WEST VIRGINIA
CONSOLIDATED PUBLIC RETIREMENT BOARD

Solicitation Number: CRFP CPR2300000002

Request for Proposal
Actuarial Services

Technical Proposal

Submitted by:

Cavanaugh Macdonald Consulting, LLC.

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	Department of Administration Purchasing Division 2019 Washington Street East Post Office Box 50130 Charleston, WV 25305-0130	**State of West Virginia** **Centralized Request for Proposals** **Service - Prof**

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BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: VS0000042286

Vendor Name : Cavanaugh Macdonald Consulting, LLC.

Address : 3550 Busbee Parkway, Suite 250

Street :

City : Kennesaw

State : Georgia **Country :** USA **Zip :** 30144

Principal Contact : Alisa Bennett

Vendor Contact Phone: 404.317.6351 **Extension:**

FOR INFORMATION CONTACT THE BUYER
Melissa Pettrey
(304) 558-0094
melissa.k.pettrey@wv.gov

Vendor Signature X **FEIN#** 61-1489078 **DATE** 2/15/2023

All offers subject to all terms and conditions contained in this solicitation

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

TRANSMITTAL LETTER

February 21, 2023

Ms. Melissa Pettrey
Department of Administration, Purchasing
Division 2019 Washington Street East
Charleston, WV 25305-0130

Re: RFP for Actuarial Services

Dear Ms. Pettrey:

Cavanaugh Macdonald Consulting, LLC (CMC) is pleased to offer our proposal to provide qualified actuarial, pension and advisory consulting services for the West Virginia Consolidated Public Retirement Board (CPRB) and its nine defined benefit retirement systems in response to your RFP. In our proposal, we will demonstrate that we are best prepared to meet – and exceed – your actuarial needs through our combination of experience, expertise, and dedication to client service. We have the proven ability, and can be trusted, to successfully perform the services described in the RFP for CPRB.

CMC's dedication to solely serve the public sector and to only provide actuarial consulting services makes us extremely unique among the firms proposing for these services. Many of our competitors work on multiemployer, corporate, or Taft-Hartley pension plans, and their exposure to the public sector is limited. At CMC, 100% of our actuarial services are provided to public sector retirement plans, like CPRB.

TRANSMITTAL LETTER

Therefore, CMC is very successful at attracting capable actuarial consultants who are dedicated to serving the public sector and can effectively communicate complex actuarial matters to Boards, staff, commissions, and other diverse groups. We excel at educating people with diverse backgrounds about the work process actuaries go through and the meaning of the results they produce. We recognize that decision makers and other invested parties come from a wide range of personal and business backgrounds. Our reports and presentations are prepared with a broad audience in mind. We believe we bring exceptional expertise and value to our clients.

Our advantages include:

Public Plan Experience and Knowledge:
Senior staff of CMC average over 30 years of experience serving public sector benefit plans – the expertise and knowledge of our staff regarding public sector actuarial consulting makes our firm a clear leader in the public plan marketplace.

Strong National Presence:
Currently serve as the retained pension actuary for statewide retirement systems in Alabama, Connecticut, Georgia, Indiana, Iowa, Kansas, Kentucky, Minnesota, Mississippi, Missouri, Montana, Nebraska, Ohio, Oklahoma and South Dakota. We also work with many municipal pension clients around the country.

Strong Communication:
Our consultants intentionally strive to effectively communicate actuarial matters so that complex actuarial concepts can be understood by non-actuaries. We frequently use modeling tools and graphics to assist our clients in understanding the dynamics of pension funding.

Client-Focused Approach:
A dedicated staff and an organizational structure that allows flexibility to meet client needs and to provide a high level of client/staff interaction. We refrain from one-size-fits-all approaches so that we can match our service and advice to each client's unique situation.

These strengths drive our success and allow us to continue to be one of the leading public sector actuarial consulting firms in the country. We are committed to maintaining our focus to continue to build on our success.

CMC agrees to comply with all provisions set forth in this RFP. The following table provides our consultants' contact information.

TRANSMITTAL LETTER

Alisa Bennett, FSA, EA, FCA, MAAA
President
3550 Busbee Parkway, Suite 250
Kennesaw, GA 30144
AlisaB@CavMacConsulting.com
Phone: 678.388.1700
Fax: 678.388.1730

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary
819 North Brainard Street
Naperville, IL 60563
LarryL@CavmacConsulting.com
Phone: 630.632.8668
Fax: 678.388.1730

Larry Langer is authorized to bind CMC to the provisions of this RFP and to clarify the information provided. This response presents a firm and irrevocable offer to remain valid from the date of this letter.

We welcome this opportunity to work with CPRB and look forward to assisting you with this important project.

Sincerely,

Alisa Bennett, FSA, EA, FCA, MAAA
President

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

PROJECT GOALS AND PROPOSED APPROACH

Approach and Methodology to Goals/Objectives

4.2 **PROJECT GOALS AND MANDATORY REQUIREMENTS: VENDOR SHOULD DESCRIBE ITS APPROACH AND METHODOLOGY TO PROVIDING THE SERVICE OR SOLVING THE PROBLEM DESCRIBED BY MEETING THE GOALS/OBJECTIVES IDENTIFIED BELOW. VENDOR'S RESPONSE SHOULD INCLUDE ANY INFORMATION ABOUT HOW THE PROPOSED APPROACH IS SUPERIOR OR INFERIOR TO OTHER POSSIBLE APPROACHES.**

The following is our response to the Goals and Objectives item numbers 4.2.1 through 4.2.1.5. of the Project Specifications section of the RFP.

While CPRB is like other retirement systems in many ways, it also has its own unique personality. A distinct history is the result of a merging of different interests and styles of the Board members and System staff, the context of the state laws, practices, and expectations, and a culture that is molded from policy makers and members alike. Consequently, the nature of this work is not to offer "one size fits all" solutions, but rather to craft our tools, skills, and resources into an approach that is consistent with the way CPRB functions.

The core of our work effort as laid out in 4.2.1 of your request for proposal will include:

- *4.2.1.1 Prepare Funding Valuations Reports*
- *4.2.1.2 Prepare GASB Reports*
- *4.2.1.3 Prepare Annual Investment Return Projection*
- *4.2.1.4 Prepare Experience Studies*
- *4.2.1.5 Peer Review and Other Assistance*

Please see below for more detail on these services.

4.2.1.1 Prepare Funding Valuations Reports

We will annually prepare July 1 Funding Actuarial Valuation reports for the following Systems:

- Public Employees' Retirement System (PERS)
- Teachers' Retirement System (TRS)
- Department of Public Safety, Death, Disability and Retirement System (Trooper Plan A)
- State Police Retirement System (Trooper Plan B)
- Judges' Retirement System (JRS)

Annual actuarial valuations determine the liabilities for all benefits promised to the active, retired and inactive members as of each valuation date. Applying the actuarial funding method and reflecting the actuarial value of assets will yield the employer actuarial contribution rates necessary to fund the promised benefits in accordance with state statutes. All valuation work will be performed in accordance with the Actuarial Standards of Practice as well as CMC's internal review process.

The end product will be actuarial valuation reports that will detail the liabilities and demonstrate the application of the funding method and resulting employer contributions. Each funding report will include a summary of principal financial results for the system including actuarial contribution rates (normal cost and unfunded actuarial accrued liability), actuarial value of assets, actuarial liabilities, membership demographics, and detailed gain/loss analysis.

The report will contain sufficient explanatory text to provide a reasonable understanding of all actuarial assumptions, methods, trends and conclusions to individuals with a fiduciary responsibility for the funding status of the retirement plan. As appropriate, the valuation report will contain comments and recommendations concerning the retirement plans' actuarial condition and funding progress.

Our valuation reports are customized and typically include an executive summary with graphs as well as a narrative discussing the valuation results. We create reports that contain information that is important to the client in a format that is friendly and readily usable. At the January Board meeting we will present highlights of the valuation results.

4.2.1.2 Prepare GASB Reports

A second group of reports will provide the necessary calculations and information for compliance with Government Accounting Standards Board (GASB) Statements Nos. 67 & 68 for the five systems listed above. These will be in a format that may be incorporated into CPRB's Annual Comprehensive Financial Reports. For the past several years, we have been preparing GASB exhibits and reports for all of our clients. Our clients' plans range from agent multiple, cost-sharing, and single-employer plans - we note that some of our plans include up to 900 employers and that we provide GASB results for each employer, including the needed accounting entries in some cases.

The comprehensive GASB reports contain all of the actuarial information needed under GASB Statements Nos. 67 & 68 that the Board uses in preparing its Annual Financial Reporting. We will work closely with the staff to make sure that all required information is completed and delivered according to the timeframe and that all auditor questions are satisfactorily answered.

The financial reports build upon a roll-forward of the previous year's valuation, with adjustments sometimes required where particular requirements of the accounting standards differ from the methodology used to fund a system. Because of this, the information to produce the required GASB disclosures is generally straight-forward. The significant challenges are typically in managing the expected future contribution effort of employers in order to allocate the Net Pension Obligation and the Pension Expense.

We typically prepare accounting reports that identify the paragraph number from the Standards along with the needed information in order to make reporting easier. For most of our clients, we prepare separate reports for GASB 67 and GASB 68, but we can combine these or even include them with the valuation where that makes sense for the benefit of the client.

4.2.1.3 Prepare Annual Investment Return Projection

CMC is committed to providing our clients with asset-liability modeling (ALM) analysis. We routinely provide our clients with modeling tools that will allow them to study potential valuation results in the future under different scenarios of investment return or changes in funding policy. These models are customized for each client so they will be of greatest value. We believe it is an extremely important tool in reviewing the projection trends in the major metrics of a pension plan. We will use this technology to prepare the Annual Investment Return Projection.

