year increased on each January 1 by the percentage increase in Consumer Price Index, but not more than 5%. • Group B & C: Same, but increase is based on half of the Consumer Price Index increase. For members receiving a reduced early retirement allowance, the adjustment will not apply before age 62.
Refund of Contributions:	If no other beneficiary is payable, a terminated member receives his accumulated contributions with interest.
Member Contribution Rates:	• Group A: 5.5% of earnable compensation. Contributions stop after 25 years of creditable service. • Group C: 5% of earnable compensation with at least five years of service as of July 1, 2014. 6% of earnable compensation with less than five years of service as of July 1, 2014.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

Appendix: Definition of Terms

Definitions of certain terms as they are used in Statement 68. The terms may have different meanings in other contexts.

Active Employees:	Individuals employed at the end of the reporting or measurement period, as applicable.
Actual Contributions:	Cash contributions recognized as additions to a pension plan's Fiduciary Net Position.
Actuarial Present Value of Projected Benefit Payments:	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation:	The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date:	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution:	A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.
Ad Hoc Cost-of-Living Adjustments (Ad Hoc COLAs):	Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.
Ad Hoc Postemployment Benefit Changes:	Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.
Agent Employer:	An employer whose employees are provided with pensions through an agent multiple-employer defined benefit pension plan.
Agent Multiple-Employer Defined Benefit Pension Plan (Agent Pension Plan):	A multiple-employer defined benefit pension plan in which pension plan assets are pooled for investment purposes but separate accounts are maintained for each individual employer so that each employer's share of the pooled assets is legally available to pay the benefits of only its employees.
Allocated Insurance Contract:	A contract with an insurance company under which related payments to the insurance company are currently used to purchase immediate or deferred annuities for individual employees. Also may be referred to as an annuity contract.
Automatic Cost-of-Living Adjustments (Automatic COLAs):	Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).

Appendix: Definition of Terms

Automatic Postemployment Benefit Changes:	Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Closed Period:	A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.
Collective Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions:	Deferred outflows of resources and deferred inflows of resources related to pensions arising from certain changes in the collective Net Pension Liability.
Collective Net Pension Liability:	The Net Pension Liability for benefits provided through (1) a cost-sharing pension plan or (2) a single-employer or agent pension plan in circumstances in which there is a special funding situation.
Collective Pension Expense:	Pension expense arising from certain changes in the collective Net Pension Liability.
Contributions:	Additions to a pension Plan's Fiduciary Net Position for amounts from employers, nonemployer contributing entities (for example, state government contributions to a local government pension plan), or employees. Contributions can result from cash receipts by the pension plan or from recognition by the pension plan of a receivable from one of these sources.
Cost-of-Living Adjustments:	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Employer:	An employer whose employees are provided with pensions through a cost-sharing multiple-employer defined benefit pension plan.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (Cost-Sharing Pension Plan):	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll:	The payroll of employees that are provided with pensions through the pension plan.
Deferred Retirement Option Program (DROP):	A program that permits an employee to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The employee continues to provide service to the employer and is paid for that service by the employer after the DROP entry date; however, the pensions that would have been paid to the employee (if the employee had retired and not entered the DROP) are credited to an individual employee account within the defined benefit pension plan until the end of the DROP period.
Defined Benefit Pension Plans:	Pension plans that are used to provide defined benefit pensions.

Appendix: Definition of Terms

Defined Benefit Pensions:	Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statement 68.)
Defined Contribution Pension Plans:	Pension plans that are used to provide defined contribution pensions.
Defined Contribution Pensions:	Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.
Discount Rate:	The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following: 1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension Plan's Fiduciary Net Position is projected (under the requirements of Statements 67/68) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments. 2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.
Entry Age Actuarial Cost Method:	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the *normal cost*. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the *actuarial accrued liability*.
Inactive Employees:	Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.
Measurement Period:	The period between the prior and the current measurement dates.
Multiple-Employer Defined Benefit Pension Plan:	A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

Appendix: Definition of Terms

Net Pension Liability (NPL):	The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities:	Entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of Statements 67/68, employees are not considered non-employer contributing entities.
Other Postemployment Benefits:	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits, regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Pension Plans:	Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed and benefits are paid as they come due.
Pensions:	Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.
Plan Members:	Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).
Postemployment	The period after employment.
Postemployment Benefit Changes:	Adjustments to the pension of an inactive employee.
Postemployment Healthcare Benefits:	Medical, dental, vision, and other health-related benefits paid subsequent to the termination of employment.
Projected Benefit Payments:	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.
Public Employee Retirement System:	A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.
Real Rate of Return:	The rate of return on an investment after adjustment to eliminate inflation.
Service Costs:	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Single Employer:	An employer whose employees are provided with pensions through a single-employer defined benefit pension plan.

Appendix: Definition of Terms

Single-Employer Defined Benefit Pension Plan (Single-Employer Pension Plan)	A defined benefit pension plan that is used to provide pensions to employees of only one employer.
Special Funding Situations:	Circumstances in which a nonemployer entity is legally responsible for making contributions directly to a pension plan that is used to provide pensions to the employees of another entity or entities and either of the following conditions exists: The amount of contributions for which the nonemployer entity legally is responsible is *not* dependent upon one or more events or circumstances unrelated to the pensions. The nonemployer entity is the only entity with a legal obligation to make contributions directly to a pension plan.
Termination Benefits:	Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.
Total Pension Liability (TPL):	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement.

C. Sample Experience Study

A sample Experience Study begins on the following page.

State Teachers'
Retirement Fund

ACTUARIAL EXPERIENCE REVIEW

Analysis of Actuarial Experience During the Period July 1, 2014 through June 30, 2019

March 19, 2020 / Matthew Strom, FSA, MAAA, EA / Tanya Dybal, FSA, MAAA, EA /
Kim Nicholl, FSA, MAAA, EA, FCA

Segal

Segal

101 North Wacker
Suite 400
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Via Email

March 19, 2020

Board of Trustees
State Teachers' Retirement Fund
Address
City, State Zip

Re: Actuarial Experience Review for the Period July 1, 2014 through June 30, 2019

Dear Trustees:

This report presents the results of the actuarial experience review of the demographic and economic experience of the State Teachers' Retirement Fund (TRF) for the period July 1, 2014 to June 30, 2019.

All current actuarial assumptions were reviewed as part of this study. This study is the basis for our recommendation of the assumptions to be used in the July 1, 2020 valuation.

In preparing the results presented in this report, we have relied upon data provided by TRF regarding the membership census data and financial information. While the scope of our engagement did not call for us to perform an audit or independent verification of this information, we have reviewed it for reasonableness. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information.

This review recommends assumptions to be used in the valuation to measure the Fund's financial condition as of a single date. Future actuarial measurements may differ significantly from the current measurements presented in this report due to other assumption sets. This report does not include an analysis of the potential range of such future measurements.

Our analysis was conducted in accordance with generally accepted actuarial principles as prescribed by the Actuarial Standards Board (ASB) and the American Academy of Actuaries. Additionally, the development of all assumptions contained herein is in accordance with ASB Actuarial Standard of Practice (ASOP) No. 27 (*Selection of Economic Assumptions for Measuring Pension Obligations*) and ASOP No. 35 (*Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations*).

The undersigned are independent. They are Fellows of the Society of Actuaries, Enrolled Actuaries, and members of the American Academy of Actuaries and are experienced in performing experience studies for large public retirement systems. They meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Respectively submitted,

Matthew A. Strom, FSA, MAAA, EA
Senior Vice President and Consulting Actuary

Kim Nicholl, FSA, MAAA, EA, FCA
Senior Vice President and Consulting Actuary

Tanya Dybal, FSA, MAAA, EA
Senior Consultant and Actuary

Table of Contents

State Teachers' Retirement Fund

Experience Review for the Period July 1, 2014 through June 30, 2019

Segal

I. Executive Summary

A. Introduction

Actuarial valuations are prepared annually to determine whether the employer contributions are sufficient to fund the State Teachers' Retirement Fund ("TRF") on an actuarial reserve basis. Each actuarial valuation involves a projection of the benefits expected to be paid in the future to all members of TRF. The projection of expected future benefit payments is based on the characteristics of members as of the valuation date, the benefit provisions in effect on that date, and assumptions of future events and conditions.

The assumptions used in actuarial valuations can be grouped in two categories: (1) economic assumptions – the assumed long-term rates of investment return, salary increases, and payroll growth, and (2) non-economic or demographic assumptions – the assumed rates of termination, disability, retirement, and mortality. Demographic assumptions are primarily selected on the basis of recent experience (although a change in plan design or the employment environment may suggest otherwise), while economic assumptions rely more on a long-term perspective of expected future trends.

In order to determine the probability of an event occurring, we examine the "decrements" and "exposures" of that event. Using termination from active employment, for example, we compare the number of employees who actually terminate in a certain age and/or service category (i.e., the number of "decrements") with those "who could have terminated" (i.e., the number of "exposures"). For example, if there were 500 active employees in the 20-24 age group at the beginning of the year and 50 of them terminate during the year, we would say the probability of termination in that age group is 50 ÷ 500 or 10%.

When setting the demographic assumptions (other than mortality), we typically develop proposed assumption rates by taking the midpoint of the current assumption rate and the rate that the experience shows for that particular decrement. For example, if the probability of termination in the 20-24 age group is currently 8%, and the experience during the study period shows that 10% of eligible members actually terminated, we would propose adjusting the termination rate to 9%. We choose the midpoint in order to smooth any changes in actual experience in case the experience during the study period is an anomaly.

For the demographic assumptions, we have reviewed the experience during the study period on both a headcount basis and on a benefit-weighted basis in order to determine the appropriate recommendation. For example, a member who is eligible to retire at any retirement age with a large pension may be more likely to retire than a member of the same age with a smaller benefit. Based on our analysis, we have determined that the benefit-weighted approach is the better approach.

If actual experience exactly matches the expected experience, the actual annual cost of TRF will equal the annual cost determined by the actuarial valuation. However, this result is virtually never achieved, due to the long-term nature of the benefit projections and the numerous assumptions used in actuarial valuations. TRF recognizes actuarial gains or actuarial losses each year, reflecting the net difference between actual experience and anticipated experience. Determination of the funded status is updated in connection with each actuarial valuation to reflect the net gain or loss. A pattern of gains or losses with respect to one or more assumptions is the basis for recommended changes to the assumptions. Each valuation measures the effectiveness of each assumption and allows for the monitoring of the assumptions.

Actuarial experience studies are undertaken periodically and serve as the basis for recommended changes in actuarial assumptions and methods. A change in assumptions is recommended when it is demonstrated that the current assumptions do not accurately reflect the current trend determined from analysis of the data or anticipated future trends based upon reasonable expectations. The data analyzed include actual experience for demographic assumptions and economic forecasts for economic assumptions. The Actuarial Standards Board (ASB) provides actuaries with standards of practice that provide guidance and recommendations on acceptable methods and techniques to be used in developing both economic and demographic assumptions. Specifically, these are the ASB Actuarial Standard of Practice (ASOP) No. 27 (*Selection of Economic Assumptions for Measuring Pension Obligations*) and ASOP No. 35 (*Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations*).

This study reviews the actuarial experience of TRF for the five-year period beginning July 1, 2014 and ending June 30, 2019, compares this experience to the current actuarial assumptions, and recommends changes to the assumptions as necessary. Economic assumption recommendations were primarily developed based on inputs related to economic forecasts and capital market expectations.

A summary of the key points of our review and our recommendations follows.

B. Recommendations

The experience review provides an opportunity for the Board, staff, and actuary to consider how specific assumptions or methods affect the funding of TRF, including the funded status and the adequacy of contributions made by members and employers (as compared to the actuarially determined contribution). We have reviewed both economic and demographic experience of the Fund as it relates to the expected actuarial experience based on the current plan assumptions. Included are recommendations for changes in assumptions that we believe will more accurately reflect the future experience of TRF.

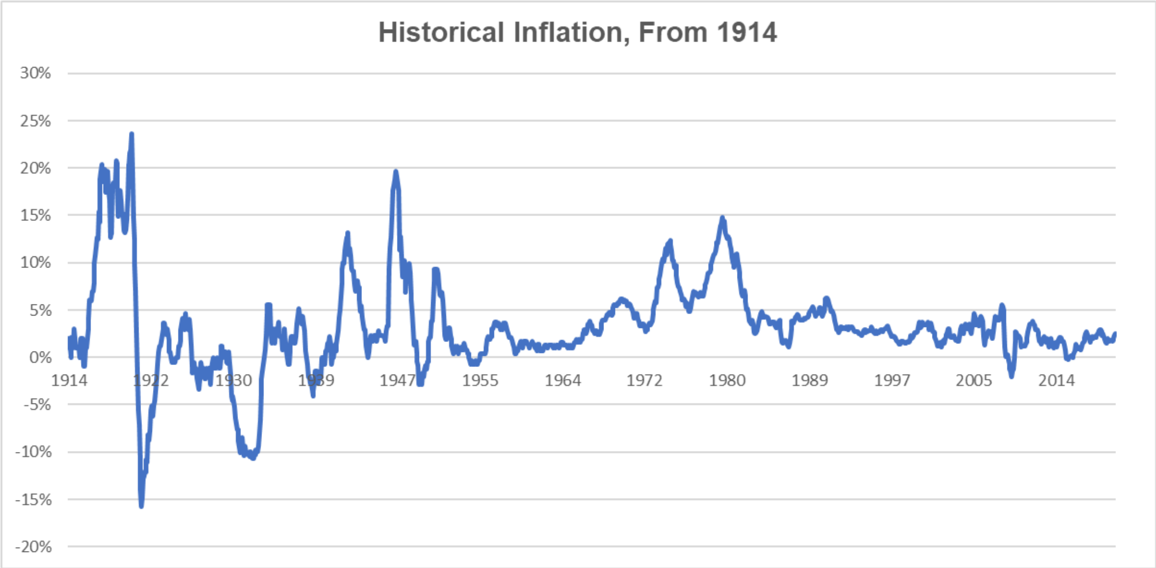
The detailed analysis of each individual assumption is discussed later in this report.

Economic Assumptions

Economic assumptions include inflation, investment rate of return (or discount rate), rate of individual salary increases, and payroll growth.

Inflation

Inflation continues at relatively low levels from a historical perspective, as shown in the graph below.



The current inflation assumption is 2.75% per annum. The outlook for inflation remains slightly less than 2.3%, over a 20 year time horizon according to the Horizon Survey of Capital Market Assumptions (2019 Edition) and other professional forecasters. In light of all sources of inflation expectations reviewed in our study, we recommend lowering the inflation assumption from 2.75% to 2.30%.

The other economic assumptions have an underlying inflation component. The investment return assumption is comprised of inflation and the real rate of return for each asset class. The assumed rates of individual salary increases are comprised of inflation, productivity, and merit and seniority increases. The payroll growth assumption is comprised of inflation and productivity.

Investment Return

The Fund has averaged investment returns of 9.4% and 5.6% over the last 10 years and 20 years, respectfully. The current assumption is 7.75%.

Based on the Fund's target allocation and the 20-year Capital Market Assumptions (CMA) provided in the Horizon Survey of Capital Market Assumptions (2019 Edition), the net expected real rate of investment return (net of investment expenses) is 5.18%, compared to the current assumption of 5.11%. Since we recommend that the inflation assumption be reduced to 2.30%, and the investment return assumption is the combination of expected inflation plus expected real rate of return, the 50th percentile expected return over the next 20 years is 7.48%. We recommend lowering the investment return assumption from 7.75% to 7.25%, which represents a 53% likelihood of achieving 7.25% over the long term.

Rates of Individual Salary Increases

We study the merit and seniority increases (plus productivity) separately from inflation. Analysis of the distribution of merit and seniority increases by years since date of hire during the study period shows that these increases were less than expected for members with less than 10 years since hire date and more than expected for those between 26 and 30 years since hire date. Based on experience, we recommend minor changes to the merit and seniority (and productivity) portion of individual salary increases (full rates in the appendix).

Payroll Growth Rate

The payroll growth rate is used for determining the effective amortization period and to determine the amortization payment of the unfunded actuarial accrued liability when the actuarially determined contribution rate is determined as a level percent-of-payroll. Based upon our analysis, we recommend no change to the current payroll growth assumption of 3.25%.

Demographic Assumptions

The demographic assumptions include mortality, retirement, termination, disability incidence, percent married, and spouse age difference.

Mortality

The current mortality table for the healthy annuitant lives is the RP-2014 Healthy Annuitant Mortality Table (sex distinct) set back one year, multiplied by 50% for ages under 75 and grading up to 100% by age 80, projected generationally using MP-2014 for both males and females. The actual rate of mortality for both males and females was more than expected.

In 2019, the Society of Actuaries published a series of mortality tables derived from public plan experience, called Pub-2010. The published mortality tables are based on three broad categories: teachers, public safety, and general employees. In addition, contingent annuitant tables were published. For purposes of comparing actual experience to expected, the PubT-2010 (the teacher table) have been projected to 2016, the mid-point of the experience study.

We recommend updating the base tables to the appropriate Pub-2010 mortality tables, with adjustments for TRF-specific experience where credible data exists. In order to reflect future improvements in mortality, we recommend updating the mortality projection scale to MP-2019.

The current mortality table for disabled lives is the RP-2014 Disabled Mortality Table set forward four years. This table was intended to have sufficient margin for future improvements in mortality. Experience for disabled annuitants has been consistent with the current assumptions. However, we recommend updating the base table to the non-safety version of the Pub-2010 mortality table for disabled retirees. In order to reflect future improvements in mortality, we recommend using the MP-2019 mortality projection scale.