4.2.1.4 Prepare Experience Studies

We will perform experience studies as a joint project with the CPRB actuarial group according to the following schedule:

- PERS to be completed by June 30, 2024
- TRS to be completed by June 30, 2025
- Trooper Plan A, Trooper Plan B, JRS, DSRS, EMSRS, MPFRS and NRPORS to be completed by June 30, 2026

We routinely perform experience studies for all systems we serve. The purpose of such a study is to compare actual system experience for the study period with that predicted by the current assumptions used in the actuarial valuation process to measure system liabilities. This investigation will compare actual with expected experience for all economic and non-economic assumptions used in the annual actuarial valuation, make recommendations for changes where appropriate, and determine the impact of the recommended changes on system funding. CMC will focus on demographic assumption recommendation development while the CPRB actuarial group will focus on economic assumption recommendation development. Final recommendations will be signed off on by both the Outside actuary and the Board actuary.

The only thing an actuary can state with certainty is that in any one year, the assumptions made about events will be wrong. The magnitude and direction of the impact of these mismatches (with the possible exception of investment returns) should produce minor fluctuations in employer contribution rates. The actuary's goal in recommending assumptions should be to minimize this fluctuation. Since these assumptions provide a reasonable expectation of events over the long-term future period, properly determined assumptions should require relatively modest adjustments from study to study. Placing too much credibility on the most recent experience analyzed in a study can exacerbate contribution volatility, the opposite outcome from the purpose for performing the study.

CMC understands that the data analyzed during a study is only an indication of the most recent trend in experience and not necessarily the best estimate of long-term future experience. Our methodology is to perform an in-depth analysis of all material assumptions utilized in the actuarial valuations. We combine our proven tools and techniques with our experience and judgment in recommending actuarial assumptions that reflect the long-term expected future experience of the system.

4.2.1.5 Peer Review and Other Assistance

CMC serves other statewide retirement systems with Staff Actuaries. In particular, Larry leads the team which reviews the work of the Staff Actuary for the South Dakota Retirement System.

Pursuant to the RFP, we will peer review the annual Actuarial Funding Valuations and the GASB reports performed by the CPRB Actuarial Staff.. These include reports for:

- Deputy Sheriffs Retirement System (DSRS)
- Emergency Medical Services Retirement System (EMSRS)
- Municipal Police Officers and Firefighters Retirement System (MPFRS)
- Natural Resources Police Officers Retirement System (NRPORS)

In particular we will:

- Review and evaluate the demographic and economic actuarial assumptions and actuarial methods recommended used in the report;

- Review the communication of the actuarial valuation results of the actuarial valuation reports, as well as their accuracy, completeness, and compliance with applicable Actuarial Standards of Practice (ASOPs);
- Provide an opinion on whether or not the valuations were performed by qualified actuaries and were performed in accordance with principles and practices prescribed by the Actuarial Standards Board.

We will be very thorough in our review of these items, but we do not feel it is constructive for non-material differences in actuarial opinions to be considered as key findings in the peer review process. Therefore, we will attempt to ensure that our comments focus on items which will improve the valuation process, results, and reporting of the systems. It is our recommended process that we first discuss all material findings with the retirement system and CPRB Actuarial Staff and then reflect those ultimate findings in our final report which is intended to improve the valuation and/or experience study process.

While not specified by the RFP, we will periodically replicate the actuarial valuations of the four systems for which the CPRB Actuarial Staff perform valuations. We propose that these be done as part of our transition work and after each experience study is implemented. This replication will serve a twofold purpose of providing a level of comfort to the Board and Staff so that the results are reasonable and allows CMC to have a better understanding of these Systems.

Note that the Cost Proposal Worksheet anticipates services under 4.2.1.5 will be provided on an hourly basis. We have included the fees for the above services in Goals 1, 2, and 4 of the Cost Proposal Worksheet. We would be delighted to clarify.

As needed, we will assist with actuarial cost analysis of proposed legislation. Charges for this type of analysis are not included above and will be based on hourly rates in the contract. We can provide fixed fees for these projects as needed.

Additional Consulting Services

As a leading actuarial consulting firm to public retirement systems around the country, we have national exposure to emerging trends and possess a very broad, very deep knowledge base of issues facing public retirement systems. Our consultants frequently collaborate via telephonic and WebEx conferences to share expertise with special cases or to discuss emerging trends and issues in our industry.

PROJECT GOALS AND PROPOSED APPROACH

As requested, CMC will provide additional services mutually agreed upon with CPRB. One such example includes the effectiveness of computer models and their ability to help our clients more clearly understand the implications of their decisions, as well as demonstrate the impact of alternate investment return scenarios and funding strategies. The "valuation model" can easily be enhanced to provide additional types of analysis, including changes in funding policy and benefit design. We believe now, in this volatile investment period, is the best time to discuss the capabilities of your current model and explore possibilities for other options you might wish to incorporate.

There are a variety of services we typically provide to our retainer clients. Some of these include detailed gain and loss analysis, analyses of proposed legislation, plan design work, benefit calculations, and experience studies. Further we also provide educational or training seminars to the staff and/or Board of Trustees upon request. For our pension clients we perform funding valuations and GASB 67 and 68 reporting, as well as a number of additional services when requested.

Throughout the contract period, there are other periodic services that may be requested by the Board or staff such as developing updated actuarial factors or performing other special studies. In addition, CMC will proactively keep the Board and staff aware of developments at the federal level and within the public pension and actuarial communities that may have an impact on financing or operations.

On certain occasions, the actuary may be expected to provide some additional consulting services, assist with other technical issues, or contribute to reports that are not specifically listed in the scope of services. Typically, the scope of the project will be discussed, and once defined, a fee estimate will be provided.

In addition to our core services, there are a number of additional services that the retained actuary will likely be called upon to provide over the term of the contract. Rather than identify them all in this space, we will simply state that those are all normal services provided to our retainer clients on an ongoing basis.

Since providing services to public plans is our only business, we offer a full array of actuarial services to our retainer clients. The most common services include:

PROJECT GOALS AND PROPOSED APPROACH

- Pension Valuations
- OPEB Valuations
- Detailed Gain and Loss Analysis
- Analysis of Proposed Legislation
- Legislative Testimony
- Asset and Liability Forecasting
- Expense and Disclosure Requirements of GASB 67, 68, 73, 74 and 75
- Impact of Re-Employment of Retirees
- Creditable Coverage and Medicare Part D Attestation
- IBNR calculation
- Premium setting and Budget Projections for Self-Funded Health Plans
- Plan Design Work, including Medical Plan Design Change Analysis
- Assistance with Policy Considerations
- Knowledge of National Public Sector Trends
- Benefit Calculations
- Individual Employee Benefit Statements
- Board of Trustee Educational Seminars
- Communications to Members and Other Constituents
- Experience Studies
- DROP, PLOP and Retirement Incentive Plans
- Long Term Disability and Long term Care Plan Analysis

Timeline

Section 4.2.1 of the RFP outlines the timeline of the work to be completed for the core services we would provide. We will hold regular status meetings with staff in order to ensure that all deadlines are met.

Summary

CMC is devoted to serving the public sector retirement system needs for actuarial services. From our seasoned consultants to our newest analysts recently out of college, there is a passion for serving our clients and providing the unique services that each retirement system needs. We are well versed in working with Staff Actuaries. We would be honored to provide this same outstanding service to CPRB.

Compliance with Mandatory Project Requirements

4.2.2. MANDATORY PROJECT REQUIREMENTS – THE FOLLOWING MANDATORY REQUIREMENTS RELATE TO THE GOALS AND OBJECTIVES AND MUST BE MET BY THE VENDOR AS A PART OF ITS SUBMITTED PROPOSAL. VENDOR SHOULD DESCRIBE HOW IT WILL COMPLY WITH THE MANDATORY REQUIREMENTS AND INCLUDE ANY AREAS WHERE ITS PROPOSED SOLUTION EXCEEDS THE MANDATORY REQUIREMENT. FAILURE TO COMPLY WITH MANDATORY REQUIREMENTS WILL LEAD TO DISQUALIFICATION, BUT THE APPROACH/METHODOLOGY THAT THE VENDOR USES TO COMPLY, AND AREAS WHERE THE MANDATORY REQUIREMENTS ARE EXCEEDED, WILL BE INCLUDED IN TECHNICAL SCORES WHERE APPROPRIATE. THE MANDATORY PROJECT REQUIREMENTS ARE LISTED BELOW.

4.2.2.1. MANDATORY REQUIREMENT 1: VENDOR SHALL PROVIDE ONLY "QUALIFIED ACTUARIES" FOR THIS ASSIGNMENT. A "QUALIFIED ACTUARY" MEANS AN ACTUARY WHO IS AN ASSOCIATE OR FELLOW MEMBER OF THE SOCIETY OF ACTUARIES WITH AT LEAST 3 YEARS OF EXPERIENCE WITH LARGE PUBLIC PENSION PLANS. THE "LEAD CONSULTANT" SHOULD BE A FELLOW MEMBER OF THE SOCIETY OF ACTUARIES AND HAVE AT LEAST 10 YEARS OF CONSULTING EXPERIENCE WITH LARGE PUBLIC PENSION PLANS.

All proposed actuaries meet the mandatory requirements for this assignment. CMC has been providing actuarial services for public pension and OPEB plans for the entirety of our existence. Senior staff of CMC average over 30 years of experience serving public sector benefit plans. While we work with some smaller public systems, most of our work is with large public retirement systems, including systems with $1 Billion in assets or larger.

Alisa Bennett has 32 years of actuarial experience and Larry Langer has 33 years of actuarial experience doing this type of work, with the past 25 years serving public plans. They are both Enrolled Actuaries under ERISA, Fellows of the Conference of Consulting Actuaries, and Members of the American Academy of Actuaries. Alisa is a Fellow of the Society of Actuaries and Larry is an Associate of the Society of Actuaries.

Micki Taylor and Wendy Ludbrook will serve as project leads and reviewers. Micki has over 30 years of actuarial experience and Wendy has 28 years of actuarial experience. Micki and

Wendy are Enrolled Actuaries, members of the American Academy of Actuaries, and Fellows of the Conference of Consulting Actuaries. Wendy is a Fellow of the Society of Actuaries and Micki is an Associates of the Society of Actuaries.

4.2.2.2. MANDATORY REQUIREMENT 2: VENDOR SHALL PROVIDE A SUCCESSION PLAN IN THE EVENT THE FIRM'S ACTUARIES ARE UNABLE TO PERFORM THE WORK DUE TO ILLNESS, AN ACCIDENT, CESSATION OF EMPLOYMENT OR FOR ANY OTHER REASON AS DETERMINED BY THE VENDOR OR BY THE CPRB.

We assign all clients with two experienced actuaries to ensure we maintain our availability to our clients for meetings, consultations, and support. By having two lead consultants assigned, the team can always respond to emergency requests and short notice meetings. This practice also protects clients from the unanticipated departure of key professionals.

Alisa Bennett and Larry Langer will serve in lead roles for CPRB. Contact with either of these actuaries will ensure that the entire team is informed of current events and receives the necessary direction to perform any requested services. Micki Taylor and Wendy Ludbrook will serve with Alisa and Larry as a core part of the team for CPRB and will be available as additional support contacts, as needed. We keep the entire client team informed about ongoing projects so that all members of the team maintain specific knowledge about the services being provided to CPRB. As a result, there will always be multiple qualified staff assigned with specific knowledge about the services being provided to CPRB should there be a sudden loss of individuals assigned to your account.

Qualifications and Experience Information

4.3 QUALIFICATIONS AND EXPERIENCE: VENDOR SHOULD PROVIDE INFORMATION AND DOCUMENTATION REGARDING ITS QUALIFICATIONS AND EXPERIENCE IN PROVIDING SERVICES OR SOLVING PROBLEMS SIMILAR TO THOSE REQUESTED IN THIS RFP. INFORMATION AND DOCUMENTATION SHOULD INCLUDE, BUT IS NOT LIMITED TO, COPIES OF ANY STAFF CERTIFICATIONS OR DEGREES APPLICABLE TO THIS PROJECT, PROPOSED STAFFING PLANS, DESCRIPTIONS OF PAST PROJECTS COMPLETED (DESCRIPTIONS SHOULD INCLUDE THE LOCATION OF THE PROJECT, PROJECT MANAGER NAME AND CONTACT INFORMATION, TYPE OF PROJECT, AND WHAT THE PROJECT GOALS AND OBJECTIVES WHERE AND HOW THEY WERE MET.), REFERENCES FOR PRIOR PROJECTS, AND ANY OTHER INFORMATION THAT VENDOR DEEMS RELEVANT TO THE ITEMS IDENTIFIED AS DESIRABLE OR MANDATORY BELOW.

4.3.1. QUALIFICATION AND EXPERIENCE INFORMATION: VENDOR SHOULD DESCRIBE IN ITS PROPOSAL HOW IT MEETS THE DESIRABLE QUALIFICATION AND EXPERIENCE REQUIREMENTS LISTED BELOW.

With the exception of two support staff members, our entire firm is composed of pension actuarial professionals. These professionals usually have college degrees in actuarial science or mathematics, and several have graduate degrees. Beyond this formal education, our professionals have also undergone extensive self-study in the process of beginning or completing actuarial credentials. All of our credentialed actuaries and (many of those not yet credentialed) complete at least 36 hours of continuing education each year.

All of our Principals participate with the national organizations serving public plans in the United States, including the National Association of State Retirement Administrators (NASRA), the National Council on Teacher Retirement (NCTR), and the Public Sector Healthcare Roundtable. We work with the staffs of these organizations to identify items of interest for conferences and for our clients. Larry Langer is a member of the Associate Advisory Committee for NASRA and Todd Green, one of our Presidents, is on the Corporate Advisory Board of NCTR. These contacts keep us "plugged in" to relevant topics and developments for public plans. Brent Banister serves on committees that deal with public plan issues with all three of the major actuarial organizations.

QUALIFICATIONS AND EXPERIENCE

4.3.1.1. QUALIFICATION AND EXPERIENCE DESIRABLE 1: PLEASE DESCRIBE THE FIRM, THE FIRM'S QUALIFICATIONS FOR THIS ENGAGEMENT, THE FIRM'S EXPERIENCE IN PROVIDING ACTUARIAL VALUATIONS/STUDIES TO STATE SPONSORED RETIREMENT SYSTEMS, AND THE FIRM'S EXPERIENCE WORKING WITH GOVERNMENT RETIREMENT SYSTEMS.

In 2005, Tom Cavanaugh and Ed Macdonald realized that increased competition was needed among actuarial consulting firms that specialize in public sector work. As a result, Cavanaugh Macdonald Consulting, LLC. was formed. With the help of Cathy Turcot, Alisa Bennett, Todd Green and Ed Koebel, the firm was successful from the start with an organizational structure that allowed flexibility to meet client needs and provide a high level of client/staff interaction.

Since 2005, CMC has hired several outstanding and prominent actuaries in the industry, including John Garrett, Patrice Beckham and Larry Langer who provide CMC with a strong ability to effectively communicate actuarial matters to Boards, staff and other constituents.

At the end of 2014 after a 40-year career in the public sector arena, Tom Cavanaugh retired to Hilton Head, South Carolina. In September of 2019, after a 30-year career in the industry, Ed Macdonald retired to Florida.

Seven Principals of the firm continue the legacy that Tom and Ed started at CMC, providing innovative, creative and technically proficient advice to help benefit plans thrive in the future. The seven Principals are:

- Ed Koebel
- Patrice Beckham
- Cathy Turcot
- Alisa Bennett
- Larry Langer
- Todd Green
- John Garrett

These seven consultants serve as the retained actuary for multiple statewide and municipal retirement and healthcare plans across the country and are very prominent figures in the industry. While all seven consultants lead CMC on a day-to-day basis, Ed Koebel serves as the Chief Executive Officer and Alisa Bennett and Todd Green serve as Presidents on the Board of Managers.

CMC was created specifically to provide actuarial consulting services to public sector pension plans, and we have been doing so for almost 18 years since. However, it is worth noting that these senior consultants have been providing services to public pension plans for an average of 30 years.

QUALIFICATIONS AND EXPERIENCE

Many came to CMC from large, national firms that were not committed to serving the public sector actuarial market.

The role of the consulting actuary and the skill set needed to be a successful consultant for a public pension plan have changed dramatically over the last twenty years. We believe the following traits are key characteristics of CMC and what makes us a successful consulting actuarial firm:

- Knowledge of the current landscape for public plans including budget challenges for participating employers/plan sponsors, trends like changing actuarial assumptions (most notably investment return and mortality), criticism of public plan design and funding by external "think tanks".
- Strong actuarial knowledge and skills to ensure the quality of the work products provided.
- Ability to communicate with a variety of audiences who have varying degrees of knowledge of public plans, in general, and actuarial funding.
- Dedication to clients including commitment to complete required projects in a timely manner and availability for clients when needed, regardless of time or day.
- Awareness of the impact of our work on various stakeholders including individual members, employers, unions, and taxpayers.
- Ability to work closely and be a "team player": Given the challenges facing public plans it is important for the actuary to be part of the client's team and work collaboratively with staff.

We expect these same skills will continue to be necessary to be a successful consulting actuary over the contract period.

CMC has been successful because we are able to meet the varying needs of our clients in a consistent and dependable manner. One of our strongest attributes is that we are able to relate to our clients as unique people and to understand the implications of our work on all stakeholders. We encourage interaction with our clients so we can fully understand the unique environment in which the system is operating. We believe CMC presents the best combination of experience and expertise to provide the actuarial services requested by the CPRB.

CMC is dedicated to providing actuarial and consulting services to only state and local governmental plans, so all our resources are brought to bear on public sector benefit issues.

CMC has extensive experience working with public retirement systems, in general, and in performing the full range of actuarial services. We staff all our client relationships with two lead consultants to ensure our work product reflects the collective wisdom and perspective of at least two senior actuaries with extensive public sector experience. We are successful at attracting very capable consultants who are dedicated to the public sector and have the ability to effectively communicate complex actuarial matters to Boards, staff, legislatures, and others diverse groups. We recognize that decision makers and other invested parties come from a wide range of personal and business backgrounds. We excel at educating people with diverse backgrounds about the work process actuaries go through and the meaning of the results they produce. Our reports and presentations are prepared with a broad audience in mind.

CMCs strengths include our total commitment to exclusively serve public plans, our extensive years of experience both as a firm and as consultants, along with our expertise that includes significant experience presenting to Boards and legislative bodies.

4.3.1.2. QUALIFICATION AND EXPERIENCE DESIRABLE 2: PLEASE PROVIDE AT LEAST THREE REFERENCES. PLEASE PROVIDE THE CONTACT INFORMATION FOR THE PENSION PLAN NAME, A CONTACT PERSON, THEIR ADDRESS, TELEPHONE NUMBER, AND EMAIL.