The current mortality table for beneficiary lives is the same as the current healthy annuitant lives mortality table. We recommend updating the base tables to the Pub-2010 Contingent Survivor Table and updating the mortality projection scale to MP-2019.

The current mortality table for active members is the RP-2014 Employee Mortality Table, projected generationally using Scale MP-2014. Very few members die in active service and the liability associated with active deaths is a small percentage of the total liability. Since plan experience is insufficient to set the assumption, we recommend using the PubT-2010 Employee Table for active members and applying a generational projection using Scale MP-2019.

Retirement

The eligibility criteria for retirement differs by Tier. Tier 1 members are those hired prior to July 1, 2008. Grandfathered Tier 1 members are those who either were at least age 55 with at least years of service or whose age plus service was at least 65 as of June 30, 2013. Non-grandfathered Tier 1 members are those who do not meet these criteria as of June 30, 2013. Tier 2 members are those hired after June 30, 2008.

Eligibility for unreduced retirement benefits is as follows:

- Tier 1 members are eligible at the earlier of:
  - Age 65 with three years of service
  - If grandfathered, age plus service is at least 85
  - If non-grandfathered, age plus service is at least 90 with a minimum age of 60

- Tier 2 members are eligible at the earlier of:
  - Age 65 with five years of service
  - Age plus service is at least 90 with a minimum of age 60

Eligibility for reduced benefits is as follows:

- For all Tier 1 members, age 55 with three years of service
- For Tier 2 members, age 55 with five years of service.

The current retirement rates vary based on a member's age and gender as well as whether the member is eligible for a reduced or unreduced benefit. In the first year that the member becomes eligible for an unreduced benefit, the unreduced retirement rate is increased by 10%.

We have analyzed retirement experience for the following groups:

- Eligible for a reduced benefit.
- Eligible for an unreduced benefit in the first year only
- Eligible for an unreduced benefit in all other years

There is little Tier 2 retirement experience and grandfathered versus non-grandfathered experience to analyze. However, the retirement rates take into account each member's eligibility requirements.

For reduced benefits, there were slightly more retirements than expected. We recommend minor modifications to rates at a few ages. In addition, because the number of retirements were insufficient to justify gender distinct retirement rates, we recommend use of unisex rates of retirement for reduced benefits.

For unreduced benefits in the first year of eligibility, members retired at an average rate of 35%. After the first year of being eligible for unreduced benefits, members retired at an average rate of 20%. Therefore, we recommend changing the current assumption of a 10% increase in retirement rates for the first year of eligibility for unreduced benefits to 12.5%.

For unreduced benefits after the first year of eligibility, there were fewer retirements than expected. The lower-than-expected actual retirement experience was more prominent for female members than for male members. Therefore, we recommend minor (primarily downward) revisions to the retirement rates.

For inactive vested retirements, the current assumption is that 5% will retire at each early retirement age prior to normal retirement and that 100% of the remaining inactive vested members will retire at normal retirement age. During the experience period, an average of 6.5% of those retired at each early retirement age prior to normal retirement. Therefore, we recommend maintaining the current 5% assumption at each early retirement age prior to normal retirement age.

Termination

The current termination assumptions are gender distinct and based on years since date of hire. Similar to the prior experience review, fewer active members are terminating prior to retirement than expected. For male members, the experience is closer to expected than it is for female members. We recommend that the termination rates be modified (primarily downward) to move towards recent actual experience.

Disability Retirement

The current disability incidence rates are based on age and are unisex. The experience for the period July 1, 2014 to June 30, 2019 shows that approximately one-third of those expected retired with a disability benefit. The prior two experience studies showed that actual disability retirements were close to the expected number. Over the last 15-year period, 80% of those expected retired with a disability benefit. Therefore, we recommend a 20% decrease to the current disability retirement rates.

Spouse Information

Spouse information assumptions affect the valuation and include the percentage of members married and the age difference of spouses. The current assumptions are:

- 75% of members are married
- Male spouses are three years older than female spouses
- 100% of spouses are of the opposite gender

We have limited data on spouse information. However, the current assumptions are reasonable and consistent with assumptions used for similar plans. In addition, all optional forms of payment are actuarially equivalent, so these assumptions do not have a material effect on the valuation results. Therefore, we recommend no change to the current assumptions.

Summary of Actuarial Experience

For the five-year period under review, the Fund has experienced actuarial gains and actuarial losses. Investment returns on the market value of assets has averaged 9.4% and 5.6% over the last 10 and 20 years, respectfully. During the five-year study period, the imputed return on the actuarial value of assets has averaged 7.9%. Experience for all other assumptions has varied between producing gains and losses on a year-by-year basis over the study period, but net experience over the entire period has generally produced actuarial gains. A summary of the historical gains and losses is shown below.

Valuation Date Beginning	Actuarial Accrued Liability (AAL)	Total Actuarial Gain/(Loss)		Investment Gain/(Loss)		Non-Investment Gain/(Loss)	
		Amount	% of AAL	Amount	% of AAL	Amount	% of AAL
July 1, 2019	$3,993,424,160	($10,741,695)	-0.27%	($34,821,389)	-0.87%	$24,079,694	0.60%
July 1, 2018	3,863,515,726	33,266,442	0.86%	4,586,416	0.12%	$28,680,026	0.74%
July 1, 2017	3,734,016,828	20,560,351	0.55%	9,464,023	0.25%	$11,096,328	0.30%
July 1, 2016	3,589,393,851	(41,196,887)	-1.15%	(33,588,108)	-0.94%	(7,608,779)	-0.21%
July 1, 2015	3,449,775,982	48,249,394	1.40%	51,873,093	1.50%	(3,623,699)	-0.11%

Summary of Assumptions and Recommended Changes

The following table summarizes the actuarial assumptions and methods used in the valuation and the changes recommended in this report.

Description	Current	Proposed
Economic Assumptions		
Inflation	2.75%	2.30%
Investment Return	7.75%	7.25%
Salary Scale	Merit/seniority rates (including productivity) based on years since date of hire plus inflation	Minor changes to the merit and seniority (and productivity) portion of individual salary increases for less than 10 years since hire and for between 26 and 30 years since hire
Payroll Growth	3.25%	No change
Demographic Assumptions		
Healthy Mortality	RP-2014 Healthy Annuitant Table, set back one year, multiplied by 50% for ages under 75 and grading up to 100% by age 80 with generational mortality improvement using MP-2014	104% of the PubT-2010 Retiree Table and 95% of the Pub-2010 Contingent Survivor Table with generational mortality improvement using MP-2019
Disabled Mortality	RP-2014 Disabled Mortality Table set forward four years	PubNS-2010 Non-Safety Disabled Mortality Table with generational mortality improvement using MP-2019
Active Mortality	RP-2014 Employee Mortality Table with generational mortality improvement using scale MP-2014	PubT-2010 Employee Table with generational mortality improvement using MP-2019
Active Retirement	For reduced retirement, unisex rates based on age that range from 2% at age 55 to 12% at age 54. For unreduced retirement, gender distinct rates that range from 15% at age 50 to 100% at age 75. In the first year that members become eligible for unreduced benefits, the unreduced retirement benefit is increased 10%.	For reduced retirement, minor changes to the unisex rates. For unreduced retirement, retirement rates are lowered. In the first year that members become eligible for unreduced benefits, the unreduced retirement benefit is increased from 10% to 12.5%.
Inactive Vested Retirement	5% at each early retirement age prior to normal retirement and 100% at normal retirement age.	No change
Termination	Gender distinct rates based on years of service	Minor modifications resulting in generally lower termination rates
Disability Retirement	Age based rates	Decrease current rates by 20%
Spouse Information	75% of members are assumed to be married, male spouses are three years younger than female spouses, and 100% of spouses are the opposite gender	No change

Impact of Assumption and Method Changes on Valuation Results

The following tables detail the impact of recommended assumption changes, using the July 1, 2019 actuarial valuation results for illustrative purposes.

Description ($ in millions)	Current Assumptions	Proposed Mortality Assumptions	Proposed Mortality and Retirement Assumptions	Proposed Mortality, Retirement, Termination and Disability Assumptions
Actuarial Accrued Liability	$3,993.4	$3,882.0	$3,868.6	$3,870.2
Actuarial Value of Assets	2,635.5	2,635.5	2,635.5	2,635.5
Unfunded Actuarial Accrued Liability	1,357.9	1,246.4	1,233.1	1,234.7
Funded Percentage	66.0%	67.9%	68.1%	68.1%
Normal Cost	$86.0	$84.5	$83.9	$84.1
Actuarially Determined Contribution Rate	12.84%	11.60%	11.38%	11.43%
Margin / (Deficit)	(0.09%)	1.15%	1.37%	1.32%
Effective Amortization Period	24 years	21 years	20 years	20 years

Description ($ in millions)	Proposed Demographic and Current Economic Assumptions	Proposed Demographic Assumptions and 7.25% Investment Return	Proposed Demographic Assumptions, 7.25% Investment Return, Salary Increase, and Inflation
Actuarial Accrued Liability	$3,870.2	$4,087.5	$4,046.9
Actuarial Value of Assets	2,635.5	2,635.5	2,635.5
Unfunded Actuarial Accrued Liability	1,234.7	1,451.9	1,411.4
Funded Percentage	68.1%	64.5%	65.1%
Normal Cost	$84.1	$93.8	$88.7
Actuarially Determined Contribution Rate	11.43%	14.17%	13.24%
Margin / (Deficit)	1.32%	(1.42%)	(0.49%)
Effective Amortization Period	20 years	29 years	26 years

The net effect of the recommended demographic assumption changes, using the July 1, 2019 actuarial valuation for illustrative purposes, would have decreased the actuarial accrued liability by approximately $123 million, or 3.1%. The primary driver of the decrease in the actuarial accrued liability is modifying the mortality tables and projection scale, which generally project less improvement in future mortality than MP-2014.

The net effect of the recommended economic assumption changes would have increased the actuarial accrued liability by approximately $177 million, or 4.6%. The primary driver of the increase in the actuarial accrued liability is the lowering of the investment return assumption from 7.75% to 7.25%.

Overall, the recommended demographic and economic changes would increase the actuarial accrued liability by $54 million, or 1.3%, increase the normal cost by $2.7 million, or 3.1%, increase the actuarially determined contribution rate by 0.40% and increase the effective amortization period by two years.

II. Economic Assumptions

The economic assumptions have a significant impact on the development of plan liabilities. Changes to these assumptions can substantially alter the results determined by the actuary. The goal of an experience study is to produce a consistent set of economic assumptions that appropriately reflect expected future economic trends.

The primary economic assumptions that affect TRF's funding are:

- Inflation;
- Investment Rate of Return;
- Individual Salary Increases; and
- Payroll Growth

The Actuarial Standards Board (ASB) has adopted Actuarial Standard of Practice No. 27 (ASOP 27 - *Selection of Economic Assumptions for Measuring Pension Obligations*) to provide actuaries guidance in developing economic assumptions.

The inflation component is included in all economic assumptions, and therefore is key to developing a consistent set of actuarial assumptions. The investment rate of return assumption includes an inflation component and a real rate of return component. The components of the salary increase assumption are inflation, productivity, and merit and seniority increases. The components of the payroll growth assumption include inflation and productivity.

A. Inflation

In developing the recommendation for the assumed inflation component, actuarial standards of practice suggest the actuary review appropriate inflation data. This data may include consumer price indexes, the implicit price deflator, forecasts of inflation, and yields on government securities of various maturities. For this study, we referred to commonly referenced historical measures of inflation via the National Consumer Price Index for all urban consumers (CPI-U).

The table below shows that recent inflation experience continues at a low rate.

Historical Consumer Price Index – Averages (U.S. City Average - All Urban Consumers)

Average Annual Change as of June 30, 2019	CPI-U
5-Year Average	1.45%
10-Year Average	1.73%
20-Year Average	2.19%
30-Year Average	2.44%

As can be seen in the table on the prior page, the average annual inflation rates have gradually declined over the last 30 years due to a relatively low inflationary period over the past two decades. Historical trend is a less important consideration for the assumed rate of inflation, but assists in determining the reasonable bounds of expected inflation.

Since 2012, Horizon Actuarial Services, LLC has published survey results that summarize the capital market assumptions of various investment firms. Based on the survey results from the 2019 Edition of the Survey of Capital Market Assumptions, the average 10-year inflation assumption across 34 survey respondents was 2.21% and the average 20-year inflation assumption across a subset of 16 survey respondents was 2.29%.

The table below compares the 2019 Horizon Survey results to other sources.

Source	10-Year	20-Year
Federal Reserve Bank of Philadelphia Fourth Quarter 2019 Survey of Professional Forecasters	2.20%	
Callan	2.25%	
Segal Marco Advisors	2.00%	2.00%
2019 Horizon Survey of Capital Market Assumptions	2.21%	2.29%

Next, we consider the measure of future inflation expectation. An indication of future expectation is a market-based forecast. Treasury Inflation Protection Securities (TIPS) are government bonds, which, in addition to a fixed yield, add the actual percentage change in CPI to the principal value. Therefore, the spread between the TIPS and the Conventional Treasury note/bond of the same maturity is an indication of the market's forecast for inflation.

The following table compares the yields on US Treasury Bonds as of June 30, 2019, with and without inflation indexing.

US Treasury Bonds as of June 30, 2019	10-Year Yield	20-Year Yield	30-Year Yield
Non-Inflation Indexed	2.07%	2.36%	2.57%
Inflation Indexed	0.37%	0.59%	0.79%
Difference	1.70%	1.77%	1.78%

Because of the inflation protection, TIPS' yields are considerably lower than those of regular Treasury securities of similar maturities. As of June 30, 2019, 30-year Treasuries yielded 2.57% while 30-year TIPS yielded 0.79%. In order for 30-year TIPS to match the return of the conventional 30-year Treasury for a buy-and-hold income investor, inflation would have to measure 1.78% per year over the next 30 years. The market's expectation of inflation alone is not a definitive basis for an inflation assumption, but is useful as one indicator of future trend. In addition, it is also important to note that the market's view of inflation over 20 years is essentially the same as over 30 years.

Lastly, we referred to the 2019 report on the financial status of the Social Security program[1]. The projected average increase in price inflation over the next 75 years under the intermediate cost assumptions used in that report was 2.60%. The price inflation measure used in this report is the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W)[2]. Besides projecting the results under the intermediate cost assumptions using an inflation assumption of 2.60%, alternative projections were also made using a lower and a higher inflation assumption of 2.00% and 3.20%, respectively.

The Philadelphia Federal Reserve Bank Survey of Professional Forecasters indicates inflation expectations of a 10-year period of 2.20%. This is consistent with the 10-year projections contained in the Horizon Survey. The 20-year projections in the Horizon Survey indicate inflation of 2.29%. In addition, the market's expectation of inflation over 30 years is consistent with expectations over 20 years. Considering all of this information, we recommend that the assumption be lowered to 2.30%.

[1] Source: Social Security Administration – The 2019 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds

[2] The CPI-W is a more specialized index relative to CPI-U and seeks to track retail prices as they affect urban hourly wage earners and clerical workers. It encompasses about 32 percent of the United States' population and is a subset of the CPI-U group. The CPI-W places a slightly higher weight on food, apparel, transportation, and other goods and services. It places a slightly lower weight on housing, medical care, and recreation. The CPI-U is a more general index and seeks to track retail prices as they affect all urban consumers. It encompasses about 87 percent of the United States' population.

B. Investment Rate of Return

The investment rate of return is used to determine the present value of expected future plan payments. The selection of an investment return assumption considers capital market outlook, the Fund's portfolio mix, and, to a lesser extent, historical returns.

The current investment return assumption is 7.75%, which is comprised of the following components:

- Inflation: 2.75%
- Real rate of return: 5.61%, net of 0.50% for investment expenses
- Adjustment for conservatism: 0.11%

The table below shows the Fund's actual investment returns on a market value basis as well as an actuarial value basis.

Average Annual Return as of June 30, 2019	Market Value of Assets	Actuarial Value of Assets
Past 10 Years	9.4%	5.3%
Past 15 Years	6.6%	6.1%
Past 20 Years	5.6%	5.9%
Past 30 Years	7.5%	7.1%

Investment returns have been less than the 7.75% return assumption on an actuarial value of assets basis. The investment return on the market value of assets basis has been above the current assumption for the past 10 years, but lower than the assumption for other periods. Historical trend is a less important consideration for the assumed rate of investment return, but assists in determining the reasonable bounds of expected investment return,

We based our analysis of the expected real rate of return on the Horizon Survey of Capital Market Assumptions (2019 Edition). This survey compiles and averages the capital market assumptions of 34 investment consultants (including Callan and Segal Marco Advisors). All investment consultants provided assumptions for a 10-year period and 16 respondents provided assumptions for 20-year periods. The expected arithmetic returns are used to determine the expected return by asset class. The 20-year expected geometric real rate of return was generated from the 50^{th} percentile of 5,000 simulated portfolio return trials.

The real return assumptions for the asset classes and the portfolio's expected real return are shown below.