Retirement Systems of Alabama (Co-Lead Actuaries: Alisa and Larry)

Dr. David Bronner
Chief Executive Officer
201 South Union Street
Montgomery, AL 36130-2150
334.517.7000
david.bronner@rsa-al.gov

Ohio Police and Fire Retirement System (Co-Lead Actuaries: Larry and Wendy)

Ms. Mary Beth Foley
Executive Director
140 E. Town Street
Columbus, Ohio 43215
614.628.8352
MBFoley@op-f.org

QUALIFICATIONS AND EXPERIENCE

Oklahoma Public Employees Retirement System (Co-Lead Actuary: Alisa)

Mr. Joe Fox
Executive Director
5400 N. Grand Blvd., Suite 400
Oklahoma City, OK 73112
405.858.6737
JFox@opers.ok.gov

Any of our retainer clients listed in Appendix A may also be contacted for additional reference.

4.3.1.3. QUALIFICATION AND EXPERIENCE DESIRABLE 3: PLEASE PROVIDE A PROPOSED STAFFING PLAN FOR THIS PROJECT, INCLUDING THE BIOGRAPHIES OF ALL STAFF IDENTIFIED FOR THIS PROJECT.

CMC provides multiple layers of support to clients for both pension and health-related issues. We assign all clients with two experienced lead actuaries to ensure we maintain our availability to our clients for meetings, consultations, and support. The proposed service team for CPRB will be led by Alisa Bennett and Larry Langer who are both highly credentialed actuaries with many years of experience working with public plans. Contact with either of these actuaries will ensure that the entire team is informed of current events and receives the necessary direction to perform any requested services. Our entire team will be included in our outlook distribution list, which will frequently be used for correspondence with CPRB staff.

While the knowledge and expertise of your senior consultants is important, the qualifications of the support staff are equally critical to the quality of the work being performed. A brief description of the responsibilities of each team member is included below. All members of the CPRB team have strong technical ability and experience. Generally, personnel assigned to clients does not change from year to year. As a result, the staff gains valuable institutional knowledge of the system while enhancing the valuation process and becoming more efficient.

QUALIFICATIONS AND EXPERIENCE

Alisa Bennett and Larry Langer – Primary Co-Lead Actuaries

Main contact for CPRB, responsible for final review of all work, provide legislative testimony, recommendation of assumptions and methods, lead actuarial team.

Micki Taylor and Wendy Ludbrook – Project Managers and Reviewers

Alternate contacts for the CPRB, responsible for management of all projects, valuations, projections and experience studies, and review of all work.

James Lochner, Ryan Gundersen and Zack Smith – Production

Production of valuation results. Data preparation, programming of valuation software and preparation of all results

Brent Banister – Resource Actuary

Responsible for technical review of all work, provide legislative testimony if needed, review of any recommendations of changes to assumptions and methods.

Complete resumes for all team members, including the remaining requested information, follow.

ALISA BENNETT, FSA, EA, FCA, MAAA
PRESIDENT

ALISAB@CAVMACCONSULTING.COM

ROLE

Primary Co-Lead Actuary

DATE OF HIRE

July, 2005

OFFICE LOCATION

Kennesaw, Georgia

RELEVANT EXPERIENCE

Alisa has 30 years of public sector consulting experience providing services to large public clients. She serves as lead consulting health actuary for several of our OPEB clients including Ohio School Employees Retirement System, the Georgia Department of Community Health, the Kentucky Teachers' Retirement System and several large counties and municipalities such as Cobb County (GA), Gwinnett County (GA) and the City of Chattanooga. In addition, she serves as pension consulting actuary for the Oklahoma Public Employees Retirement System and the Oklahoma Law Enforcement Retirement System. Alisa's experience includes all aspects of valuing pension and retiree health plans, including funding valuations, GASB disclosures, budget projections, health care premium rate setting and the analysis of plan changes.

EDUCATION

- B.S. in Mathematics from University of Georgia
- Master of Arts in Mathematics from University of Georgia

PROFESSIONAL DESIGNATIONS AND MEMBERSHIPS

- Fellow of the Society of Actuaries
- Enrolled Actuary under ERISA
- Fellow of the Conference of Consulting Actuaries
- Member of the American Academy of Actuaries

ALISA BENNETT, FSA, EA, FCA, MAAA
PRESIDENT

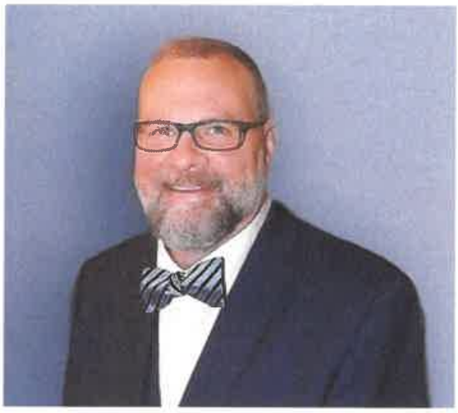
RECENT PUBLICATIONS, STUDIES OR PRESENTATIONS

Alisa has recently presented the following:

- "Emerging Health Issues" International Foundation of Employee Benefit Plans for "Certification of Achievement in Public Plan Policy" (CAPPP) program, 2022
- Actuarial Panel "Asset Allocation and the Investment Return Assumption", NCTR, 2021
- "Stress Testing", Georgia Association of Public Pension Trustees, 2019
- "Understanding Accounting Controls for GASB Actuarial Reporting", Georgia GFOA Fall Conference 2019
- "Your Responsibilities as it Relates to Your Actuarial Report Panel Discussion", 2017
- "Actuarial Topics Update" Oklahoma Public Fund Trustee Education Conference, 2014
- "How to Read an Actuarial Report" Georgia Government Finance Officers Association, 2013
- "Change in GASB Liability Rules" at the State and Local Government Benefits Association Regional Conference, 2013
- "Retiree Health Care Costs and OPEB: What to keep an eye on?" at the Public Sector Healthcare Roundtable Conference, 2011
- "Managing Drug Expenditures – One Year Later" at the Public Sector Healthcare Roundtable Conference, 2010
- "Issues Facing the Public Pension Industry", Southern Conference on Teacher Retirement, 2010
- "The Great GASB!" at the Enrolled Actuaries Meeting in Washington, DC, 2009

LARRY LANGER, ASA, EA, FCA, MAAA
PRINCIPAL AND CONSULTING ACTUARY

LARRYL@CAVMACCONSULTING.COM



ROLE

Primary Co-Lead Actuary

DATE OF HIRE

June, 2017

OFFICE LOCATION

Naperville, Illinois

RELEVANT EXPERIENCE

Larry began his actuarial career in 1989. Larry has served as an actuarial consultant to numerous state and local government retirement systems since 1997. But for one musician's plan, he has exclusively served public sector retirement systems since 1997. Larry has a broad range of experience in such areas as public plan consulting, valuations, plan design, legislative impact analysis, experience studies, asset/liability models, federal compliance and GASB issues, deferred retirement option plans (DROP), stable contribution policies, and retiree health care benefit plan design, valuations, and funding strategies.

- Retirement Systems of Alabama
- Cook County Pension Fund
- Escanaba Public Safety Retirement System
- Grosse Pointe Farms General and Public Safety Pension and VEBA
- City of Milwaukee Employes' Retirement System. (That is how Milwaukee spells Employees'.)
- Missouri County Employees Retirement Fund
- Ohio Police & Fire Pension Fund
- Redford Township Police and Fire Retirement System and Retiree Health Care Trust
- South Dakota Retirement Systems (as auditing actuary)
- City of Trenton Fire and Police Retirement System and Health Care Fund
- Washtenaw County Employees Retirement System and VEBA
- Woodhaven Retirement Plan for Employees and Policemen and Retiree Health Care Plan

LARRY LANGER, ASA, EA, FCA, MAAA
PRINCIPAL AND CONSULTING ACTUARY

Since joining Cavanaugh Macdonald in 2017, Larry has also assisted in the transition of every system listed above other than Alabama. In addition, he has also performed audit work for the Public School Retirement Systems and Public Education Employees Retirement System of Missouri, the Utah Retirement Systems and the Illinois Municipal Retirement Fund. He has a significant amount of experience with retirement systems for municipal systems covering civilians, public safety members, and utilities.

EDUCATION

- B.S. in Actuarial Science from The Central Michigan University

PROFESSIONAL DESIGNATIONS AND MEMBERSHIPS

- Associate of the Society of Actuaries
- Enrolled Actuary under ERISA
- Fellow of the Conference of Consulting Actuaries
- Member of the American Academy of Actuaries

RECENT PUBLICATIONS, STUDIES OR PRESENTATIONS

Larry has recently presented the following:

- "An Attorney and An Actuary Walk into a...a Discussion of the Efficiency/Deficiency of Defined Benefit and Defined Contribution Plans" with Michael VanOverbeke at Michigan Association of Public Employee Retirement Systems (MAPERS) conference, September 2022
- "What Happens When You Assume" at the National Association of Public Plan Attorneys (NAPPA) 2022 Legal Education Conference, part of three-person panel, June 2022
- "Actuary 201 – Key Drivers of Sustainability" at the 2021 Public Pension Finance Forum (P2F2), part of a three-person panel, October 2021
- "Actuary 101" at Missouri Association of Public Employee Retirement Systems (MoMAPERS) with Bryan Hoge of CMC, July 2021
- "Actuarial Panel" panel discussion at the National Association of State Retirement Administrators (NASRA) 2020 Annual Meeting, August 2020
- "Actuarial Standard of Practice 4", a National Council on Teacher Retirement (NCTR) Federal Webinar, part of five-person panel, March 2020

LARRY LANGER, ASA, EA, FCA, MAAA
PRINCIPAL AND CONSULTING ACTUARY

During his career he has testified to numerous legislative committees regarding various pension actuarial issues.

Larry is a past member of the Public Plans Subcommittee of the American Academy of Actuaries. He participated in the development of the February 2014 Issue Brief entitled "Objectives and Principles for Funding Public Sector Pension Plans". He is a current member of the Corporate Advisory Committee of NASRA.