Horizon Study Asset Classes	Horizon Study 20-Year Annual Arithmetic Real Return	Target Allocation	Weighted Real Return
US Core	2.17%	16%	0.35%
Real Estate	5.65%	10%	0.57%
High Yield	4.09%	7%	0.29%
Commodities/Timber	4.00%	2%	0.08%
Infrastructure	6.17%	6%	0.37%
Cash	0.78%	1%	0.01%
US Large Cap	6.05%	24%	1.45%
US Small Cap	7.23%	7%	0.50%
International Developed	7.01%	17%	1.19%
Emerging Markets	9.38%	4%	0.37%
Private Equity	10.53%	6%	0.63%
Total		**100%**	**5.81%**
Adjustment to Geometric			(0.63%)
Geometric Real Rate of Return			**5.18%**

Using the Fund's target asset allocation and the capital market assumptions provided in the 2019 Horizon Survey, the expected real return is 5.18%. This means that over a 20-year period, the Fund is expected to earn an annual rate of return of at least 5.18% half of the time. An expected real rate of return of 4.95% will increase the likelihood of meeting the expectation over a 20-year period to 53%. The following table summarizes the components of the current and proposed investment return assumption.

Assumption Component	Current Assumption	Proposed Assumption
Inflation	2.75%	2.30%
Real Rate of Return	5.11%	5.18%
Adjustment for Adverse Deviation	(0.11%)	(0.23%)
Total Expected Rate of Return	**7.75%**	**7.25%**
Confidence Level	N/A	53.2%

The purpose of the adjustment for adverse deviation is to increase the likelihood of achieving the expected investment return. For example, the 23 basis point reduction in the recommended assumption increases the likelihood of meeting the expectation to 53.2%.

Based on this analysis, we recommend lowering the investment return assumption from 7.75% to 7.25%.

C. Salary Scale

The rate of individual salary increase scale is used to determine members' benefits provided by the Fund. Generally, a member's salary will change over the long term in accordance with inflation, productivity, and merit and seniority scale. The actuary should review available compensation data when selecting this assumption, including the school districts' current compensation practices and any anticipated changes, historical compensation increases and practices of the school districts and other employers in the same industry or geographic area, and historical national wage and productivity growth.

The estimated rate of individual salary increases consists of the following components:

- Inflation
- Productivity
- Merit and seniority increases

The inflation and productivity components are combined to produce the assumed rate of wage inflation. The productivity assumption is currently 1.5%. As described in the next section, we recommend a decrease in the productivity assumption to 1.3%. The inflation and productivity components represents the "across the board" average annual increase in salaries shown in the experience data. The merit component includes the additional increases in salary due to performance, seniority, promotions, etc.

Since merit and seniority increases are unique to each retirement system, it is appropriate to base this assumption on recent experience. We study the merit and seniority increases separately from inflation.

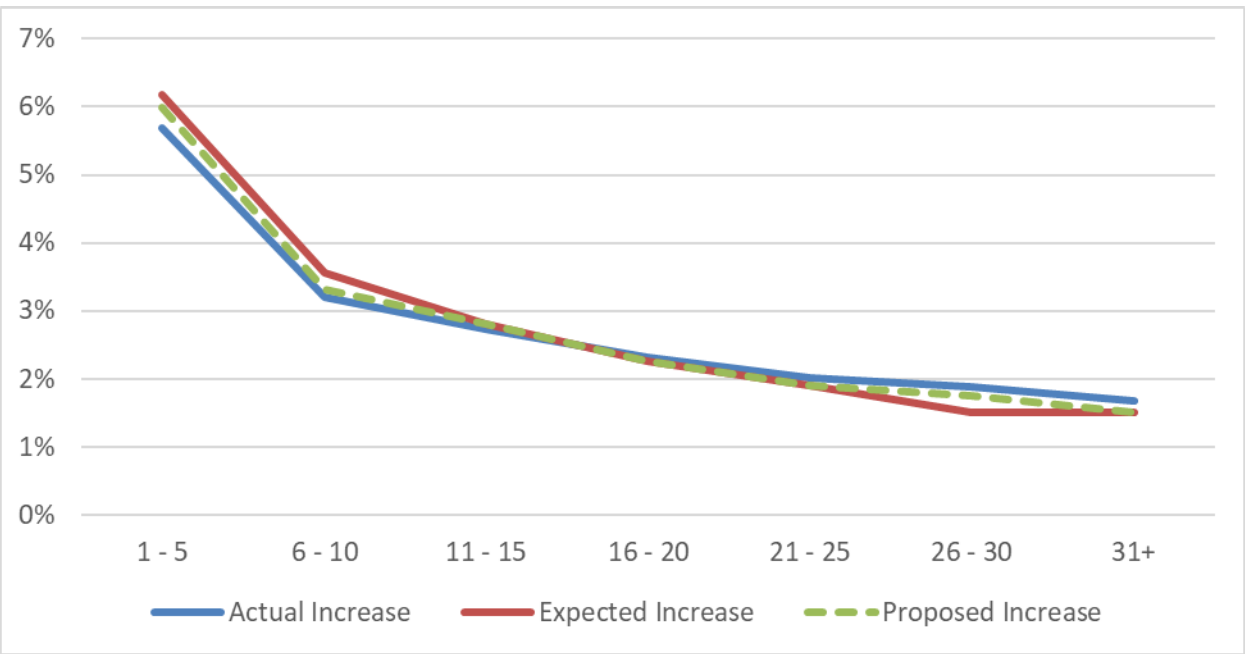
The current salary scale assumption is a table based on years since date of hire. The individual salary increase assumption (including inflation and productivity) ranges from 14.5% during the first year to 4.25% at 26 or more years of service. The historical compensation data, adjusted by approximately 1.5% to account for actual inflation during the study period, was evaluated based on age and years since date of hire age. The strongest relationship continues to be based on members' years since date of hire.

The actual historical compensation data for the experience period (shown in the tables that follow) have been adjusted by approximately 1.5% to account for actual inflation during the study period. The expected salary increase rates have been adjusted by 2.75% to account for our prior assumed rate of inflation. The proposed increase rates are based on ages as of the valuation date and do not reflect any underlying assumptions for inflation, while the proposed increase rates plus inflation reflect our newly proposed assumption for inflation of 2.30%.

The following table and graph shows the actual salary increase experience compared to the current and proposed assumptions. Experience has been adjusted to remove actual inflation over the experience period, which averaged approximately 1.5%.

Years from Hire	Prior Year Salaries (in $000s)	Actual Salaries[3] (in $000s)	Actual Salary Increase	Expected Salary Increases (in $000s)	Expected Salary Increase Rate	Proposed Salary Increase Rate
1 – 5	731,565	773,141	5.68%	776,824	6.19%	6.00%
6 – 10	519,638	536,265	3.20%	538,166	3.57%	3.31%
11 – 15	413,223	424,490	2.73%	424,824	2.81%	2.81%
16 – 20	404,524	413,927	2.32%	413,639	2.25%	2.25%
21 – 25	307,546	313,747	2.02%	313,407	1.91%	1.91%
26 – 30	244,914	249,546	1.89%	248,588	1.50%	1.75%
31+	226,542	230,358	1.68%	229,940	1.50%	1.50%
Total	**2,847,953**	**2,941,473**	**3.28%**	**2,946,389**	**3.42%**	**3.35%**

Graph 1
Salary Increase Experience



[3] Adjusted for actual average inflation of approximately 1.5% during the experience period.

D. Payroll Growth

The payroll growth assumption represents the expected annual increase in total covered payroll from one year to the next. This assumption is used to determine the amortization of unfunded actuarial accrued liability (in the actuarially determined contribution) as a level percentage of payroll. The current assumption for payroll growth is 3.25% per year and consists of the following components:

Component	Current Assumption
Inflation	2.75%
Productivity	1.50%
Adjustment for conservatism	-1.00%
Total	3.25%

Productivity can be measured as the excess of the increase in the National Average Wage over inflation. As of June 2019:

- The 20-year average of the National Average Wage is 3.0%
- The 20-year average inflation is 2.2%

The 0.8% difference between these figures represents the average productivity over the last 20 years. We expect productivity in the State to continue to be greater than the national average, due to its overall strong economy. Therefore, we recommend decreasing the productivity component from 1.5% to 1.3%, which is consistent with the change in national productivity since the prior study (1.0% versus 0.8%)

A lower payroll growth assumption is more conservative. To the extent that actual payroll increases were more than 3.25%, more dollars have gone toward paying off the unfunded liability than anticipated and future amortization payments are lower.

The following table summarizes the Fund’s historical payroll and active population growth:

Year Ended June 30	Total Payroll ($ in millions)	Number of Active Members
2019	$680.5	11,175
2014	557.2	10,305
2009	440.0	9,707
2004	376.5	9,826
1999	314.6	10,046

The average increase in covered payroll and active members is shown below:

Period	Increase in Total Payroll	Increase in Active Members
5-year average	4.1%	1.6%
10-year average	4.5%	1.4%
15-year average	4.0%	0.9%
20-year average	3.9%	0.5%

Based on a 30-year open group projection, assuming a level active population and that all recommended demographic assumptions herein are adopted, projected total payroll is expected to increase by 3.0% year, on average, over the long-term and 3.25% over the first ten years.

The following table summarizes the components of the current and recommended payroll growth assumption:

Component	Current	Recommended
Inflation	2.75%	2.30%
Productivity	1.50%	1.30%
Adjustment for Conservatism	-1.00%	-0.35%
Total	3.25%	3.25%

III. Demographic Assumptions

The demographic assumptions used to value TRF reflect the expected occurrences of various events among members of the Plan. The assumptions should reflect specific characteristics of the Plan and produce reasonable results. A reasonable assumption is one that is expected to model the contingency being measured and not expected to produce significant gains and losses. The types of demographic assumptions used to measure pension obligations include, but are not limited to the following:

- Mortality;
- Retirement;
- Termination;
- Disability incidence; and
- Other assumptions such as percent married and age difference between spouses

The Actuarial Standards Board (ASB) has adopted Actuarial Standard of Practice No. 35 (ASOP 35 – *Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations*) to provide actuaries guidance in developing demographic assumptions. The standard recommends the actuary follow a general process for selecting demographic assumptions. The first step of the general procedure is to identify the types of assumptions to use. The actuary should consider relevant plan provisions that will affect timing and value of any potential benefit payments, all contingencies that give rise to benefits or loss of benefits and the characteristics of the covered group. The next step is to identify the relevant assumption universe. The assumption universe may include prior experience studies or general studies of trends relevant to the type of demographic assumption in addition to plan experience to the extent that it is credible. The third step is to consider the assumption format. The format may include different tables for different segments of the covered population (i.e., different termination rate tables for males/females). The final step is the select the specific assumption and evaluate the reasonableness of each assumption. The specific experience of the Plan should be incorporated but not given undue weight to past experience if recent experience is attributable to a phenomenon that is unlikely to continue. For example, if recent rates of termination were due to a one-time reduction in workforce it may be unreasonable to assume that such rates will continue.

A. Mortality Rates

One of the most significant actuarial assumptions is the probability of death. The mortality assumption takes the form of a mortality table that contains for each age in the table a probability of a person dying between that age and the next. TRF currently uses three different mortality tables for its members: post-retirement mortality, disabled mortality and pre-retirement mortality.

In 2019, the Society of Actuaries published a series of mortality tables derived from public plan experience, called Pub-2010. The published mortality tables are based on three broad categories: teachers, public safety, and general employees. In addition, the study concluded that surviving annuitants demonstrated worse mortality than the primary annuitants. As a result, separate contingent survivor tables were developed. For purposes of comparing actual experience to expected, the PubT-2010 (the teacher table) have been projected to 2016, the mid-point of the experience study.

We analyzed the experience two ways: one way is solely by number of annuitants while the other way is by weighting the probability of death with each annuitant's pension benefit amount. This methodology takes into consideration the correlation between the annuitant mortality and the level of benefit.

In 2008, the SOA published an article recommending that mortality assumptions include an adjustment for credibility. Under this approach, the number of deaths in a sub-group needed for full credibility for a headcount-weighted mortality table is 1,082. Full credibility in this context means 90% confidence that the actual experience will be within 5% of the expected value.

When reviewing the actual experience under each of the three categories below, we compared the actual experience with the current mortality table and with the applicable Pub-2010 mortality table. After thoroughly reviewing the results, we can conclude that the Pub-2010 mortality tables are more consistent with the actual experience than the prior RP-2014 mortality tables. We recommend updating the base tables to the appropriate Pub-2010 mortality tables, with adjustments for TRF-specific experience where credible data exists. We also recommend the use of the Pub-2010 Contingent Survivor Mortality Table. In order to reflect future improvements in mortality, we recommend updating the mortality projection scale to MP-2019.

Post-Retirement Healthy Mortality

The mortality experience among retirees and beneficiaries determines the durations over which retirement benefits are paid. Lower mortality rates mean longer benefit payment periods and, therefore, higher benefit costs.

Currently, TRF uses healthy post-retirement mortality rates based on the RP-2014 Healthy Annuitant Mortality Table (sex distinct) set back one year, multiplied by 50% for ages under 75 and grading up to 100% by age 80, projected generationally using MP-2014 for both males and females.

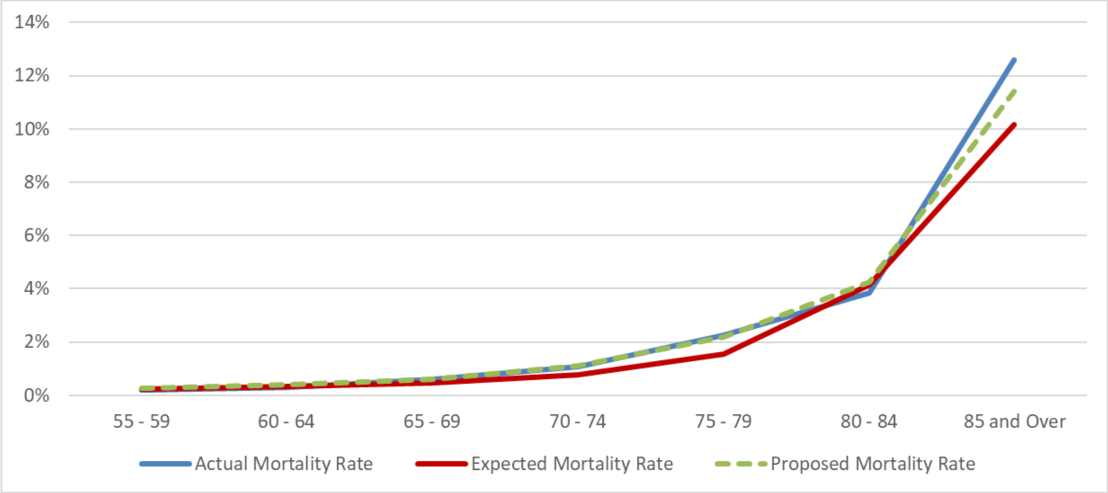
The experience during the study period shows that, in total, more members in pay status have died than expected. On a benefit-weighted basis, the actual number of deaths was 21% greater than expected. The actual rate of death for females was 16% greater than expected. For males, the actual rate of death was 28% greater than expected. During the experience study period, there were 849 actual deaths, resulting in partial credibility of 89%. We used the 89% credibility adjustment to develop the recommended mortality assumptions.

The following table provides a summary of mortality experience for annuitants by basis and gender for the study period:

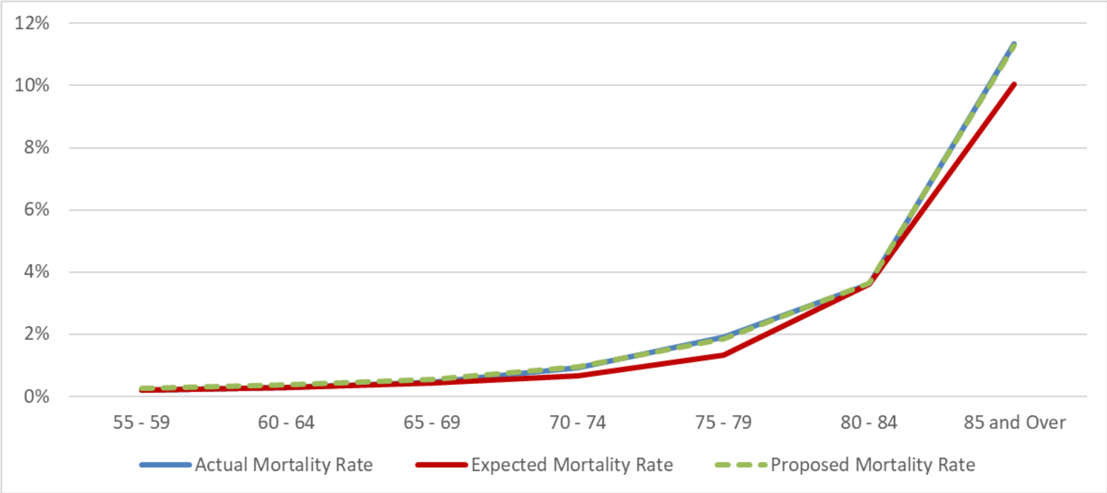
Gender	Exposures	Actual Deaths	Expected Deaths	Ratio of Actual to Expected
Basis – Counts				
Female	24,894	521	451	115%
Male	12,319	328	243	135%
Total	**37,213**	**849**	**694**	**122%**
Basis – Benefits (in 000's)				
Female	555,846	6,882	5,939	116%
Male	326,378	6,267	4,905	128%
Total	**882,244**	**13,149**	**10,844**	**121%**

The total number of deaths on a benefit-weighted basis was 13,149. Applying the TRF exposures to the unadjusted PubT-2010 Retiree Table would result in 12,601 proposed deaths. Applying the credibility-weighted adjustment of 89% would result in 13,048 proposed deaths (a blend of actual experience and unadjusted PubT-2010). Therefore, we recommend that the mortality table be updated to 104% of the PubT-2010 Retiree Table, which would result in 13,105 deaths and is close to the number of credibility-weighted deaths during the study period. The following graphs show the actual mortality rate, expected mortality rate, and proposed mortality rate by total, female, and male.