MICKI TAYLOR, ASA, EA, FCA, MAAA
CONSULTING ACTUARY

MICKIT@CAVMACCONSULTING.COM

ROLE

Project Manager and Reviewer

DATE OF HIRE

May, 2009

OFFICE LOCATION;

Kennesaw, Georgia

RELEVANT EXPERIENCE

Micki has been in the actuarial profession since 1992 providing services to public and private sector clients. Micki has a broad range of experience in annual valuation production, proposed legislation pricing, actuarial audits, experience studies, and the design, administration, and funding of public retirement plans. Micki currently serves the Pensacola General Employees' Retirement Fund, Pinellas Park General Employees' Pension Plan, City of Pompano Beach General Employees' Retirement System, City of Hollywood Police Officers' Retirement System, Tuscaloosa Police Officers and Firefighters Retirement Plan, Employees' Retirement System of the Puerto Rico Electric Power Authority and the University of Puerto Rico Retirement System.

EDUCATION

- B.S. in Chemistry Cum Laude from the University of Georgia
- Master of Actuarial Science from Georgia State University

PROFESSIONAL DESIGNATIONS AND MEMBERSHIPS

- Associate of the Society of Actuaries
- Enrolled Actuary under ERISA
- Member of the American Academy of Actuaries
- Fellow of the Conference of Consulting Actuaries

WENDY LUDBROOK, FSA, EA, FCA, MAAA
CONSULTING ACTUARY

WENDYL@CAVMACCONSULTING.COM

ROLE

Project Manager and Reviewer

DATE OF HIRE

January, 2019

OFFICE LOCATION

Kirkwood, Missouri

RELEVANT EXPERIENCE

Wendy has a broad range of experience in public plan consulting, valuations, plan design, legislative impact analysis, data analysis, experience studies, asset/liability models, federal compliance and GASB issues and funding strategies. Wendy currently serves the following systems:

- Cook County Pension Fund
- Escanaba Public Safety Retirement System
- Grosse Pointe Farms General and Public Safety Pension and VEBA
- Missouri County Employees Retirement Fund
- Ohio Police & Fire Pension Fund
- Redford Township Police and Fire Retirement System and Retiree Health Care Trust
- South Dakota Retirement Systems (as auditing actuary)
- City of Trenton Fire and Police Retirement System and Health Care Fund
- Washtenaw County Employees Retirement System and VEBA
- Woodhaven Retirement Plan for Employees and Policemen and Retiree Health Care Plan

Since joining Cavanaugh Macdonald in 2019, Wendy has also assisted in the transition of every system listed above. In addition, she has also performed audit work for the Public School Retirement Systems and Public Education Employees Retirement System of Missouri, the Utah Retirement Systems and the Illinois Municipal Retirement Fund.

WENDY LUDBROOK, FSA, EA, FCA, MAAA
CONSULTING ACTUARY

PAST RESPONSIBILITIES

Wendy began her actuarial career in 1995 and has served as an actuarial consultant to numerous state and local government retirement systems. Her past responsibilities have included Illinois TRS, the Chicago Transit Authority, St. Louis (MO) County and Missouri Sheriffs.

EDUCATION

- B.S. in Mathematics from Washington University in St. Louis

PROFESSIONAL DESIGNATIONS AND MEMBERSHIPS

- Fellow of the Society of Actuaries
- Enrolled Actuary under ERISA
- Fellow of the Conference of Consulting Actuaries
- Member of the American Academy of Actuaries

RELEVANT PUBLICATIONS, STUDIES, OR PRESENTATIONS.

Wendy is currently participating on the committee to update the February 2014 Issue Brief entitled "Objectives and Principles for Funding Public Sector Pension Plans".

Wendy has also participated in writing exam questions for the Enrolled Actuary (EA) exams for over 10 years including serving as the chair of the EA2F Exam committee for 4 years. She currently serves on the EA1 Exam committee.

BRENT A. BANISTER, PhD, FSA, EA, FCA, MAAA
CONSULTING ACTUARY

BRENTB@CAVMACCONSULTING.COM

ROLE

Resource Actuary

DATE OF HIRE;

September, 2010

OFFICE LOCATION;

Bellevue, Nebraska

RELEVANT EXPERIENCE

Brent has a broad range of experience in proposed legislation analysis and testimony, actuarial audits, experience studies, valuations, and the design, administration and funding of public retirement plans and postretirement health plans. Brent is responsible for the preparation of annual pension and other post-employment benefit (OPEB) valuations, experience studies, and modeling current and proposed plan designs. Brent is the Chief Actuary for CMC, and his duties include reviewing actuarial matters for the firm and training staff on new actuarial standards of practice.

Brent has public sector consulting experience since 1994 providing services to large public clients. He has worked extensively with cost-sharing multiple employer statewide and other large systems, including Indiana Public Retirement System, Iowa Public Employees Retirement System, Kansas Public Employees Retirement System, Los Angeles County Employees retirement Association, Minnesota Teachers Retirement Association, Nebraska Public Employees Retirement System, and Oklahoma Public Employees Retirement System, in preparing the annual valuation, developing projection models, and conducting cost and experience studies. Over his career, Brent has performed a significant amount of review work for other consultants covering retirement and postemployment benefits on systems from municipalities through statewide systems all across the country.

EDUCATION

- BS in Mathematics from Washington State University
- PhD in Mathematics from Washington State University

BRENT A. BANISTER, PhD, FSA, EA, FCA, MAAA
CONSULTING ACTUARY

PROFESSIONAL DESIGNATIONS AND MEMBERSHIPS

- Fellow of the Society of Actuaries
- Enrolled Actuary under ERISA
- Fellow of the Conference of Consulting Actuaries
- Member of the American Academy of Actuaries

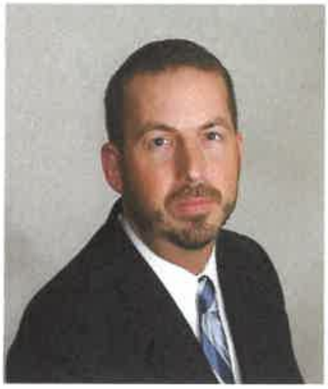
RECENT PUBLICATIONS, STUDIES OR PRESENTATIONS

Brent has presented at several conferences and before many legislative bodies and organizations including:

- P2F2 Annual Conference
- Oklahoma Public Fund Trustee Conference
- Nebraska Actuaries Club
- Kansas Public Employees Retirement System Study Commission
- Minnesota Legislative Commission on Pension and Retirement
- Iowa Public Retirement Systems Committee
- Nebraska Retirement Systems Committee
- Accounting organizations and seminars
- Articles on alternatives to DROPs and the importance of appropriate risk

JAMES LOCHNER
SENIOR CONSULTANT

JAMESL@CAVMACCONSULTING.COM



ROLE

Pension Production

DATE OF HIRE;

July, 2006

OFFICE LOCATION;

Kennesaw, Georgia

RELEVANT EXPERIENCE

James has a broad range of experience in annual valuation production, proposed legislation pricing, actuarial audits, retiree medical valuations, health claims underwriting and experience studies.

James has provided consulting experience since 1998 to many public clients including Connecticut MERS, Connecticut SERS and Kentucky Teachers Retirement Systems.

EDUCATION

- M.A. in Actuarial Science from Georgia State University
- B.S. in Manufacturing Engineering from Boston University

RYAN GUNDERSEN
SENIOR CONSULTANT

RYANG@CAVMACCONSULTING.COM

ROLE

Production

DATE OF HIRE

January, 2019

OFFICE LOCATION

Plainfield, Illinois

CURRENT RESPONSIBILITIES

Ryan has a broad range of experience in such areas as public plan consulting, data analysis, valuations, legislative impact analysis, experience studies, GASB valuations, actuarial valuation audits, forecasting, and retiree health care benefit funding and accounting valuations. Ryan currently serves the following systems:

- Cook County Pension Fund
- City of Milwaukee Employes' Retirement System (that is how they spell Employes')
- Ohio Police & Fire Pension Fund
- Missouri County Employees Retirement Fund
- Escanaba Public Safety Retirement System
- Grosse Pointe Farms General and Public Safety Pension and VEBA
- Redford Township Police and Fire Retirement System and Retiree Health Care Trust
- City of Trenton Fire and Police Retirement System and Health Care Fund
- Washtenaw County Employees Retirement System and VEBA
- Woodhaven Retirement Plan for Employees and Policemen and Retiree Health Care Plan

Since joining CMC in 2019, Ryan has also assisted in the transition of every system listed above. In addition, he has also performed audit work for the Utah Retirement Systems and the Illinois Municipal Retirement Fund.

RYAN GUNDERSEN
SENIOR CONSULTANT

PAST RESPONSIBILITIES

Ryan has served numerous state and local government retirement systems since 2006, including the following in Illinois: CCPF, MWRD, PEABF, CTPF, MEABF, LABF, FABF, PABF, SERS, GARS, JRS, ISAC, over 50 downstate police and fire funds for individual funding and accounting valuations, portability calculations and service purchases, Illinois Department of Insurance valuations for downstate police and fire funds, and COGFA.

Since 2006 Ryan has vast experience developing actuarial valuation models while transitioning pension funds and retiree health care plans from previous actuaries.

EDUCATION

B.A. in Actuarial Science from Roosevelt University

PROFESSIONAL DESIGNATIONS AND MEMBERSHIPS

Currently pursuing actuarial credentials and has completed Exam P, Exam FM, Exam MLC, Exam MFE, VEE Mathematical Statistics, VEE Economics, and VEE Accounting and Finance, the Fundamentals of Actuarial Practice Modules, Interim Assessment and Final Assessment.

MILITARY SERVICE

Ryan is a proud veteran of the United States Marine Corps where he served in the infantry as the primary plotter in the Fire Direction Center of an 81mm mortar platoon.

ZACHERY SMITH
ACTUARIAL ANALYST

ZACKS@CAVMACCONSULTING.COM

ROLE

Production

DATE OF HIRE

November, 2021

OFFICE LOCATION

Kennesaw, Georgia

RELEVANT EXPERIENCE

Zack is responsible for assisting in annual pension valuations and preparing GASB reports, including data analysis, gain-loss analysis, and reporting. He is also responsible for the preparation of retirement calculations for several of our municipal clients. Zack assists in the preparation of retirement calculations for Alabama RSA, Cobb County (GA), Pensacola General Employees' Retirement Fund, Pinellas Park General Employees' Pension Plan, City of Pompano Beach General Employees' Retirement System and Ocean City (MD). Zack's additional responsibilities include data analysis regarding mortality assumptions and assisting with preparation of annual pension valuations and GASB reports for the Gwinnett County Board of Education.

EDUCATION

- B.S. in Statistics from University of South Carolina
- Exams Completed: P, FM, IFM
- Currently pursuing ASA and FSA credentials

QUALIFICATIONS AND EXPERIENCE

Mandatory Qualifications and Experience

4.3.2. MANDATORY QUALIFICATION/EXPERIENCE REQUIREMENTS – THE FOLLOWING MANDATORY QUALIFICATION/EXPERIENCE REQUIREMENTS MUST BE MET BY THE VENDOR AS A PART OF ITS SUBMITTED PROPOSAL. VENDOR SHOULD DESCRIBE HOW IT MEETS THE MANDATORY REQUIREMENTS AND INCLUDE ANY AREAS WHERE IT EXCEEDS THE MANDATORY REQUIREMENTS. FAILURE TO COMPLY WITH MANDATORY REQUIREMENTS WILL LEAD TO DISQUALIFICATION, BUT AREAS WHERE THE MANDATORY REQUIREMENTS ARE EXCEEDED WILL BE INCLUDED IN TECHNICAL SCORES WHERE APPROPRIATE. THE MANDATORY QUALIFICATIONS/EXPERIENCE REQUIREMENTS ARE LISTED BELOW.

The professional staff at CMC are technically proficient, as evidenced by their actuarial credentials, including membership in the Society of Actuaries, the American Academy of Actuaries, and the Conference of Consulting Actuaries. Their credentials can be verified by searching the Actuarial Directory located on the Society of Actuaries' website, www.soa.org. The directory also includes the date their designations were granted. This will allow you to verify the actuarial credentials of our professional staff.

Alisa and Larry's experience serving as leads for actuarial consulting services exceed the mandatory requirements for this assignment. Alisa has experience in actuarial consulting since 1992 and Larry since 1989.

Alisa is a Fellow of the Society of Actuaries, an Enrolled Actuary under ERISA, a Fellow of the Conference of Consulting Actuaries and a Member of the American Academy of Actuaries.

Larry is an Associate of the Society of Actuaries, an Enrolled Actuary under ERISA, a Fellow of the Conference of Consulting Actuaries and a Member of the American Academy of Actuaries.

The experience of each person on the CMC team is summarized on the following page.

QUALIFICATIONS AND EXPERIENCE

Team Member	Years of Experience	Title/Role	Education
Alisa Bennett FSA, EA, FCA, MAAA	32	President Co-Lead Actuary	M.A., Mathematics
Larry Langer ASA, EA, FCA, MAAA	34	Principal and Consulting Actuary Co-Lead Actuary	B.S., Actuarial Science
Micki Taylor ASA, EA, FCA, MAAA	31	Consulting Actuary Project Manager and Reviewer	B.S., Chemistry M.A., Actuarial Science
Wendy Ludbrook FSA, EA, FCA, MAAA	28	Consulting Actuary Project Manager and Reviewer	B.S., Mathematics
James Lochner	25	Senior Consultant Production	M.A., Actuarial Science B.S., Manufacturing Engineering
Ryan Gundersen Pursuing ASA	16	Senior Consultant Production	B.A., Actuarial Science
Zack Smith Pursuing ASA	1	Senior Consultant Production	B.S., Statistics
Brent Banister PhD, FSA, EA, FCA, MAAA	29	Chief Actuary Resource Actuary	PhD, Mathematics

Key to Actuarial Credentials:
FSA: Fellow, Society of Actuaries
ASA: Associate, Society of Actuaries
EA: Enrolled Actuary under Employees Retirement Income Security Act (ERISA)
FCA: Fellow of Conference of Consulting Actuaries
MAAA: Member, American Academy of Actuaries

4.3.2.1. MANDATORY QUALIFICATION AND EXPERIENCE REQUIREMENT 1: THE FIRM MUST HAVE PROVIDED ACTUARIAL SERVICES TO GOVERNMENTAL DEFINED BENEFIT PENSION PLANS FOR THE PAST FIVE YEARS OR MORE.

CMC is considered one of the leading actuarial consulting firms in the country, providing actuarial services to public sector employers across the United States, Puerto Rico, and some Pacific Island nations for almost 18 years. In aggregate, CMC provides actuarial services to nearly 70 Pension clients and over 25 OPEB clients, some of which include hundreds of individual plans. These include various state and municipal sponsors of cost-sharing multiple-employer, agent multiple-employer, and single employer plans of all sizes.

One of the reasons our consultants came to work for CMC is because we are a firm that allows them to be public plan actuaries. This is our passion, and we strongly believe that our ability to be part of a firm that only does public plan actuarial work allows us to serve our clients more efficiently than we could within the constraints of more traditional actuarial consulting firms. Ultimately, it is our clients who benefit from this model, and we believe CPRB would benefit from being served by CMC as well.

We provide comprehensive actuarial consulting services to our retainer clients, including the following:

- Pension Valuations
- Detailed Gain and Loss Analysis
- Analysis of Proposed Legislation
- Legislative Testimony
- Asset/Liability Forecasting
- Expense and Disclosure Requirements of GASB 67, 68, 73, 74 and 75
- Impact of Re-Employment of Retirees
- Retiree Health Care Valuations
- Medicare Part D Attestation
- Funding, Budgeting and Reserving for Self-Funded Benefit Plans
- Plan Design Work
- Assistance with Policy Considerations
- Knowledge of National Public Sector Trends
- Benefit Calculations
- Individual Employee Benefit Statements
- Board of Trustee Educational Seminars
- Communications to Members and Other Constituents
- Experience Studies
- DROP, PLOP and Retirement Incentive Plans

A breakdown of our revenue is as follows:

- 100% of our revenue is from public sector actuarial consulting services.
- 70% of our revenue is from public sector ***Pension*** actuarial consulting services.
- 30% of our revenue is from public sector *OPEB* actuarial consulting services.

4.3.2.2. MANDATORY QUALIFICATION AND EXPERIENCE REQUIREMENT 2: THE FIRM MUST HAVE SUFFICIENT DEPTH REGARDING QUALIFIED ACTUARIES AND LEAD CONSULTANTS TO ENSURE GOALS ARE MET IN A TIMELY MANNER AND TO PROVIDE ADEQUATE RESOURCES FOR THE CONSULTING TEAM.

Alisa Bennett and Larry Langer will have overall responsibility for the relationship with the CPRB. In this role they will work closely with the CPRB and staff discussing any issues and making sure all needs are being met. Our goal is to use these discussions to effectively address any issues identified by the Board to better allocate our resources to meet client needs.

QUALIFICATIONS AND EXPERIENCE

Our reports and presentations are prepared with a broad audience in mind, and we routinely tailor our reports to the needs of the audience. CMC has a formal peer review policy that all staff adhere to which ensures that the quality of our work continues to meet our high standards. The extent of peer review required is based on the nature of the particular assignment. All our consultants adhere to firm-wide standards for consistency. To further assure work quality, each technical staff member performs an internal replication audit of someone else's client each year. Finally, all systems are assigned several experienced consultants that are each qualified and experienced as lead consultants. They collaborate on all work products which ensures another experienced actuary's review of all work performed for a client.

CMC is a recognized leader in public sector actuarial consulting. Our firm has experienced significant growth since its inception. As such, CMC is viewed as an attractive employer in the industry by experienced consultants down to entry level staff. Initial or expanded ownership in the firm is offered periodically to assist in retaining key professionals and CMC offers competitive compensation and benefits, to all staff members. CMC is a strong proponent of supporting staff members that are pursuing their actuarial credentials. Therefore, CMC offers a generous exam study program as well as pay raises and bonuses for each completed exam during the study process.

We monitor the performance of our employees on an ongoing basis by working closely with them and receiving detailed information on their hours worked on each project for each client. In addition, in the first quarter of each year we evaluate the performance of all employees against annual metrics such as timeliness and the quality of the work performed, as well as their progress toward professional goals including enhanced technical skills and actuarial credentials. These metrics are a primary determinant of the compensation the employee receives as well as promotions.

We assign staff based upon the needs of the client and the capabilities and capacity of our staff. We are very careful about adding new clients and we do not respond to every RFP that is issued for actuarial services. Staff feedback and our billing system provide information concerning the capacity of each staff member. We look to recruit new staff before current assignments approach full capacity. By staffing ahead of our current needs, we ensure that current client assignments are never short of staff, we always maintain capacity to add clients, and we are never rushed into a hiring decision.

APPENDIX A – CLIENT LIST

A complete listing of our retained pension clients is provided below. All work for the following clients is ongoing. In addition to the references previously provided, any of these clients may be contacted as further reference.