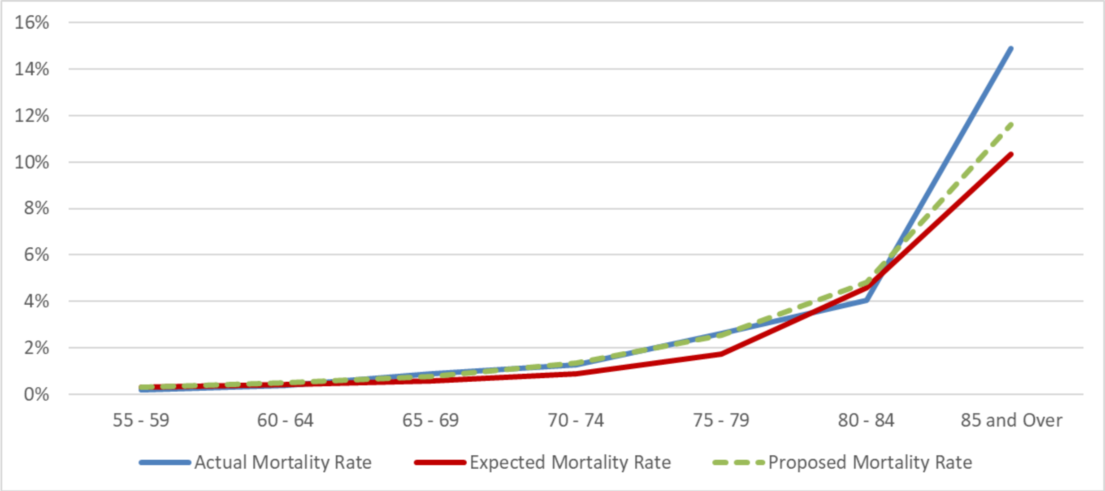
Graph 2
Actual Versus Proposed Experience, Benefit-Weighted Basis
Healthy Retiree Mortality – **Total**



Graph 3
Actual Versus Proposed Experience, Benefit-Weighted Basis
Healthy Retiree Mortality – **Female**



Graph 4
Actual Versus Proposed Experience, Benefit-Weighted Basis
Healthy Retiree Mortality – **Male**



The following table compares the experience during the study period of the actual annuitant deaths to the current assumption and the proposed assumption.

Gender	Exposures	Actual Deaths	Expected Deaths	Ratio of Actual to Expected	Proposed Deaths	Ratio of Actual to Proposed
Basis – Benefits (in 000's)						
Female	555,846	6,882	5,939	116%	7,093	97%
Male	326,378	6,267	4,905	128%	6,012	104%
Total	**882,244**	**13,149**	**10,844**	**121%**	**13,105**	**100%**

Beneficiary Mortality

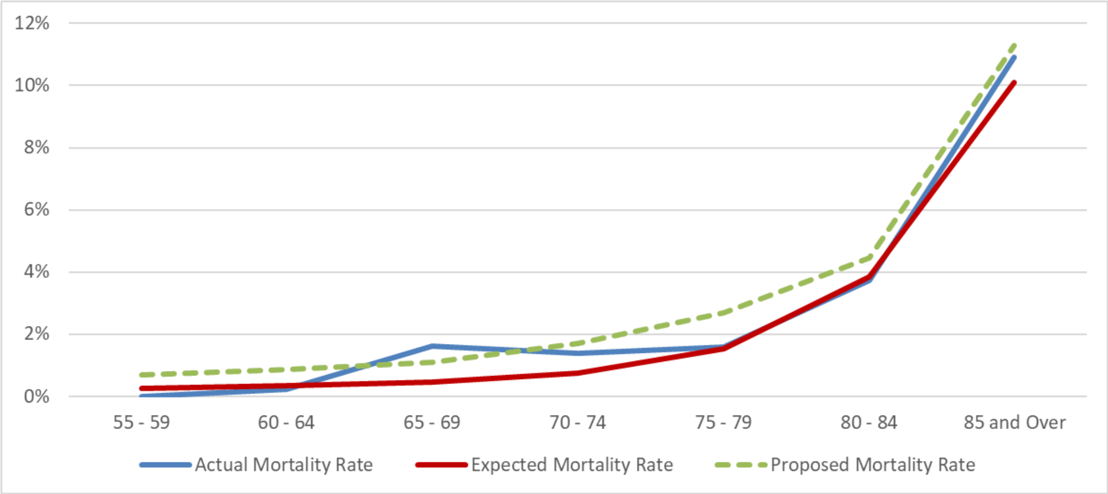
Currently, TRF uses the same mortality table for beneficiaries that is used for healthy annuitants. The beneficiary experience during the study period shows that, in total, more beneficiaries have died than expected. On a benefit-weighted basis, the rate of death in total was 15% greater than expected. The actual rate of death for females was 11% greater than expected. For males, the actual rate of death was 32% greater than expected. During the experience study period, there were 130 actual deaths, resulting in partial credibility of 35%. We used the 35% credibility adjustment to develop the recommended mortality assumptions.

The following table provides a summary of mortality experience for beneficiaries by basis and gender for the study period:

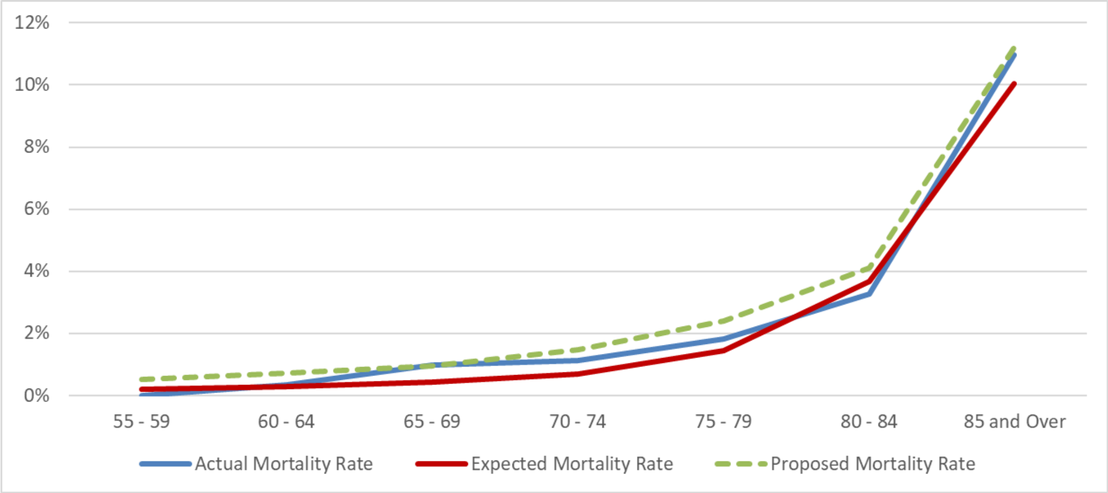
Gender	Exposures	Actual Deaths	Expected Deaths	Ratio of Actual to Expected
Basis – Counts				
Female	2,458	104	92	113%
Male	868	26	19	135%
Total	**3,326**	**130**	**112**	**116%**
Basis – Benefits (in 000's)				
Female	36,201	1,326	1,192	111%
Male	11,799	304	230	132%
Total	**48,000**	**1,630**	**1,423**	**115%**

The total number of beneficiary deaths on a benefit-weighted basis was 1,630. Applying the TRF exposures to the unadjusted Pub-2010 Contingent Survivor Table would result in 1,928 proposed deaths. Applying the credibility-weighted adjustment of 35% would result in 1,828 proposed deaths (a blend of actual experience and unadjusted Pub-2010 Contingent Survivor). Therefore, we recommend that the mortality table be updated to 95% of the Pub-2010 Contingent Survivor Table, which would result in 1,832 deaths and is close to the number of credibility-weighted deaths during the study period. The following graphs show the actual mortality rate, expected mortality rate, and proposed mortality rate by total, female, and male.

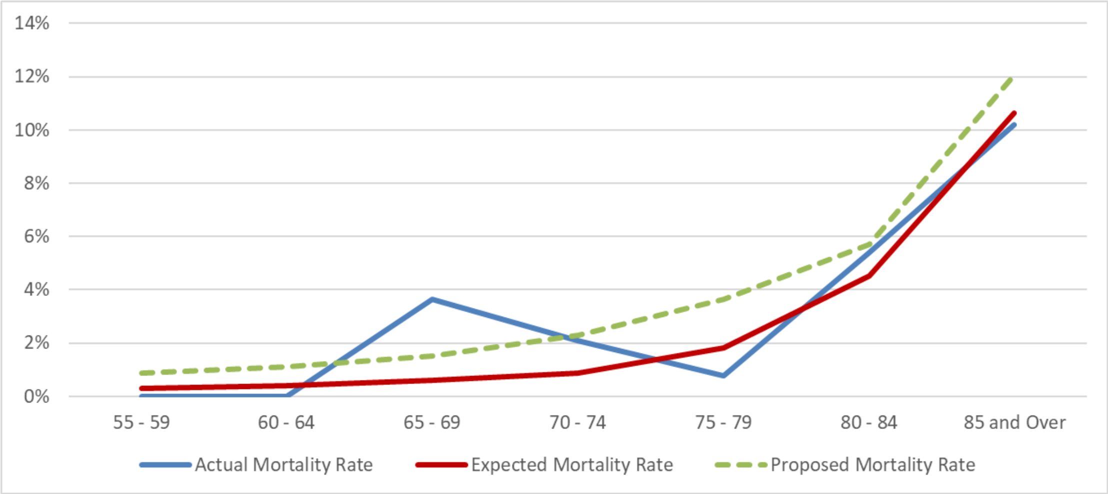
Graph 5
Actual Versus Proposed Experience, Benefit-Weighted Basis
Beneficiary Mortality – **Total**



Graph 6
Actual Versus Proposed Experience, Benefit-Weighted Basis
Beneficiary Mortality – **Female**



Graph 7
Actual Versus Proposed Experience, Benefit-Weighted Basis
Beneficiary Mortality – **Male**



The following table compares the experience during the study period of the actual beneficiary deaths to the current assumption and the proposed assumption.

Gender	Exposures	Actual Deaths	Expected Deaths	Ratio of Actual to Expected	Proposed Deaths	Ratio of Actual to Proposed
Basis – Benefits (in 000's)						
Female	36,201	1,326	1,192	111%	1,468	90%
Male	11,799	304	230	132%	364	83%
Total	**48,000**	**1,630**	**1,423**	**115%**	**1,832**	**89%**

Disabled Mortality

The current mortality table for disabled lives is the RP-2014 Disabled Mortality Table set forward four years. Experience for disabled annuitants has been consistent with the current assumptions as the ratio of actual to expected deaths on a benefits weighted basis is 92%. However, we recommend updating the base table to the Pub-2010 Non-Safety Disabled Retiree Table. The limited number of actual deaths is insufficient to warrant making an adjustment to the published table. In order to reflect future improvements in mortality, rather than using a static table with margin, we recommend applying generational improvement using Scale MP-2019.

The following table provides a summary of disabled mortality experience by basis in total for the study period:

Exposures	Actual Deaths	Expected Deaths	Ratio of Actual to Expected	Proposed Deaths	Ratio of Actual to Proposed
Basis – Counts					
638	18	20	90%		
Basis – Benefits (in 000's)					
9,373	250	272	92%	229	109%

Pre-Retirement Mortality

First, in combination with withdrawal and disability rates, the pre-retirement mortality table enables the actuary to estimate the number of individuals who will eventually be eligible for a service retirement benefit, and thereby estimate the liability for those individuals. In addition, the death of a member before retirement may result in a benefit payable to a beneficiary, and the liability for these benefits must be taken into account in the valuation.

The current mortality table for active members is the RP-2014 Employee Mortality Table, projected generationally using Scale MP-2014. Very few members die in active service and the liability associated with active deaths is a small percentage of the total liability. Since plan experience is insufficient to set the assumption, we recommend using the PubT-2010 Employee Table for active members and applying a generational projection using Scale MP-2019. The mortality experience of active and terminated vested members is important for several reasons.

B. Retirement Rates

Active Retirement

The eligibility criteria for retirement differs by Tier. Tier 1 members are those hired prior to July 1, 2008. Grandfathered Tier 1 members are those who either were at least age 55 with at least three years of service or whose age plus service was at least 65 as of June 30, 2013. Non-grandfathered Tier 1 members are those who do not meet these criteria as of June 30, 2013. Tier 2 members are those hired after June 30, 2008.

Eligibility for unreduced retirement benefits is as follows:

- Tier 1 members are eligible at the earlier of:
  - Age 65 with three years of service
  - If grandfathered, age plus service is at least 85
  - If non-grandfathered, age plus service is at least 90 with a minimum age of 60
- Tier 2 members are eligible at the earlier of:
  - Age 65 with five years of service
  - Age plus service is at least 90 with a minimum of age 60

Eligibility for reduced benefits is as follows:

- For all Tier 1 members, age 55 with three years of service
- For Tier 2 members, age 55 with five years of service.

The current retirement rates vary based on a member's age and gender as well as whether the member is eligible for a reduced or unreduced benefit. In the first year that the member becomes eligible for an unreduced benefit, the unreduced retirement rate is increased by 10%.

We have analyzed retirement experience on a benefit-weighted basis for the following groups:

- Eligible for a reduced benefit.
- Eligible for an unreduced benefit in the first year only
- Eligible for an unreduced benefit in all other years

There is little Tier 2 retirement experience and grandfathered versus non-grandfathered experience to analyze. However, the retirement rates take into account each member's eligibility requirements.

Reduced Retirement Benefit

The experience showed that there were slightly more retirements than expected. We recommend minor modifications at a few ages. In addition, because the number of retirements were insufficient to justify gender distinct retirement rates, we recommend continued use of unisex rates of retirement for reduced benefits.

The following table compares the experience during the study period of the rate of reduced retirements to the current assumption and the proposed assumption.

Gender	Exposures	Actual Retirements	Expected Retirements	Ratio of Actual to Expected	Proposed Retirements	Ratio of Actual to Proposed
Basis – Benefits (in 000's)						
Total	87,178	4,173	3,278	127%	3,738	112%

The following table and graph shows the actual reduced retirement experience compared to the current and proposed assumptions.

Age	Exposures	Actual Retirements	Actual Retirement Rate	Expected Retirements	Assumed Retirement Rate	Ratio of Actual Rate to Expected Rate	Proposed Retirement Rate
Basis – Benefits (in 000’s)							
55	17,281	293	1.70%	346	2.00%	85%	2.00%
56	14,057	330	2.34%	281	2.00%	117%	2.00%
57	12,723	576	4.53%	254	2.00%	226%	3.00%
58	10,256	386	3.76%	308	3.00%	125%	3.50%
59	9,161	408	4.45%	321	3.50%	127%	4.00%
60	7,748	398	5.14%	310	4.00%	128%	5.00%
61	6,014	722	12.01%	391	6.50%	185%	9.00%
62	4,173	448	10.73%	376	9.00%	119%	10.00%
63	3,326	262	7.88%	399	12.00%	66%	11.00%
64	2,440	350	14.36%	293	12.00%	120%	12.00%
Total	**87,178**	**4,173**	**4.79%**	**3,278**	**3.76%**	**127%**	**4.29%**

Graph 8
Actual Versus Proposed Experience, Benefit-Weighted Basis
Reduced Retirement – **Total**

Unreduced Retirement Benefit in the First Year of Eligibility

The experience shows that male and female members who retired in the first year of eligibility for an unreduced benefit retired an average rate of 35%. After the first year of being eligible for unreduced benefits, members retired at an average rate of 20%. Therefore, we recommend changing the current assumption of a 10% increase in retirement rates for the first year of eligibility for unreduced benefits to 12.5%.

Unreduced Retirement Benefit after the First Year of Eligibility

The experience shows that there were fewer retirements than expected. The reduction in retirements was greater for female members than for male members. Therefore, we recommend minor revisions to the retirement rates.

As shown in the table below, the actual number of retirements that occurred after the first year of eligibility for unreduced benefits was 19% less than expected for females and 11% less than expected for males.

Gender	Exposures	Actual Retirements	Expected Retirements	Ratio of Actual to Expected
Basis – Benefits (in 000's)				
Female	128,576	24,905	30,922	81%
Male	55,138	10,880	12,196	89%
Total	**183,714**	**35,785**	**43,118**	**83%**

The following tables and graphs shows the actual unreduced retirement experience compared to the current and proposed assumptions.

Female

Age	Exposures	Actual Retirements	Actual Retirement Rate	Expected Retirements	Expected Retirement Rate	Ratio of Actual to Expected	Proposed Retirement Rate
Basis – Benefits (in 000's)							
<55	2,145	598	27.88%	322	15.00%	186%	15.00%
55	6,566	1,529	23.29%	985	15.00%	155%	15.00%
56	9,022	1,321	14.64%	1,353	15.00%	98%	15.00%
57	10,169	1,241	12.20%	1,525	15.00%	81%	15.00%
58	11,395	1,986	17.43%	1,709	15.00%	116%	15.00%
59	13,302	2,007	15.09%	1,995	15.00%	101%	15.00%
60	14,628	2,207	15.09%	2,194	15.00%	101%	15.00%
61	13,909	3,356	24.13%	3,477	25.00%	97%	25.00%
62	13,064	4,156	31.81%	4,573	35.00%	91%	30.00%
63	10,237	2,177	21.27%	3,071	30.00%	71%	30.00%
64	8,460	3,257	38.50%	3,384	40.00%	96%	40.00%
65	6,855	624	9.10%	3,427	50.00%	18%	35.00%
66	3,306	146	4.41%	1,322	40.00%	11%	30.00%
67	2,371	216	9.12%	711	30.00%	30%	20.00%
68	924	46	5.03%	277	30.00%	17%	20.00%
69	777	8	0.97%	233	30.00%	3%	20.00%
70-74	1,445	31	2.13%	361	25.00%	9%	20.00%
Total	**128,576**	**24,905**	**19.37%**	**30,922**	**24.05%**	**81%**	**22.11%**

Graph 9
Actual Versus Proposed Experience, Benefit-Weighted Basis
Reduced Retirement – **Female**

Male

Age	Exposures	Actual Retirements	Actual Retirement Rate	Expected Retirements	Expected Retirement Rate	Ratio of Actual to Expected	Proposed Retirement Rate
Basis – Benefits (in 000's)							
<55	649	154	23.74%	97	15.00%	158%	15.00%
55	2,381	393	16.49%	357	15.00%	110%	15.00%
56	4,216	679	16.11%	632	15.00%	107%	15.00%
57	5,265	969	18.40%	790	15.00%	123%	15.00%
58	5,453	669	12.26%	818	15.00%	82%	15.00%
59	5,873	1,130	19.25%	881	15.00%	128%	15.00%
60	5,557	1,021	18.38%	834	15.00%	123%	15.00%
61	5,524	2,033	36.81%	1,381	25.00%	147%	30.00%
62	4,205	1,062	25.24%	1,472	35.00%	72%	30.00%
63	4,128	1,021	24.74%	1,032	25.00%	99%	25.00%
64	3,323	1,197	36.00%	1,163	35.00%	103%	35.00%
65	2,935	159	5.40%	1,174	40.00%	14%	30.00%
66	1,911	216	11.30%	573	30.00%	38%	25.00%
67	1,236	67	5.42%	371	30.00%	18%	25.00%
68	624	47	7.53%	156	25.00%	30%	20.00%
69	642	27	4.18%	161	25.00%	17%	20.00%
70-74	1,215	37	3.05%	304	25.00%	12%	20.00%
Total	**55,138**	**10,880**	**19.73%**	**12,196**	**22.12%**	**89%**	**21.20%**

Graph 10
Actual Versus Proposed Experience, Benefit-Weighted Basis
Reduced Retirement – **Male**

Inactive Vested Retirement

The current assumption is that 5% of inactive members will retire at each early retirement age prior to normal retirement and that 100% of the remaining inactive vested members will retire at normal retirement age. During the experience study period, an average of 6.5% of eligible inactive vested members retired at each early retirement age prior to normal retirement. Therefore, we recommend maintaining the current 5% assumption at each early retirement age prior to normal retirement age.

The following table compares the experience during the study period of the rate of inactive vested retirements to the current assumption and the proposed assumption.

Exposures	Actual Retirements	Expected Retirements	Ratio of Actual to Expected	Proposed Retirements	Ratio of Actual to Proposed
Basis – Counts					
2,373	154	119	130%	119	130%

C. Termination

The termination rates used in annual actuarial valuations project the percentage of employees at each age or service duration that will terminate membership before retirement. These rates take account of possible terminations for all causes other than retirement, death, or disability. They include both voluntary and involuntary withdrawals from service.

Terminations before retirement give rise to some benefit rights, but may also involve the forfeiture of a portion of previously accrued benefits. Forfeitures resulting from turnover are anticipated in advance and help finance benefits that become payable to other members.

The termination experience studied includes all terminations of active employment for members not vested at termination (since such members are not eligible for other benefits, termination of employment will, most likely, result in a withdrawal of employee contributions), and terminations of membership for members who were vested and either withdrew their contributions or are eligible for future benefits. Rehired members offset these terminations in order to determine the net terminations for each year.

As shown in the table below, the total rate of terminations (on a benefit-weighted basis) are about 10% less than expected.

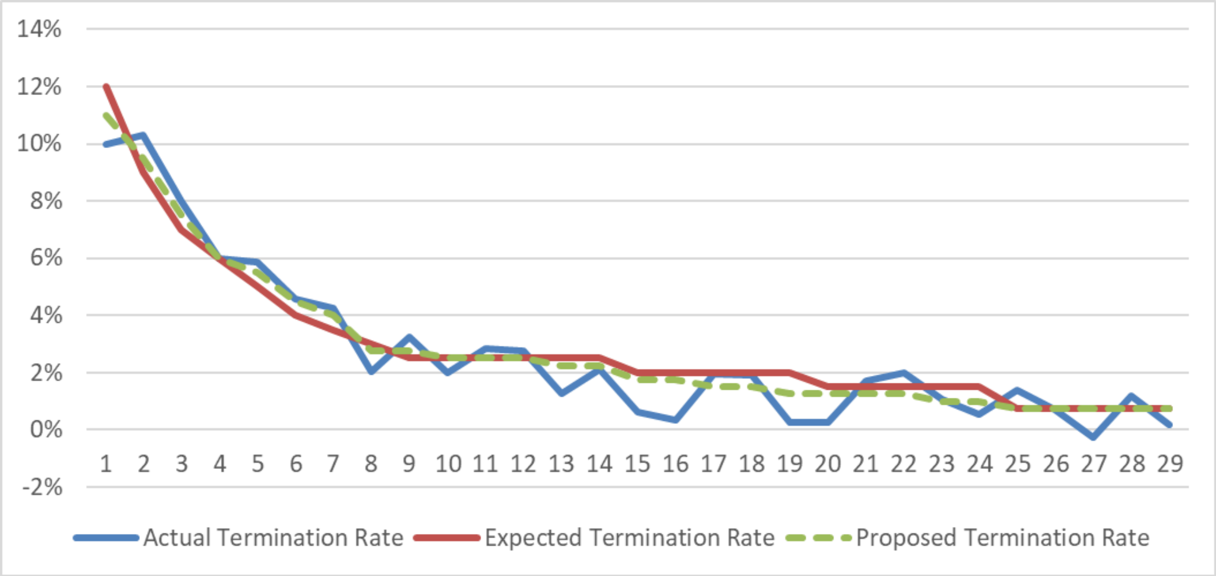
Gender	Exposures	Actual Terminations	Expected Terminations	Ratio of Actual to Expected
Basis – Benefits (in 000's)				
Female	338,406	6,839	7,854	87%
Male	156,525	2,707	2,745	99%
Total	**494,931**	**9,546**	**10,599**	**90%**

The current termination assumptions are sex distinct and based on service. We recommend minor changes (primarily decreases) to the rates of termination. The following tables and graphs show the actual, expected, and proposed termination rates based on years since hire.

Female

Years Since Hire	Exposures	Actual Terminations[4]	Actual Termination Rate	Expected Terminations	Expected Termination Rate	Ratio of Actual to Expected	Proposed Termination Rate
Basis – Benefits (in 000's)							
1	2,517	251	9.98%	302	12.00%	83%	11.00%
2	4,914	506	10.29%	442	9.00%	114%	9.50%
3	6,573	527	8.02%	460	7.00%	115%	7.50%
4	7,470	448	6.00%	448	6.00%	100%	6.00%
5	7,643	449	5.88%	382	5.00%	118%	5.50%
6	8,451	387	4.57%	338	4.00%	114%	4.50%
7	9,320	395	4.24%	326	3.50%	121%	4.00%
8	10,201	208	2.04%	306	3.00%	68%	2.75%
9	10,970	356	3.24%	274	2.50%	130%	2.75%
10	11,764	233	1.98%	294	2.50%	79%	2.50%
11	12,296	349	2.84%	307	2.50%	114%	2.50%
12	12,164	337	2.77%	304	2.50%	111%	2.50%
13	12,059	152	1.26%	301	2.50%	50%	2.25%
14	13,280	278	2.09%	332	2.50%	84%	2.25%
15-19	75,251	779	1.04%	1,505	2.00%	52%	1.54%
20-24	70,488	776	1.10%	1,057	1.50%	73%	1.15%
25-29	63,045	407	0.65%	473	0.75%	86%	0.75%
Total	**338,406**	**6,839**	**2.02%**	**7,854**	**2.32%**	**87%**	**2.18%**

Graph 11
Actual Versus Proposed Experience, Benefit-Weighted Basis
Termination Before Retirement – **Female**

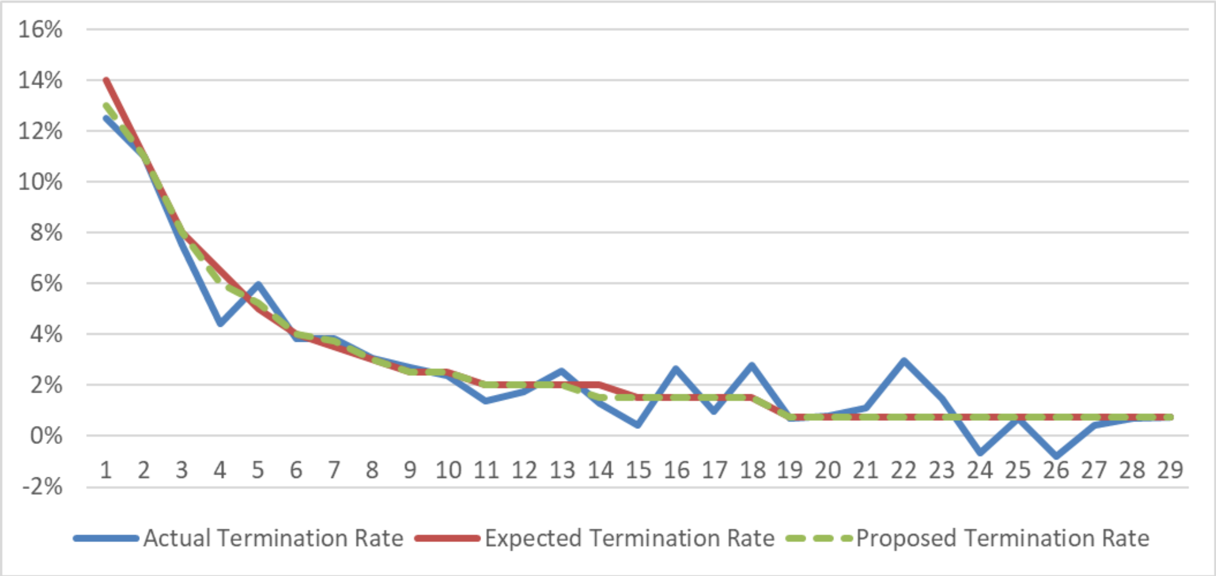


[4] Actual terminations as shown in the table are net of rehired employees.

Male

Years Since Hire	Exposures	Actual Terminations[5]	Actual Termination Rate	Expected Terminations	Expected Termination Rate	Ratio of Actual to Expected	Proposed Termination Rate
Basis – Benefits (in 000's)							
1	852	106	12.50%	119	14.00%	89%	13.00%
2	1,639	181	11.03%	180	11.00%	100%	11.00%
3	2,162	163	7.52%	173	8.00%	94%	8.00%
4	2,473	109	4.41%	161	6.50%	68%	6.00%
5	2,529	151	5.97%	126	5.00%	119%	5.25%
6	2,848	109	3.81%	114	4.00%	95%	4.00%
7	3,211	123	3.84%	112	3.50%	110%	3.75%
8	3,963	121	3.06%	119	3.00%	102%	3.00%
9	4,468	120	2.68%	112	2.50%	107%	2.50%
10	4,767	114	2.40%	119	2.50%	96%	2.50%
11	4,995	70	1.40%	100	2.00%	70%	2.00%
12	5,229	90	1.73%	105	2.00%	86%	2.00%
13	5,149	131	2.55%	103	2.00%	128%	2.00%
14	5,275	68	1.28%	105	2.00%	64%	1.50%
15-19	34,028	523	1.54%	450	1.32%	116%	1.32%
20-24	37,129	410	1.11%	278	0.75%	147%	0.75%
25-29	35,809	117	0.33%	269	0.75%	44%	0.75%
Total	**156,525**	**2,707**	**1.73%**	**2,745**	**1.75%**	**99%**	**1.73%**

Graph 12
Actual Versus Proposed Experience, Benefit-Weighted Basis
Termination Before Retirement – **Male**



The schedule of termination rates also include a rate in the first year (i.e., 0 years from hire), which is used in the development of Entry Age Normal cost calculations and is currently 20% for both males and females. Since the census data often does not include members at plan entry, there is insufficient data on which to base this assumption. However, after reviewing the actual experience for members with less than five years since date of hire and extrapolating, we recommend lowering the termination rate in the first year from 20% to 15%.

[5] Actual terminations as shown in the table are net of rehired employees.

D. Disability Retirement

Disability incidence rates function in the same way as retirement rate tables. The rate at each age indicates the probability of becoming disabled before the next age. Disability rates add liability for the value of disability benefits, but lessen the value of retirement benefits ultimately payable, since anyone who becomes disabled is not projected to receive retirement benefits other than the disability benefit.

The current disability rates are based on age and are unisex. The experience for the period July 1, 2014 to June 30, 2019 shows that approximately one-third of those expected retired with a disability benefit. During the study period, there were 15 members who received a disability benefit compared to 41 members who were expected to receive a disability benefit. The prior two experience studies showed that actual disability retirements were close to the expected number. Over the last 15-year period, 80% of those expected retired with a disability benefit. Therefore, we recommend a 20% decrease to the current disability retirement rates.

E. Spouse Information

Spouse information assumptions that affect the valuation include the percentage of members married and the age difference of spouses. The current assumptions are:

- 75% of members are married
- Male spouses are three years older than female spouses
- 100% of spouses are of the opposite gender

We have limited data on spouse information. However, the current assumptions are reasonable and consistent with assumptions used for similar plans. In addition, all optional forms of payment are actuarially equivalent, so these assumptions do not have a material effect on the valuation results. Therefore, we recommend no changes to the current assumptions.

IV. Appendix

Appendix A: Proposed Salary Scale (Service-based Rates, Inclusive of Proposed Inflation)

Years from Hire	Current Total Salary Increase Rate	Proposed Total Salary Increase Rate
1	14.50%	14.80%
2	7.75%	6.80%
3	7.50%	6.55%
4	7.25%	6.30%
5	7.00%	6.30%
6	6.75%	5.80%
7	6.50%	5.80%
8	6.25%	5.55%
9	6.00%	5.55%
10	6.00%	5.30%
11	5.75%	5.30%
12	5.75%	5.30%
13	5.50%	5.05%
14	5.50%	5.05%
15	5.25%	4.80%
16	5.25%	4.80%
17	5.00%	4.55%
18	5.00%	4.55%
19	5.00%	4.55%
20	4.75%	4.30%
21	4.75%	4.30%
22	4.75%	4.30%
23	4.75%	4.30%
24	4.50%	4.05%
25	4.50%	4.05%
26	4.25%	4.05%
27	4.25%	4.05%
28	4.25%	4.05%
29	4.25%	4.05%
30	4.25%	4.05%
31 and over	4.25%	3.80%

Appendix B: Proposed Retirement Rates (Age-based Rates)

Age	Unreduced Retirement[6]				Reduced Retirement	
	Female		Male		Unisex	
	Current Rate	Proposed Rate	Current Rate	Proposed Rate	Current Rate	Proposed Rate
<55	15.0%	15.0%	15.0%	15.0%		
55	15.0%	15.0%	15.0%	15.0%	2.0%	2.0%
56	15.0%	15.0%	15.0%	15.0%	2.0%	2.0%
57	15.0%	15.0%	15.0%	15.0%	2.0%	3.0%
58	15.0%	15.0%	15.0%	15.0%	3.0%	3.5%
59	15.0%	15.0%	15.0%	15.0%	3.5%	4.0%
60	15.0%	15.0%	15.0%	15.0%	4.0%	5.0%
61	25.0%	25.0%	25.0%	30.0%	6.5%	9.0%
62	35.0%	30.0%	35.0%	30.0%	9.0%	10.0%
63	30.0%	30.0%	25.0%	25.0%	12.0%	11.0%
64	40.0%	40.0%	35.0%	35.0%	12.0%	12.0%
65	50.0%	35.0%	40.0%	30.0%		
66	40.0%	30.0%	30.0%	25.0%		
67	30.0%	20.0%	30.0%	25.0%		
68	30.0%	20.0%	25.0%	20.0%		
69	30.0%	20.0%	25.0%	20.0%		
70	25.0%	20.0%	25.0%	20.0%		
71	25.0%	20.0%	25.0%	20.0%		
72	25.0%	20.0%	25.0%	20.0%		
73	25.0%	20.0%	25.0%	20.0%		
74	25.0%	20.0%	25.0%	20.0%		
75	100.0%	100.0%	100.0%	100.0%		

[6] If a member reaches eligibility for unreduced retirement before age 65 under the rule of 85 (Grandfathered Tier 1) or the Rule of 90/Age 60 (Non-grandfathered Tier 1 and Tier 2), [10.0% current / 12.5% proposed] is added to the rate at the age (and only this age) the member becomes first eligible for an unreduced retirement benefit

Appendix C: Proposed Termination Rates (Service-based Rates)

	Female		Male	
Years from Hire	Current Rate of Termination	Proposed Rate of Termination	Current Rate of Termination	Proposed Rate of Termination
0	20.00%	15.00%	20.00%	15.00%
1	12.00%	11.00%	14.00%	13.00%
2	9.00%	9.50%	11.00%	11.00%
3	7.00%	7.50%	8.00%	8.00%
4	6.00%	6.00%	6.50%	6.00%
5	5.00%	5.50%	5.00%	5.25%
6	4.00%	4.50%	4.00%	4.00%
7	3.50%	4.00%	3.50%	3.75%
8	3.00%	2.75%	3.00%	3.00%
9	2.50%	2.75%	2.50%	2.50%
10	2.50%	2.50%	2.50%	2.50%
11	2.50%	2.50%	2.00%	2.00%
12	2.50%	2.50%	2.00%	2.00%
13	2.50%	2.25%	2.00%	2.00%
14	2.50%	2.25%	2.00%	1.50%
15	2.00%	1.75%	1.50%	1.50%
16	2.00%	1.75%	1.50%	1.50%
17	2.00%	1.50%	1.50%	1.50%
18	2.00%	1.50%	1.50%	1.50%
19	2.00%	1.25%	0.75%	0.75%
20	1.50%	1.25%	0.75%	0.75%
21	1.50%	1.25%	0.75%	0.75%
22	1.50%	1.25%	0.75%	0.75%
23	1.50%	1.00%	0.75%	0.75%
24	1.50%	1.00%	0.75%	0.75%
25	0.75%	0.75%	0.75%	0.75%
26	0.75%	0.75%	0.75%	0.75%
27	0.75%	0.75%	0.75%	0.75%
28	0.75%	0.75%	0.75%	0.75%
29	0.75%	0.75%	0.75%	0.75%

END OF REPORT

D. Sample Benefits Adequacy study

A sample Benefits Adequacy study begins on the following page.