Pension Retainer Client List

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
1. Alabama: • Clerks and Registers Retirement System • Employees' Retirement System • Judicial Retirement System • Teachers Retirement System	1981 – Present Annual actuarial valuations, experience studies, legislation	385,000 $40.5 Billion	Dr. David Bronner Chief Executive Officer Retirement Systems of Alabama 201 South Union Street Montgomery, AL 36130-2150 334.517.7000 david.bronner@rsa-al.gov
2. Alabama Peace Officers Annuity & Benefit Fund	1996 – Present Annual actuarial valuations, legislation	2,627 $27.7 Million	Mr. John E. Hixon, Jr. Executive Director Alabama Peace Officers' Annuity & Benefit Fund 514 South McDonough Street Montgomery, AL 36102-2186 334.242.4079 John.Hixon@apoabf.alabama.gov
3. Central Nebraska Public Power and Irrigation District	2010 – Present Annual actuarial valuations	125 $20 Million	Ms. Rochelle Jurgens Controller 415 Lincoln Street PO Box 740 Holdrege, NE 68949 308.995.8601 rjurgens@cnppid.com
4. Charlotte Firefighters Retirement System	2000 – Present Annual actuarial valuations and experience studies	1,897 $676.3 Million	Ms. Sandra Thiry Administrator Charlotte Firefighters' Retirement System Charlotte National Building 428 East Fourth Street, Suite 205 Charlotte, NC 28202 704.626.2728 sthiry@ci.charlotte.nc.gov
5. Chattanooga Area Regional Transportation Authority	2016– Present Annual actuarial valuations	105 $19 Million	Ms. Lisa Maragnano Executive Director Chattanooga Area Regional Transportation Authority 617 Wilcox Boulevard Chattanooga, TN 37406 423.629.1411 lisamaragnano@gocarta.org
6. City of Chattanooga General Pension Plan	2012 - Present Annual actuarial valuations and experience studies	2,799 $345.7 Million	Ms. Cheryl Powell Pension and Data Analyst City of Chattanooga General Pension Plan 101 East 11th Street Suite 101 Chattanooga, TN 37402 423.643.7224 cpowell@chattanooga.gov

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
7. Cobb County (GA)	2007 – Present Annual actuarial valuations, experience studies and benefit statements	8,109 $869.9 Million	Mr. Bill Volckmann Chief Executive Officer Cobb County Government 100 Cherokee Street Marietta, GA 30090-9679 770.528.1524 william.volckmann@cobbcounty.org
8. Connecticut Municipal Employees' Retirement System	2013 – Present Annual actuarial valuations, experience studies, legislation	22,323 $2.7 Billion	Mr. John Herrington Director State of Connecticut Office of the State Comptroller Retirement Services Division 55 Elm Street Hartford, CT 06106 860.702.3487 John.Herrington@po.state.ct.us
9. Connecticut State Employees' Retirement System	2009 – Present Actuarial valuations, experience studies, legislation	103,799 $17 Billion	Mr. John Herrington Director State of Connecticut Office of the State Comptroller Retirement Services Division 55 Elm Street Hartford, CT 06106 860.702.3487 John.Herrington@po.state.ct.us
10. Connecticut Teachers' Retirement Board	2009 – Present Actuarial valuations, experience studies, legislation	99,857 $18.3 Billion	Ms. Helen Quinn Sullivan Administrator Connecticut Teachers' Retirement Board 765 Asylum Avenue, 2nd Floor Hartford, CT 06105 860.241.8402 Helen.Sullivan@ct.gov
11. Cook County Pension Fund • County Employees' and Officers' Annuity and Benefit Fund of Cook County • Forest Preserve Forest Preserve District Employees' Annuity and Benefit Fund of Cook County	2019 – Present Actuarial valuations, experience studies, legislation	57,475 $12.8 Billion	Mr. Brent Lewandowski Interim Executive Director Cook County Pension Fund 70 W. Madison Street, Suite 1925 Chicago, Illinois 60602 312.603.1224 blewandowski@countypension.com
12. City of East Point Employees Retirement Plan	2013 – Present Annual actuarial valuations and experience studies	840 $140.6 Million	Ms. Charlotte Cagle Chairperson City of East Point Employees Retirement Plan P.O. Box 90129 East Point, Georgia 30364 770.780.1117 chaircharlottecagle@gmail.com

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
13. City of Escanaba Public Safety Retirement Board	2019 - Present Actuarial valuations, experience studies, legislation	74 $38.3 Million	Ms. Kim Gustafson City Treasurer, Retirement Board Secretary City of Escanaba Public Safety Retirement Board First Floor City Hall 410 Ludington Street Escanaba, MI 49829 906.786.0552 treasurer@escanaba.org
14. Fulton County Schools	2019 - Present Actuarial valuations, experience studies	4,856 $505.1 Million	Greta P. Tinaglia Deputy Chief Financial Officer Fulton County Schools Retirement Services 6201 Powers Ferry Road NW Atlanta, GA 30339 Tinaglia@fultonschools.org 470.254.0414
15. Georgia: • Employees' Retirement System • Judicial Retirement System • Legislative Retirement System • Military Pension Fund • Public School Employees' Retirement System	1981 – Present Annual actuarial valuations, experience studies, legislation	298,101 $18.4 Billion	Mr. Jim Potvin Executive Director Employees' Retirement System of Georgia Two Northside 75, Suite 300 Atlanta, GA 30318-7778 404.603.5605 jim.potvin@ers.ga.gov
16. Georgia Firefighters' Pension Fund	2010 - Present Actuarial valuations, experience studies, legislation	23,028 $1.2 Billion	Mr. Morgan Wurst Executive Director Georgia Firefighters' Pension Fund 2171 East View Parkway Conyers, GA 30013 770.388.5757 execdir@gfpf.org
17. Georgia Sheriffs' Retirement Fund	2005 – Present Actuarial valuations, experience studies, legislation	392 $121.7 Million	Ms. Lisa Petty Secretary – Treasurer Sheriffs' Retirement Fund of Georgia 1000 Sheriffs Way Madison, Georgia 30650 770.914.1076 lpetty@georgiasheriffs.org
18. Georgia Teachers Retirement System	1981 – Present Annual actuarial valuations and experience studies	483,844 $81.2 Billion	Mr. L. C. (Buster) Evans Executive Director Teachers Retirement System of Georgia Two Northside 75, Suite 200 Atlanta, GA 30318-7901 404.352.6523 buster.evans@trsga.com
19. City of Grosse Pointe Farms • General Employees Retirement System • Public Safety Retirement Systems	2019 - Present Actuarial valuations, experience studies, legislation	161 $82.8 Million	Mr. Tim Rowland Finance Director City of Grosse Pointe Farms 90 Kerby Road Grosse Pointe Farms, MI 48236 313.640.1602 trowland@grossepointefarms.org

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
20. Gwinnett County Board of Education's Retirement System	2005 – Present Annual actuarial valuations and experience studies	36,362 $2.5 Billion	Mr. David Harris Director Retirement and Risk Management Services Gwinnett County Public Schools 437 Old Peachtree Road, NW Suwanee, GA 30024-2978 678.301.6278 David_Harris@gwinnett.k12.ga.us
21. Gwinnett County Retirement Systems	2006 – Present Actuarial valuations and experience studies	4,317 $1.3 Billion	Ms. Tori Burkholder Deputy Director, Human Resources Gwinnett County 75 Langley Drive Lawrenceville, GA 30045 770.822.7911 Tori.Burkholder@GwinnettCounty.com
22. City of Hollywood Police Officers' Retirement System	2008 – Present Annual actuarial valuations	672 $225.9 Million	Mr. Dave Williams Plan Administrator City of Hollywood Police Officers' Retirement System 4205 Hollywood Boulevard, Suite 4 Hollywood, FL 33021 954.967.4395 davew@hollywoodpolicepensionfund.com
23. Indiana Public Retirement System • Public Employees Retirement Fund • Teachers Pre-'96 Retirement Fund • Teachers '96 Retirement Fund • '77 Fire and Police Fund • Excise, Gaming, and Conservation Employees Retirement Fund • Judicial Retirement System • Prosecuting Attorneys Retirement Fund • Legislators Defined Benefit Plan	2017 – Present Annual actuarial valuations and experience studies, legislation	418,000 $38.5 Billion	Mr. Steve Russo Executive Director Indiana Public Retirement System One North Capitol, Suite 001 Indianapolis, IN 46204 312.232.3864 sterusso@inprs.in.gov
24. Iowa Judicial Retirement Fund	2010 – Present Annual actuarial valuations and experience studies, legislation	438 $310.2 Million	Mr. Kent Farver, CPA Director of Finance Judicial Building 1111 E. Court Avenue Des Moines, IA 50319 515.348.4847 Kent.farver@iowacourts.gov
25. Iowa Peace Officers Retirement System	2010 – Present Annual actuarial valuations, experience studies and legislation	1,248 $807.6 Million	Ms. Linda Guffey POR Executive Officer Department of Public Safety 215 E. 7th Street, 4th Floor Des Moines, IA 50319 515.725.6248 guffy@dps.state.ia.us