PENSION REFORM TASK FORCE

Benefit Amount and Replacement Ratio Comparison

<Date>

This document has been prepared by Segal for the benefit of the City Pension Reform Task Force and is not complete without the presentation provided at the <date> Task Force meeting and any accompanying document. This document should not be shared, copied or quoted, in whole or in part, without the consent of Segal, except to the extent otherwise required by law.




SEGAL

Requests of Segal from September 13th Meeting

- Summary of assumptions used in the projections
- Data on life expectancy changes
- Estimated Social Security benefit amounts for the straw employee analysis
- The straw employee analysis using a future service multiplier of 1.6%, 1.7%, 1.8% and 1.9%
- The number of active employees currently eligible to retire and the number eligible to retire in five years
- The number and percentage of actives with pay in the following categories:
  - Less than $25,000
  - Between $25,000 and $35,000
  - Between $35,000 and $50,000

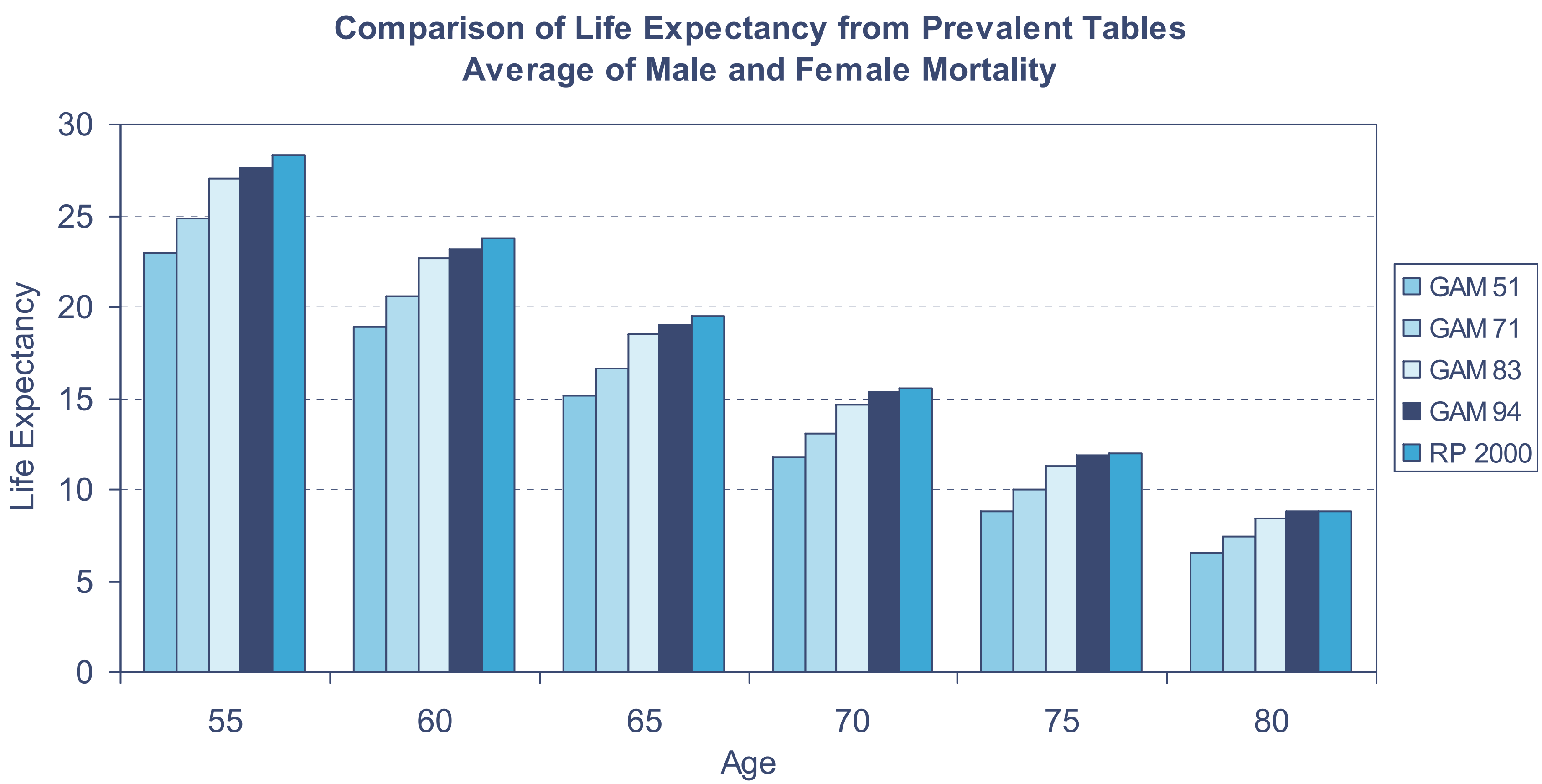
Summary of Assumptions Used in the Projections

- Exhibit 1 is a comprehensive list of actuarial assumptions from the recent actuarial valuation report prepared by the Plan's actuary
  - These assumptions provide the basis for our projections, especially as they relate to assumed demographic experience such as incidence of service retirement, termination, disability retirement and in-service death.
- In addition to the assumptions outlined in Exhibit 1, our projections rely on the following two elements:
  - An estimated market value of assets as of June 30, 20xx of $1.82 billion.
  - The amortization of unfunded actuarial liability is determined using a 4% payroll growth assumption beginning in the second projection year.
    - The payroll growth assumption is the rate at which total active member payroll grows each year

Life Expectancy Changes

- Compares life expectancy at various ages based upon five mortality tables in use over the past 60 years
  - Chart on following page is based on 50/50 split between males and females
- GAM 51 – 1951 Group Annuity Mortality Table
  - First published mortality table based on mortality rates of employed individuals covered under group annuity contracts
  - Based on data from 1946 to 1950
- GAM 71 – 1971 Group Annuity Mortality Table
  - Based on data from 1964 to 1968
- GAM 83 – 1983 Group Annuity Mortality Table
  - Based on data used to construct GAM 71, projected to 1983
- GAM 94 – 1994 Group Annuity Mortality Table
  - Based on group annuitant experience data from 1986 to 1990, projected to 1994
- RP 2000 – 2000 Retired Pensioners Mortality Table
  - Only table based solely on retirement plan mortality experience
  - Based on data from 1990 through 1994, projected to 2000

Life Expectancy Changes



Data Table

Life expectancy in years at a given age

Mortality Table:	Age: 55	60	65	70	75	80
GAM 51	23.0	18.9	15.2	11.7	8.8	6.5
GAM 71	24.9	20.6	16.7	13.1	10.0	7.4
GAM 83	27.0	22.7	18.5	14.7	11.3	8.4
GAM 94	27.7	23.2	19.1	15.3	11.9	8.8
RP 2000	28.3	23.8	19.5	15.5	11.9	8.8

Demonstration of Benefit Change Impact including Social Security – Rule of 80 and Rule of 83

- To demonstrate the impact on retirement amounts of the benefit design scenarios, we have calculated Replacement Ratios (retirement benefit / final salary) for several sample "straw" employees both before and after application of the changes
  - Samples 1-3 consider impact on current non-grandfathered actives
  - Samples 4-6 consider impact on new hires

		Current Age	Years of Service	Annual Total Compensation	Retirement Age	Total Service	Before Changes	With Changes	Retirement Age	Total Service	Before Changes	With Changes
Current Employees												
Sample 1:	DB	33	9	$45,000	52	28	54%	n/a	54	30	58%	45%
	Social Security						0% *	0%			0%	0%
	Total						54%	0%			58%	45%
Sample 2:	DB	45	12	$60,000	57	24	47%	n/a	58	25	49%	39%
	Social Security						0%	0%			0%	0%
	Total						47%	0%			49%	39%
Sample 3:	DB	56	13	$75,000	62	19	38%	n/a	63	20	40%	33%
	Social Security						20%	20%			21%	21%
	Total						58%	20%			61%	54%
New Employees												
Sample 4	DB	24	0	$35,300	52	28	54%	n/a	54	30	58%	41%
	Social Security						0%	0%			0%	0%
	Total						54%	0%			58%	41%
Sample 5	DB	33	0	$46,800	57	24	47%	n/a	58	25	49%	34%
	Social Security						0%	0%			0%	0%
	Total						47%	0%			49%	34%
Sample 6	DB	43	0	$64,700	62	19	38%	n/a	63	20	40%	27%
	Social Security						20%	20%			21%	21%
	Total						58%	20%			61%	48%

* The earliest age Social Security benefits can be received is age 62

Demonstration of Benefit Change Impact including Social Security – Age 62 and Social Security NRA

- To demonstrate the impact on retirement amounts of the benefit design scenarios, we have calculated Replacement Ratios (retirement benefit / final salary) for several sample "straw" employees both before and after application of the changes
  - Samples 1-3 consider impact on current non-grandfathered actives
  - Samples 4-6 consider impact on new hires

	Current Age	Years of Service	Annual Total Compensation	Retirement Age	Total Service	Before Changes	With Changes	Retirement Age	Total Service	Before Changes	With Changes
Current Employees											
Sample 1: DB	33	9	$45,000	62	38	68%	56%	67	43	71%	60%
Social Security						19%	19%			25%	25%
Total						87%	75%			96%	85%
Sample 2: DB	45	12	$60,000	62	29	57%	45%	67	34	66%	52%
Social Security						20%	20%			26%	26%
Total						77%	65%			92%	78%
Sample 3: DB	56	13	$75,000	62	19	38%	n/a	66	23	46%	38%
Social Security						20%	20%			26%	26%
Total						58%	20%			72%	64%
New Employees											
Sample 4 DB	24	0	$35,300	62	38	68%	46%	67	43	71%	47%
Social Security						19%	19%			25%	25%
Total						87%	65%			96%	72%
Sample 5 DB	33	0	$46,800	62	29	57%	40%	67	34	66%	43%
Social Security						20%	20%			26%	26%
Total						77%	60%			92%	69%
Sample 6 DB	43	0	$64,700	62	19	38%	n/a	67	24	47%	33%
Social Security						20%	20%			26%	26%
Total						58%	20%			73%	59%

Demonstration of Benefit Change Impact under Alternative Future Service Multipliers – Rule of 80 and Rule of 83

- Replacement Ratios for “straw” employees showing the impact of alternative future service multipliers: 1.5%, 1.6%, 1.7%, 1.8% and 1.9%

		Current Age	Years of Service	Annual Total Compensation	Retirement Age	Total Service	Before Changes	With Changes	Retirement Age	Total Service	Before Changes	With Changes
Current Employees												
Sample 1:	1.5%	33	9	$45,000	52	28	54% $2,034	n/a	54	30	58% $2,187	45% $1,672
	1.6%							n/a				46% $1,743
	1.7%							n/a				48% $1,814
	1.8%							n/a				50% $1,885
	1.9%							n/a				52% $1,956
Sample 2:	1.5%	45	12	$60,000	57	24	47% $2,346	n/a	58	25	49% $2,448	39% $1,974
	1.6%							n/a				41% $2,033
	1.7%							n/a				42% $2,091
	1.8%							n/a				43% $2,150
	1.9%							n/a				44% $2,209
Sample 3:	1.5%	56	13	$75,000	62	19	38% $2,344	n/a	63	20	40% $2,471	33% $2,090
	1.6%							n/a				34% $2,130
	1.7%							n/a				35% $2,170
	1.8%							n/a				35% $2,210
	1.9%							n/a				36% $2,250
New Employees												
Sample 4:	1.5%	24	0	$35,300	52	28	54% $1,596	n/a	54	30	58% $1,716	41% $1,192
	1.6%							n/a				43% $1,272
	1.7%							n/a				46% $1,351
	1.8%							n/a				49% $1,431
	1.9%							n/a				51% $1,510
Sample 5:	1.5%	33	0	$46,800	57	24	47% $1,830	n/a	58	25	49% $1,910	34% $1,327
	1.6%							n/a				36% $1,416
	1.7%							n/a				39% $1,504
	1.8%							n/a				41% $1,592
	1.9%							n/a				43% $1,681
Sample 6:	1.5%	43	0	$64,700	62	19	38% $2,022	n/a	63	20	40% $2,132	27% $1,482
	1.6%							n/a				29% $1,580
	1.7%							n/a				31% $1,679
	1.8%							n/a				33% $1,778
	1.9%							n/a				35% $1,877

Note: Monthly benefit amounts are shown in today’s dollars

Demonstration of Benefit Change Impact under Alternative Future Service Multipliers – Age 62 and SSNRA

- Replacement Ratios for "straw" employees showing the impact of alternative future service multipliers: 1.5%, 1.6%, 1.7%, 1.8% and 1.9%

		Current Age	Years of Service	Annual Total Compensation	Retirement Age	Total Service	Before Changes		With Changes		Retirement Age	Total Service	Before Changes		With Changes	
Current Employees																
Sample 1:	1.5%	33	9	$45,000	62	38	68%	$2,563	56%	$2,109	67	43	71%	$2,662	60%	$2,259
	1.6%								59%	$2,209					63%	$2,370
	1.7%								62%	$2,308					66%	$2,481
	1.8%								64%	$2,408					69%	$2,593
	1.9%								67%	$2,507					72%	$2,704
Sample 2:	1.5%	45	12	$60,000	62	29	57%	$2,862	45%	$2,264	67	34	66%	$3,290	52%	$2,613
	1.6%								47%	$2,341					54%	$2,714
	1.7%								48%	$2,419					56%	$2,815
	1.8%								50%	$2,497					58%	$2,916
	1.9%								51%	$2,575					60%	$3,016
Sample 3:	1.5%	56	13	$75,000	62	19	38%	$2,344	n/a		66	23	46%	$2,845	38%	$2,349
	1.6%								n/a						39%	$2,407
	1.7%								n/a						39%	$2,464
	1.8%								n/a						40%	$2,521
	1.9%								n/a						41%	$2,579
New Employees																
Sample 4:	1.5%	24	0	$35,300	62	38	68%	$2,011	46%	$1,354	67	43	71%	$2,088	47%	$1,391
	1.6%								49%	$1,444					50%	$1,484
	1.7%								52%	$1,534					54%	$1,577
	1.8%								55%	$1,624					57%	$1,670
	1.9%								58%	$1,715					60%	$1,762
Sample 5:	1.5%	33	0	$46,800	62	29	57%	$2,233	40%	$1,546	67	34	66%	$2,566	43%	$1,670
	1.6%								42%	$1,649					46%	$1,781
	1.7%								45%	$1,752					49%	$1,892
	1.8%								48%	$1,855					51%	$2,003
	1.9%								50%	$1,958					54%	$2,115
Sample 6:	1.5%	43	0	$64,700	62	19	38%	$2,022	n/a		67	24	47%	$2,561	33%	$1,762
	1.6%								n/a						35%	$1,880
	1.7%								n/a						37%	$1,997
	1.8%								n/a						39%	$2,115
	1.9%								n/a						41%	$2,232

Note: Monthly benefit amounts are shown in today's dollars

Number of Employees Eligible to Retire

- As of the valuation date, there are 8,896 active member
- Retirement eligibility requirements:
  - Age 60 with 10 years of service
  - Age 62 with 5 years of service
  - Rule of 80
- In two years, there will be 1,723 members eligible to retire (19% of total)
- In seven years, there will be 3,055 members eligible to retire (34% of total)

Pensionable Earnings Less than $50,000

- Based upon current valuation data
- Less than $25,000
  - 1% of active members
  - 100 out of 8,896
- Between $25,000 and $35,000
  - 7% of active members
  - 602 out of 8,896
- Between $35,000 and $50,000
  - 30% of active members
  - 2,676 out of 8,896
- Total less than $50,000
  - 38% of active members
  - 3,378 out of 8,896

Appendix

- Summary of projection assumptions and methods
- Recap of design scenario modeled
- 10-year and 20-year projection of Funded Percentage and City contribution rate

Actuarial Assumptions and Methods

- Actuarial assumptions are the same as those used in the current actuarial valuation performed by the Plan's actuary, except as noted below:
  - The estimated market value of assets used as of <date> is $1.82B
  - The amortization of unfunded actuarial liability is determined using a 4% payroll growth assumption beginning in the second projection year
- The calculations are based upon the results of the current actuarial valuation prepared by the Plan's actuary. Segal has reproduced the valuation results to within a range of reasonableness and determined the financial impact of alternative models by applying the changes in liability under the Segal valuations and applying those changes to the Actuary's valuation results.

Projections, by their nature, are not a guarantee of future results. The modeled projections are intended to serve as estimates of future financial outcomes that are based on the information available to us at the time the modeling is undertaken and completed, and the agreed-upon assumptions and methodologies described herein. Emerging results may different significantly if the actual experience proves to be different from these assumptions or if alternative methodologies are used. Actual experience may differ due to such variables as demographic experience, the economy, stock market performance and the regulatory environment.

Recap of Design Scenario Modeled

- Existing active members that meet certain criteria would be "grandfathered" into the current plan design and contribution structure
  - Modeled grandfather group includes:
    - Active employees who are age 50 with 15 years of service, or
    - Active employees within 10 points of the Rule of 80 Recap of Design Scenario Modeled
  - Increase asset smoothing period from 4 years to 5 years (not subject to grandfathering)
  - Increase employee contribution rate of 5% of salary (approximately 21.57% of actuarially determined total for current fiscal year) to 44% of actuarially determined total (approximately 8-10% of salary)
    - New hires contribute at new level immediately
    - Increase for non-grandfathered existing employees would be phased in over 5 years (initially 26% of total rate, increasing by 4.5% each year for 5 years)
    - Note that the member rate will change each year depending upon the actuarially determined total contribution rate
    - Grandfathered employees continue to contribute at 5% of salary
    - City pays remaining portion of actuarially determined total (56% long term)

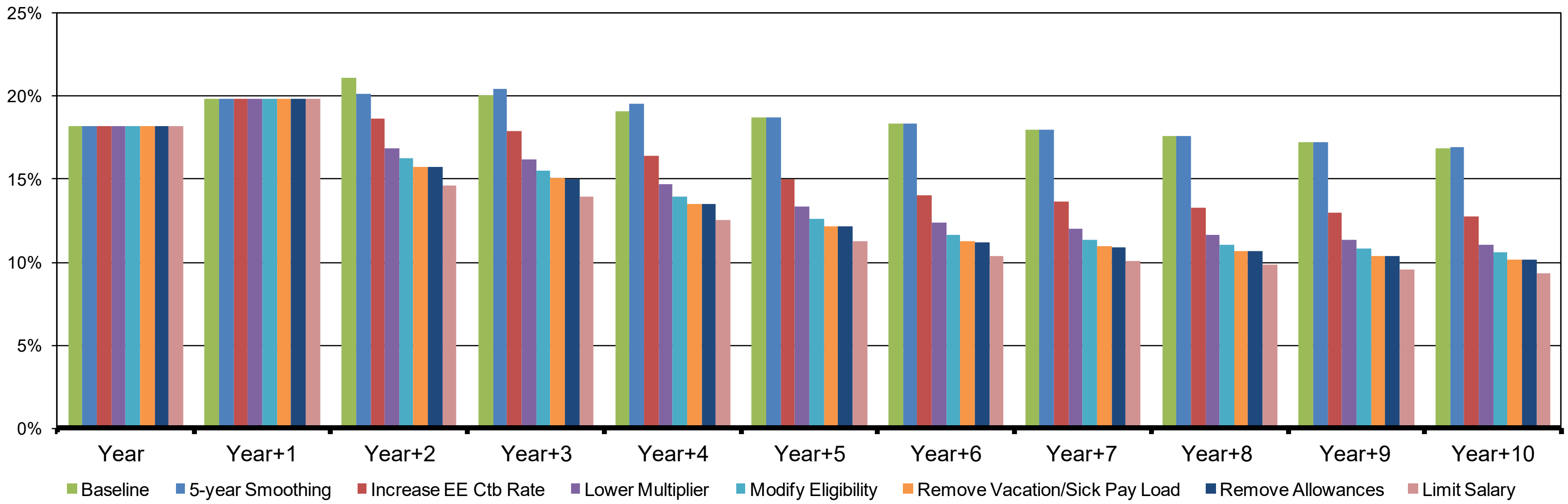
Recap of Design Scenarios Modeled (cont'd)

- (List continued from previous slide)
  - Change multiplier for future accruals to 1.5%
    - Current schedule of accrual rates: 2.0% for service up to 32.5 years
      1.0% for next three years of service
      0.5% for service after 35.5 years
  - Modify retirement eligibility
    - Eliminate age 62 with 5 years of service
    - Change age 60 with 10 years of service to age 63 with 10 years of service
    - Change Rule of 80 to Rule of 83
  - Vacation and sick time payouts can no longer be included in pensionable earnings
  - Pensionable earnings can no longer include travel, communications or technical allowances
  - Pensionable earnings limited to Social Security Taxable Wage Base, indexed at 3%

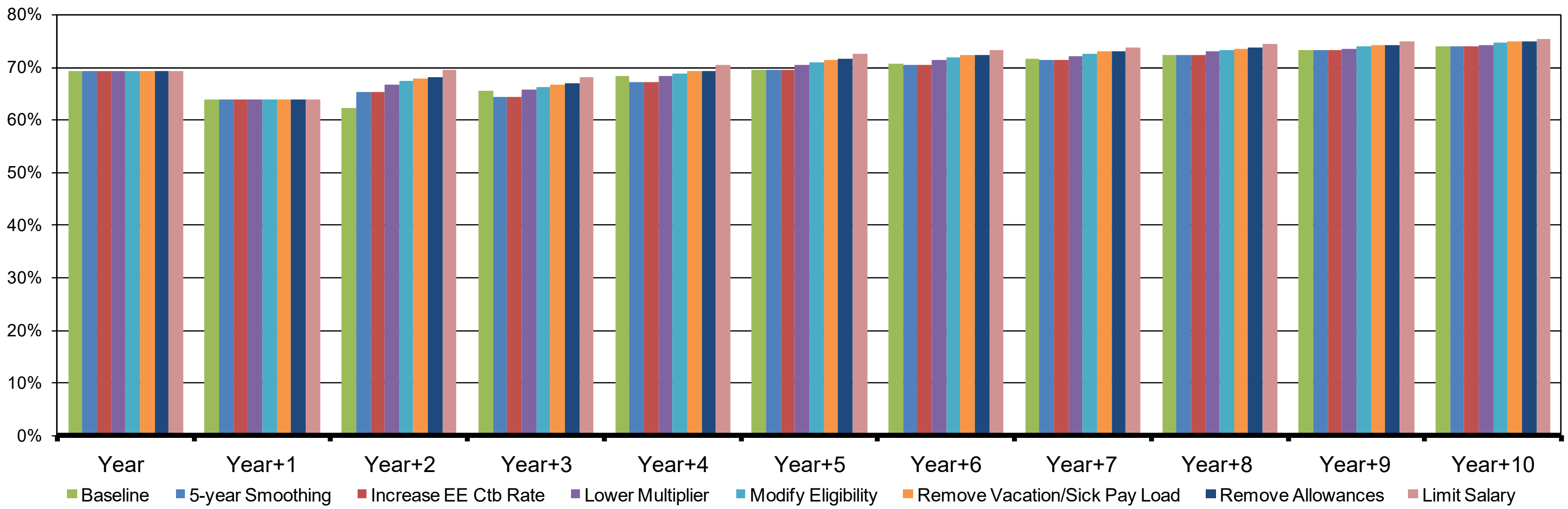
Projection of City Contribution Rate and Funded Percentage Reflecting Scenarios Modeled

- Layered impact of all scenarios modeled, reflecting revised grandfather criteria (50 and 15 or within 10 points of Rule of 80)

Estimated City Contribution Rate (Fiscal Year)



Estimated Funded Percentage (Valuation Date)



Analysis of Scenarios Modeled: Revised Grandfather Criteria (50&15 or 10 Points from Rule of 80)

- Focus on five-year projected City contribution rate for comparison
  - Employees' 44% sharing of actuarially determined rate fully phased in

Fiscal Year	Baseline	Add 5 Year Smoothing	Add Change to Employee Contribution Structure	Add Change to Future Accrual Multiplier	Add Change to Eligibility	Add Removal of Vac/Sick Pay	Add Removal of Allowances	Add Limit Earnings to Soc Sec TWB
<Date>	18.34%	18.35%	14.02%	12.38%	11.66%	11.26%	11.23%	10.38%
Impact		0.01%	-4.33%	-1.64%	-0.72%	-0.40%	-0.03%	-0.85%
		"Sand"	"Boulder"	"Rock"	"Pebble"	"Pebble"	"Sand"	"Pebble"

- As long as the City continues to fund their calculated share of the contribution, the projected long-term funded percentage (20 years) will converge towards the same point, regardless of scenario
  - Byproduct of 20-year open, level percentage of payroll funding policy

Valuation	Baseline	Add 5 Year Smoothing	Add Change to Employee Contribution Structure	Add Change to Future Accrual Multiplier	Add Change to Eligibility	Add Removal of Vac/Sick Pay	Add Removal of Allowances	Add Limit Earnings to Soc Sec TWB
<Date> +20	80.5%	80.5%	80.5%	79.4%	80.2%	80.0%	80.1%	79.8%

Appendix

A. Financial statement cover letter

B. Bank reference

C. Professional biographies

D. Representative list of Public Sector clients

A. Financial statement cover letter

Segal

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Chief Financial Officer
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M 646.483.2578
jfristachi@segalco.com

333 West 34th Street
New York, NY 10001-2402
segalco.com

March 6, 2025

Proprietary/Confidential Materials

Ms. Connie Heinrichs and Ms. Brook Taylor, Procurement Contract Officers
State Purchasing Bureau
Nebraska Public Employees Retirement Systems (NPERS)
1526 K Street, Suite 130
Lincoln, NE 68508

Re: **Request for Proposals - Financials (RFP - F) Nebraska Public Employees Retirement Systems (NPERS) – Actuarial Services (RFP # 120961 O5)**

Dear Ms. Heinrichs and Ms. Taylor,

Pursuant to the above referenced RFP - Financials, to provide **Actuarial Services (RFP # 120961 O5)** on behalf of the **Nebraska Public Employees Retirement Systems (NPERS)** we are hereby submitting a password-protected **electronic/email copy** of Segal's audited financial statements for the years ended December 31, 2022 - December 31, 2023, which are designated as **"Proprietary/Confidential Materials." Our audited Financial Statements provide the reports/statements that are required of a publicly held corporation. As requested, we have also attached a banking reference letter from Chase Bank.**

We request that only you, and/or the member(s) of your staff directly responsible for the evaluation of this information, view our financial statements. At the conclusion of the evaluation, please remove any electronic copies from your computer system. Thank you for maintaining the confidentiality of this material.

If you have any questions, please feel free to call me.

Very truly yours,

Joseph Fristachi

Joseph Fristachi
Treasurer and Chief Financial Officer

JXF: nab
Enc.

cc: Matt Strom

B. Bank reference

CHASE

J.P.Morgan

March 5, 2025

Joe Fristachi
333 W 34TH ST
NEW YORK, NY 10001-2402

RE: THE SEGAL GROUP, INC.

Dear Joe,

This letter is being delivered to you to provide information on the Company's banking relationship with JPMorgan Chase Bank, N.A (the "Bank").

We can hereby confirm that the Company has maintained accounts at the Bank since 08/04/1988 and has operated the accounts in a satisfactory manner.

Please be advised that this letter refers only to facts as they exist as of the date of this letter and the Bank shall have no duty or obligation to inform the addressee hereof of any future changes in such facts. This letter is solely for the benefit of the addressee hereof for the referenced purpose, and may not be relied on by any other person or for any other purpose.

Sincerely,

Sebenza Nkomo

Sebenza Nkomo
Executive Director
JPMorgan Chase Bank, N.A.
383 Madison Avenue, NY
212-270-1993
Sebenza.nkomo@jpmorgan.com

C. Professional biographies

Matthew A. Strom, FSA, MAAA, EA

Senior Vice President and Actuary, Chicago

Project Role: Client Relationship Manager and Primary Actuary

Expertise

Matt is a Senior Vice President and Actuary in Segal's Chicago office with over 25 years of experience consulting to sponsors of defined benefit pension plans. His responsibilities include presenting to boards of trustees, reviewing actuarial valuations, preparing actuarial cost studies and managing other special projects for public sector retirement plans. His expertise includes deterministic and stochastic cost and funding level projections, plan design analyses, experience studies, asset/liability modeling and actuarial audits. He serves as lead consultant and actuary to many public sector retirement systems including the Teachers' Retirement System of the State of Illinois and Vermont Retirement Systems. Matt is also a member of Segal's Public Sector Leadership Group.

Professional background

Prior to joining Segal, Matt was a Senior Consultant at another large benefits consulting firm. In this position, he managed and analyzed defined benefit and post-retirement welfare benefit valuations and assisted clients with various administrative and plan design issues. His clients range in size from several hundred to over 600,000 members.

Education/professional designations

Matt received a BS with high distinction in Actuarial Science from the University of Illinois at Urbana-Champaign. He is a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary. He also volunteers on the Society of Actuaries Retirement Plans Experience Committee, which is responsible for the ongoing reporting of mortality and other experience of defined benefit pension plans

Publications/speeches

- "The Impact of Inflation on Public Pensions," *PERSist* (National Conference on Public Employee Retirement Systems), Fall 2022
- "Public Pensions Overview," 2022 National Association of Public Pension Attorneys Legal Education Conference, June 2022
- "The Effect of Inflation on Public Plan Design and Assumptions," 2022 Conference of Consulting Actuaries Enrolled Actuaries Meeting, May 2022
- "The Analytics of Managing Risk in Your Defined Benefit Plan," Segal Consulting Spring 2015 Public Sector webinar series, June 2015

- “Understanding Pension Obligation Bonds,” *Benefits and Compensation Digest* (International Foundation of Employee Benefit Plans), July 2007

References

Client name:	**Vermont State Retirement Systems**
Contact name:	Tim Duggan
Telephone number:	802.828.5195
Email address:	Tim.duggan@vermont.org
Client name:	**Colorado Public Employees Retirement Association**
Contact name:	Koreen Holden, FCA, EA, MAAA
Telephone number:	303.837.6256
Email address:	kholden@copera.org
Client name:	**Teachers’ Retirement System of the State of Illinois**
Contact name:	Amy Reynolds
Telephone number:	217.814.2272
Email address:	areynolds@trsil.org

Daniel J. Siblik, ASA, MAAA, FCA, EA

Vice President and Actuary, Chicago

Project Role: Secondary Actuary

Expertise

Dan is a Vice President and Actuary, working primarily with staff in Chicago's office. He has more than 25 years of experience as a benefits consultant and focuses primarily on public sector pension consulting, as well as retiree healthcare consulting.

Dan's clients have included statewide pension plans, municipalities and counties, boards, transit authorities as well as Native American tribes. His primary roles include, but are not limited to, reviewing and delivering pension valuation results, preparing experience studies and developing recommended assumptions, actuarial audits, modeling projections, preparing cost-impact statements for proposed legislation and/or plan changes and reporting to the Governmental Accounting Standards Board (GASB).

In addition to his consulting responsibilities, Dan also works with training junior staff and new business opportunities.

Dan's pension exposure includes extensive involvement in GASB Statement Nos. 67 and 68 reporting. His retiree healthcare work involved GASB Statement Nos. 74 and 75. Dan also spent more than a decade working on multiemployer pension plans. That work included a similar scope to his current public sector consulting.

Professional background

Prior to rejoining Segal, Dan was a consulting actuary at other benefit consulting firms.

Education/professional designations

Dan earned a BS in Actuarial Science from the University of Illinois Urbana-Champaign. He is an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries, a Fellow of the Conference of Consulting Actuaries and an Enrolled Actuary.

Publications/speeches

- "With Paycheck-to-Paycheck Living More Common, a Defined Benefit Plan Provides a Secure Retirement Path," NCPERS *PERSist*, Fall 2024
- Co-presenter of "The Role of Defined Benefit Pensions in Recruiting and Retaining Public Safety Professionals," TEXPERS Summer Educational Forum, August 2024
- "Public Pension Oversimplification Can Complicate Things Quickly," NCPERS *PERSist*, Winter 2024
- Co-panelist on "Plan Design and How It Affects Your Workforce," Conference of Consulting Actuaries, October 2023

- Co-presenter of "A Current Look at Public Pension Plans, Inflation, and Social Security," the opening general session of the National Conference of Public Employee Retirement Systems' (NCPERS) Financial, Actuarial, and Legislative & Legal (FALL) Conference, as well as full training day with Trustees, October 2023
- "How Do Public Pension Plans Measure Up to Social Security on Inflation Protection?", NCPERS *PERSist*, Summer 2023
- "Can We Teach Old Pension Plans New Tricks? And Do We Need To?," Special Pension Briefing (Illinois Commission on Government Forecasting and Accountability), Fall 2022

References

Client name:	**Teachers' Retirement System of the State of Illinois**
Contact name:	Amy Reynolds
Telephone number:	217.814.2272
Email address:	areynolds@trsil.org
Client name:	**Chicago Municipal Employees' Pension and Annuity Pension Fund**
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Email address:	junkinist@meabf.org
Client name:	**Illinois Commission on Government Forecasting and Accountability**
Contact name:	Dan Hankiewicz
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Tatsiana Dybal, FSA, MAAA, EA

Vice President and Actuary, Chicago

Project Role: Senior Reviewing Actuary

Expertise

Tatsiana is a Vice President and Actuary in Segal's Chicago office with over 15 years of experience in actuarial consulting. She is responsible for preparing annual valuations and projections and assisting with plan design and experience studies. Her clients include public sector plans and range in size from several hundred to over 500,000 participants.

Tanya has experience working on GASB Statement Nos. 67 and 68 reporting as well as plan health monitoring for large statewide plans. She has also done extensive auditing work in addition to work related to bankruptcy proceedings.

Professional background

Tanya joined Segal in 2007. Prior to joining Segal, Tanya worked in the marketing department of a technology firm for seven years.

Education/professional designations

Tanya received an MS in Physics and Mathematics from State University (Minsk, Belarus) and an MS with high distinction in Actuarial Science from DePaul University. She is a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary. Tatsiana has received the firm's prestigious Quality Star and One Company awards.

References

Client name:	**Colorado Public Employees Retirement Association**
Contact name:	Koreen Holden, FCA, EA, MAAA
Telephone number:	303.837.6256
Email address:	kholden@copera.org
Client name:	**Mid-America Carpenters Regional Council Benefit Funds**
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Client name:	**Teachers' Retirement System of the State of Illinois**
Contact name:	Amy Reynolds
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David K. Nickerson, ASA, EA

Actuary, Chicago

Project Role: Reviewing Actuary

Expertise

David is an Actuary in Segal's Chicago office with over 13 years of actuarial experience. He prepares valuation reports for corporate, public sector and multiemployer clients, among other projects. His work also includes deterministic and stochastic projections, experience studies, GASB 67/68 compliance, cost impact statements for proposed legislation and/or plan changes, plan design analysis and other pension-related work such as FICA safe harbor guidance and plan terminations. David's clients have included statewide pension plans, national funds and boards, ranging in size from several hundred to over 400,000 members.

Professional background

Prior to joining Segal in 2016, David served as a Pension Actuarial Analyst at another national employee benefits consulting firm specializing in corporate and public sector retirement plans.

Education/professional designations

David holds a BS in Actuarial Science with a minor in Music from Brigham Young University. He is an Associate of the Society of Actuaries and an Enrolled Actuary.

References

Client name:	**Teachers' Retirement System of the State of Illinois**
Contact name:	Amy Reynolds
Telephone number:	217.814.2272
Email address:	areynolds@trsil.org
Client name:	**Firemen's Annuity and Benefit Fund of Chicago**
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Client name:	**Illinois Commission on Government Forecasting and Accountability**
Contact name:	Dan Hankiewicz
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Jakob M. Nolan, FSA, MAAA, EA

Associate Actuarial Consultant, Chicago

Project Role: Reviewing Actuary

Expertise

Jakob is an Associate Actuarial Consultant in Segal's Chicago office, with over seven years of experience. He specializes in pension work, with a focus on reviewing and programming actuarial valuations, experience studies, audits and government reporting for public and multiemployer pension plans. His clients include statewide retirement systems as well as smaller plans (firefighter plans, municipalities, authorities and unions). In addition, he works on individual participant benefit calculations and relative values disclosures as well as plan redesign.

Professional background

Prior to Segal, Jakob served as a Pension Actuarial intern at another actuarial consulting firm.

Education/professional designations

Jakob holds a BS in Mathematics from the University of Illinois at Chicago. He is a Fellow of the Society of Actuaries (FSA), a Member of the American Academy of Actuaries and an Enrolled Actuary.

References

Client name:	**Chicago Housing Authority**
Contact name:	Lenneah Jubinal
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Client name:	**Firemen's Annuity and Benefit Fund of Chicago**
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Email address:	kellyweller@fabf.org
Client name:	**Chicago Municipal Employees' Pension and Annuity Pension Fund**
Contact name:	Tiffany Junkins
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Diana W. Yen, ASA, MAAA

Associate Actuarial Consultant, Chicago

Project Role: Actuarial Analyst

Expertise

Diana is an Associate Actuarial Consultant in Segal's Chicago office, with 10 years of experience. She specializes in pension work, with a focus on actuarial valuations, experience studies, audits and government reporting under GASB Statement Nos. 67 and 68. Diana has also worked on individual benefit calculations as well as plan design work.

Education/professional designations

Diana holds BS degrees in Actuarial Science and Operations Management from The Ohio State University. She is an Associate of the Society of Actuaries (ASA) and a Member of the American Academy of Actuaries (MAAA).

References

Client name:	**Chicago Housing Authority**
Contact name:	Lenneah Jubinal
Telephone number:	312.742.8500
Email address:	ljubinal@thecha.org
Client name:	**Firemen's Annuity and Benefit Fund of Chicago**
Contact name:	Kelly Weller
Telephone number:	773.536.0450
Email address:	kellyweller@fabf.org
Client name:	**Union League Club Employees' Retirement Plan**
Contact name:	Raffel Francis
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Laura C. Jeske

Senior Actuarial Associate, Chicago

Project Role: Senior Actuarial Analyst

Expertise

Laura is a Senior Actuarial Associate for the Retirement practice in Segal's Chicago office. She focuses on evaluating retirement plans and developing actuarial results. Her primary roles focus on analyzing plan data, financial statements and deterministic projections.

Laura works on public and multiemployer clients, involving a range of liabilities and diverse plan provisions. She has conducted an in-depth experience study analysis reviewing data history spanning five years for Illinois Teachers' Retirement System. Furthermore, she has worked on benefit improvements and benefit reductions to maintain financial stability over the long-term for multiemployer pension plans.

Education/professional designations

Laura graduated from the University of Wisconsin – Milwaukee with a BA in Actuarial Science. She is currently pursuing designations as an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary.

Maria Manoukarakis

Actuarial Associate, Chicago

Project Role: Actuarial Analyst

Expertise

Maria is an Actuarial Associate for the Retirement practice in Segal's Chicago office. She focuses on evaluating retirement plans and developing actuarial results. Her primary roles focus on analyzing plan data, financial statements and deterministic projections.

Maria works on public and multiemployer clients, involving a range of liabilities and diverse plan provisions. She has conducted in-depth variable annuity plan design analyses reviewing historical data and the projected effects. Furthermore, she has worked on benefit improvements to maintain financial stability over the long-term for multiemployer pension plans.

Education/professional designations

Maria graduated from the University of Illinois Urbana-Champaign with a BS in Actuarial Science. She is currently pursuing designations as an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary.

Melanie Walker, JD

Senior Vice President, National Compliance Practice Leader, Denver

Project Role: Compliance Resource

Expertise

Melanie is a Senior Vice President and National Compliance Practice Leader. Based in the firm's Denver office, she has over 25 years of compliance experience.

Melanie is Segal's primary subject matter expert on public sector retirement plan compliance, serves as a national resource on many issues and is a member of our Public Sector Leadership Group (PSLG). She also provides ongoing and special compliance consulting services to employee benefit plans (both retirement and health) in all three of Segal's major markets.

Melanie's specialized expertise includes:

- Performing comprehensive compliance reviews for public sector defined benefit and defined contribution plans
- Analyzing, drafting and reviewing governing plan documents such as state/local statutes, administrative rules and policy manuals
- Researching and analyzing statutory, regulatory and agency guidance on tax rules and employee benefit laws
- Providing advice and training on fiduciary rules and plan governance structure
- Consulting with public entities on retiree health plan design and funding options
- Assisting public plans with administrative and operational issues relating to plan design and plan reform

Professional background

Prior to joining Segal, Melanie worked in employment law at a firm in Denver.

Education/professional designations

Melanie received a BA in Political Science and International Affairs with an area of concentration in the former Soviet Union at the University of Colorado at Boulder and a JD from the University of Colorado School of Law. She is a licensed attorney in the State of Colorado.

Melanie is an active member of the National Association of Public Pension Attorneys (NAPPA), where she serves on the Tax & Benefits Committee and as a co-leader of the DC/Hybrid Plans Forum. She is also a member of the National Association of Government Defined Contribution Administrators (NAGDCA) where she currently serves on the Legislative Committee.

Publications/speeches

Melanie frequently authors publications for distribution to Segal's public sector clients. As an active member of the National Association of Public Pension Attorneys (NAPPA) and the National Association of Government Defined Contribution Administrators (NAGDCA), Melanie has written articles for both associations' newsletters and is a frequent speaker at NAPPA and NAGDCA conferences and other employee benefits organizations, including the International Foundation of Employee Benefit Plans (IFEBP), the National Coordinating Committee for Multiemployer Plans (NCCMP) and the Defined Contribution Institutional Investment Association (DCIIA).

D. Representative list of Public Sector clients

A representative list of Segal's Public Sector actuarial valuation clients (by asset size) is in the following table. We currently perform actuarial valuations, experience analysis reviews and general consulting services for the complex public-sector defined benefit plans listed.

Representative List of Segal's Public Sector Actuarial Valuation Clients (by Asset Size)

Client	Initial Contract Year	Total Membership	Asset Size
University of California Retirement System	2004	365,844	$98.6 billion
Colorado Public Employees' Retirement Association	2018	649,581	$64.8 billion
Public Employees' Retirement System of the State of Nevada	1974	220,687	$64.4 billion
Illinois Teachers' Retirement System	2016	434,117	$64.2 billion
City of Los Angeles Fire and Police Pension Plan	2006	27,620	$31.3 billion
Police and Firemen's Retirement System of New Jersey	2020	89,070	$27.8 billion
Los Angeles City Employees' Retirement System	2004	61,384	$23.0 billion
Orange County Employees Retirement System	2004	52,644	$21.6 billion
The Water and Power Employees' Retirement Plan of the City of Los Angeles	1999	23,148	$17.8 billion
San Diego County Employees Retirement Association	2003	51,242	$17.6 billion
San Bernardino County Employees' Retirement Association	2002	50,060	$15.2 billion
Sacramento County Employees' Retirement System	2004	32,910	$13.3 billion
Alameda County Employees' Retirement Association	2003	26,411	$11.2 billion
Contra Costa County Employees' Retirement Association	2003	25,263	$10.8 billion
Ventura County Employees' Retirement Association	2003	22,527	$8.2 billion
Boston Retirement System	prior to 2005	46,066	$6.8 billion
Fresno County Employees' Retirement Association	2006	21,804	$6.6 billion
Kern County Employees' Retirement Association	2011	24,326	$5.8 billion
Vermont Retirement Systems	2017	58,440	$5.5 billion
Municipal Employees' Annuity and Benefit Fund of Chicago	2014	79,912	$4.3 billion
University of Missouri Retirement, Disability and Death Benefit Plan	prior to 2005	34,234	$3.7 billion
Sonoma County Employees' Retirement Association	2007	11,767	$3.4 billion
Fire and Police Pension Fund, San Antonio	2003	6,976	$3.4 billion
Los Angeles Department of Water & Power	2002	20,123	$3.2 billion

Client	Initial Contract Year	Total Membership	Asset Size
East Bay Municipal Utility District Retirement System	2007	4,557	$2.5 billion
City of Fresno Fire and Police Retirement System	2006	2,633	$2.2 billion
Georgia Municipal Employees Benefit System	2005	37,448	$2.1 billion
City of Jacksonville General Employees Retirement Plan	2010	9,348	$2.0 billion
Dallas Police and Fire Pension System	2016	10,592	$2.0 billion
Milwaukee County Employees' Retirement System	2017	18,142	$2.0 billion
City of Fresno Employees Retirement System	2006	5,862	$1.8 billion
County of Santa Clara (OPEB only)	2011	31,995	$1.7 billion
Memphis Light, Gas and Water Division Retirement and Pension System	1999	5,260	$1.6 billion
DeKalb County Pension Plan	1988	11,856	$1.5 billion
Firemen's Annuity and Benefit Fund of Chicago	2020	10,154	$1.5 billion
Fulton County Employees Retirement System	2013	3,450	$1.4 billion
Middlesex County Retirement System	prior to 2005	17,812	$1.4 billion
City of Atlanta General Employees' Pension Fund	1994	9,205	$1.4 billion
City of Cambridge Contributory Retirement System	prior to 2005	5,899	$1.3 billion
Retirement Plan for Employees of NJ Transit Bus Operations, Inc. Amalgamated Transit Union	prior to 2005	8,946	$1.2 billion
Imperial County Employees' Retirement System	2007	4,646	$1.2 billion
Barnstable County Retirement System	prior to 2005	8,444	$1.1 billion
City of Birmingham Retirement and Relief System	prior to 1990	7,638	$1.0 billion
City of Worcester Retirement System	prior to 2005	6,889	$952 million
Government Employees' Retirement System of the Virgin Islands	1993	18,000	$769 million
Mendocino County Employees' Retirement Association	2011	3,733	$715 million
Milwaukee County Transport Employees' Pension Plan	2017	2,334	$636 million
City of Orlando Police Officers' Pension Fund	1995	1,548	$623 million
New Jersey Transit Non-Agreement Retirement Plan	prior to 2005	2,557	$564 million
Massachusetts Water Resource Authority	2013	1,788	$530 million
Essex Regional Retirement System	2018	5,960	$525 million
Fairfax County Water Authority Retirement Plan	2015	864	$427 million
City of Savannah Employees' Retirement Plan	prior to 1997	4,144	$421 million
City of New Orleans Employees' Retirement System	2018	5,452	$419 million
Park Employees' Annuity and Benefit Fund of Chicago	2012	5,615	$415 million
Newton Contributory Retirement System	2014	3,512	$351 million

Client	Initial Contract Year	Total Membership	Asset Size
Town of Brookline Contributory Retirement System	prior to 2005	3,915	$309 million
City of Holyoke Retirement System	prior to 2005	2,322	$300 million
Town of East Hartford Pension Plan	prior to 1995	1,187	$255 million
Weld County Retirement Plan	2012	2,170	$255 million
City of Chattanooga Fire and Police Pension Fund	1998	1,705	$241 million
City of Atlanta General Employees' Pension Fund Employees of the Atlanta Board of Education	1994	2,734	$230 million
City of Jacksonville Corrections Officers Retirement Plan	2010	926	$220 million
Judicial Retirement System of Nevada	1976	225	$210 million
Fulton-DeKalb Hospital Authority Employees' Retirement Plan	2012	6,093	$197 million
City of Salem Retirement System	2009	1,750	$178 million
City of Bridgeport Public Safety Plan A	prior to 2000	573	$169 million
Employees Retirement Plan of the Town of Hamden	prior to 1992	1,104	$167 million
Town of Wellesley Contributory Retirement System	prior to 2005	1,316	$164 million
Retirement Plan for Employees of The Water Works and Sewer Board of the City of Birmingham	2008	972	$163 million
Dedham Contributory Retirement System	2019	927	$157 million
Town of Andover Retirement System	1998	1,317	$144 million
Town of Natick Contributory Retirement System	2002	1,179	$128 million
Chicago Housing Authority Employees' Retirement Plan	2013	1,185	$121 million
City of Falls Church Basic Retirement Plan	2019	644	$121 million
Boston Water and Sewer Commission	2006	722	$114 million
Town of Belmont Retirement System	2013	1,075	$109 million
Board of Education Employees' Pension Fund of Essex County	prior to 2005	547	$108 million
City of Gloucester Retirement System	2012	1,105	$107 million
City of Gainesville Retirement Plan A	2007	862	$106 million
City of Vero Beach General Employee Retirement Plan	1998	724	$96 million
Retirement Plan of Hampton Roads Transportation District Commission	prior to 2005	962	$88 million
City of Bridgeport Plan B (Police)	prior to 2000	135	$83 million
Pension Plan for General Employees of the Town of North Haven	prior to 1995	340	$70 million
Swampscott Retirement System	2019	632	$67 million
Town of Portsmouth, Rhode Island	2014	317	$53 million

Client	Initial Contract Year	Total Membership	Asset Size
City of Bridgeport Plan B (Fire)	prior to 2000	74	$44 million
City of Falls Church Police Retirement Plan	2019	81	$40 million
City of Birmingham Firemen's and Policemen's Supplemental Pension System	prior to 1990	1,791	$35 million
Town of North Haven Police Department Pension Plan	prior to 1995	107	$27 million
Town of Johnston, Rhode Island Firefighters Pension System	2001	112	$24 million
Town of Johnston, Rhode Island Police Pension System	2001	152	$22 million
Town of North Haven Fire Department Pension Plan	prior to 1995	66	$19 million
Town of Wolcott Board of Education	Prior to 2010	184	$18 million
City of Birmingham Retirement and Relief System Health Department Employees	prior to 1990	44	$16 million
Retirement Plan for Policemen of the Town of Wolcott	prior to 1995	44	$15 million
Town of Westbrook Retirement Plan	prior to 1995	197	$14 million
Retirement Plan for Employees of the Town of Wolcott	prior to 1995	105	$11 million
Retirement Plan of NJ Transit Bus Operations, Inc. for Utility Workers' Union of America, Local 601 Employees	prior to 2005	38	$7 million
Legislators' Retirement System of the State of Nevada	1976	141	$5.4 million
University System of New Hampshire Additional Retirement Contribution Plan	2015	358	$2.3 million
Town of Westbrook Volunteer Fire Plan	Prior to 1995	69	$2 million
Fort Worth Police Benevolent Association	2016	1,707	$1.6 million
Town of North Haven Volunteer Fire Plan	prior to 1995	76	$1 million
City of Birmingham Unclassified Employees' Pension & Relief System	prior to 1990	10	$0.7 million
Watauga County Law Enforcement Officers' Special Separation Allowance Plan	2017	45	$0.6 million
Town of Westbrook Constables Plan	2006	11	$0.3 million
Town of Bethany Volunteer Fire	2016	49	$0.2 million
City of Bridgeport's Janitors' and Engineers' Retirement Fund	prior to 2005	15	$0.0 million
Town of North Haven Elected Officials	Prior to 1995	5	$0.0 million