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
26. Iowa Public Employees Retirement System	2010 – Present Annual actuarial valuation and experience studies, legislation	380,408 $42.9 Billion	Mr. Greg Samorajski Chief Executive Officer Iowa Public Employees Retirement System 7401 Register Drive Des Moines, IA 50321 515.281.0070 greg.samorajski@ipers.org
27. Jefferson County Employees Retirement System	1998 – Present Annual actuarial valuations	5,023 $1.2 Billion	Ms. Amy Adams GRS Executive Director The General Retirement System for Employees of Jefferson County Suite 430 Courthouse 716 Richard Arrington, Jr., Blvd., N. Birmingham, AL 35203 205.325.5354 amy@grsal.net
28. Kansas City Board of Public Utilities	2005 – Present Annual actuarial valuations and experience studies, legislation	1,344 $592.1 Million	Ms. Mindy Harris Plan Administrator Board of Public Utilities 540 Minnesota Avenue Kansas City, KS 66101-2930 913.573.6938 mharris@bpu.com
29. Kansas City Police Retirement System and Police Civilians Retirement System	2007 – Present Annual actuarial valuations and experience studies, legislation	3,600 $1.2 Billion	Mr. Jim Pyle Pension Systems Manager 9701 Marion Park Drive, B Kansas City, Missouri 64137 816.482.8138 jpyle@kcpd.org
30. Kansas Public Employees Retirement System • State/School • Local • Police and Fire • Judges	2010 – Present Annual actuarial valuations and experience studies, legislation	326,602 $23.4 Billion	Mr. Alan Conroy Executive Director Kansas Public Employees Retirement System 611 S. Kansas Ave, Suite 100 Topeka, KS 66603 785.296.1019 aconroy@kpers.org
31. Kansas City Public Schools Retirement System	2014 – Present Annual actuarial valuations and experience studies, legislation	11,318 $694.2 Million	Ms. Christine Geier Executive Director Public School Retirement System 3100 Broadway, Suite 1211 Kansas City, MO 64111 816.472.5800 christine.geier@kcpsrs.org
32. Kentucky Teachers' Retirement System	1981 – Present Annual actuarial valuations, experience studies, legislation	187,956 $26 Billion	Mr. Eric Wampler Deputy Executive Secretary Kentucky Teachers' Retirement System 479 Versailles Road Frankfort, KY 40601-3800 502.848.8505 Eric.Wampler@trs.ky.gov

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
33. Lexington-Fayette Urban County Government Policemen's and Firefighters' Retirement Fund	2006 – Present Actuarial valuations	2,490 $995.3 Million	Mr. Chad Hancock Financial Administrator Lexington-Fayette Urban County Government 200 East Main Street Lexington, KY 40507 859.258.3300 chancock@lexingtonky.gov
34. Lincoln, Nebraska Police and Fire Pension Fund	2015 – Present Annual actuarial valuations and experience studies, legislation	1,242 $318.9 Million	Mr. Paul Lutomski Police and Fire Pension Officer Lincoln, NE Police and Fire Pension Fund 555 South 10th Street, Room 302 Lincoln. NE 68508 402.441.8749 plutomski@lincoln.ne.gov
35. Los Angeles County Employees Retirement Association	2018 – Present Actuarial audits	185,786 $73 Billion	Mr. Richard Bendall Chief, Internal Audit 300 N. Lake Avenue, Suite 820 Pasadena, CA 91101 626.564.6000 Ext. 3523 RBendall@lacera.com
36. Metropolitan Utilities District of Omaha Nebraska	2010 – Present Annual actuarial valuation and experience studies	1,447 $119.6 Million	Mr. Joseph Schaffart Chief Financial Officer Metropolitan Utilities District of Omaha 7350 World Communications Drive Omaha, NE 68122-4041 402.504.7111 Joseph_Schaffart@mudnebr.com
37. Miami General Employees' and Sanitation Employees' Retirement Trust	2008 – Present Actuarial valuations	4,099 $1.3 Billion	Mr. Edgard Hernandez Pension Administrator City of Miami General Employees' and Sanitation Employees' Retirement Trust (GESE) 2901 Bridgeport Avenue Coconut Grove, FL 33133-3607 305.441.2300 Edgard@gese.org
38. City of Milwaukee Employes' Retirement System	2019 – Present Actuarial valuations, experience studies	29,198 $5.6 Billion	Mr. Jerry Allen Executive Director Employes' Retirement System City of Milwaukee 789 N. Water Street, Suite 300 Milwaukee, WI 53202 414.286.5454 Jerry.allen@cmers.com
39. Minnesota Teachers' Retirement Association	2011 – Present Annual actuarial valuations, experience studies, legislation	206,871 $28.4 Billion	Mr. Jay Stoffel Executive Director Teachers' Retirement Association of Minnesota 60 Empire Drive, Suite 400 St. Paul, MN 55103 651.205.4252 JStoffel@minnesotatra.org

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
40. Mississippi: ▪ Highway Safety Patrol Retirement System • Municipal Retirement Systems • Public Employees Retirement System • Supplemental Legislative Retirement Plan	1992 – Present Annual actuarial valuations, experience studies, legislation	346,025 $35.9 Billion	Mr. Ray Higgins Executive Director Mississippi PERS PERS Building 429 Mississippi Street Jackson, MS 39201-1005 601.359.2241 RHiggins@pers.ms.gov
41. Missouri County Employees' Retirement Fund	2019 – Present Annual actuarial valuations, experience studies, legislation	20,171 $668.2 Million	Mr. Michael Ruff Executive Director 2121 Schotthill Woods Drive Jefferson City, MO 65101 573.632.4128 mruff@mocerf.org
42. Missouri State Employees' Retirement System Judges Retirement System	2017 – Present Annual actuarial valuations, experience studies, legislation	138,428 $9.5 Billion	Ms. Ronda Stegmann Director Missouri State Employees' Retirement System 907 Wildwood Drive Jefferson City, MO 65109 573.632.6113 rondas@mosers.org
43. Montana Public Employees' Retirement Administration: • Firefighter's Unified Retirement System • Game Wardens' and Peace Officers' Retirement System • Highway Patrol Officers' Retirement System • Judges' Retirement System • Municipal Police Officers' Retirement System • Public Employees' Long Term Disability Plan • Public Employees' Retirement System • Sheriffs' Retirement System • Volunteer Firefighters' Compensation Act	2016 - Present Annual actuarial valuations, experience studies, legislation	97,124 $9.5 Billion	Mr. Dore Schwinden Executive Director Montana Public Employees' Retirement Administration 100 North Park Avenue, Suite 200 Helena, MT 59620 406.444.5459 dschwinden@mt.gov
44. Montana Teachers Retirement System	2009 – Present Annual actuarial valuations, experience studies, legislation	46,467 $5.1 Billion	Mr. Shawn Graham Executive Director Montana TRS 100 N. Park Avenue, Suite 110 Helena, MT 59601 406.444.3376 ShawnGraham@mt.gov

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System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
45. Nebraska Public Employees Retirement System • School Employees Retirement System • State Patrol Retirement System • Judges Retirement System • County Employees Cash Balance Plan • State Employees Cash Balance Plan	2013 – Present Annual actuarial valuations, experience studies, legislation	134,710 $1.9 Billion	Mr. Randy Gerke Director Nebraska Public Employees Retirement Systems 1526 "K" Street, Suite 400 Lincoln, NE 68509-4816 402.471.9495 randy.gerke@nebraska.gov
46. Norwalk, Connecticut	2020 – Present Annual actuarial valuations, experience studies, legislation	1,952 $430.8 Million	Ms. Chitsamay Lam Comptroller City of Norwalk Comptroller Department 125 East Avenue Norwalk, CT 06851 203.854.7711 clam@norwalkct.org
47. Ocean City, MD	2012 – Present Annual actuarial valuations, experience studies, legislation	741 $146.4 Million	Ms. Katie Callan Human Resources Director Town of Ocean City 301 Baltimore Avenue Ocean City, MD 21842 410.289.8766 kcallan@oceancitymd.gov
48. Ohio Police and Fire Retirement System	2019 – Present Actuarial valuations, experience studies, legislation	58,276 $16.4 Billion	Ms. Mary Beth Foley Executive Director Ohio Police and Fire Retirement System 140 E. Town Street Columbus, Ohio 43215 614.628.8352 MBFoley@op-f.org
49. Ohio School Employees Retirement System	2008 – Present Annual actuarial valuations, experience studies, legislation	233,339 $17.8 Billion	Mr. Richard Stensrud Executive Director School Employees Retirement System 300 East Broad Street, Suite 100 Columbus, OH 43215 614.222.5890 RStensrud@ohsers.org
50. Oklahoma Law Enforcement Retirement System	2013 – Present Annual Actuarial Valuations	2,789 $1.2 Billion	Mr. Duane Michael Executive Director Oklahoma Law Enforcement Retirement System 421 NW 13th Street, Suite 100 Oklahoma City, OK 73103 405.522.4932 Duane.Michael@olers.ok.gov

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System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
51. Oklahoma Police Pension and Retirement System	2016 - Present Annual actuarial valuations, experience studies, legislation	10,162 $3.3 Billion	Ms. Ginger Sigler Executive Director Oklahoma Police Pension and Retirement System 1001 N. W. 63rd Street, Suite 305 Oklahoma City, OK 73116-7335 405.840.3555 Ext. 222 Ginger.Sigler@opprs.ok.gov
52. Oklahoma Public Employees Retirement System • Oklahoma Judges Retirement System	2010 – Present Annual actuarial valuations, experience studies, legislation	74,782 $13 Billion	Mr. Joe Fox Executive Director Oklahoma Public Employees Retirement System 5400 N. Grand Blvd., Suite 400 Oklahoma City, OK 73112 405.858.6737 JFox@opers.ok.gov
53. Omaha Schools Employees Retirement System	2010-Present Annual actuarial valuations, experience studies, legislation	14,411 $1.4 Billion	Mr Shane Rhian Chief Financial Officer Omaha School Employees Retirement System 3215 Cuming Street Omaha, NE 68131 531-299-9430 Shane.Rhian@ops.org
54. Palau Civil Service Pension Plan	2016 – Present Annual actuarial valuations, GASB 67/68	6,361 $27.8 Million	Mr. Presley Etibek Executive Director Republic of Palau Civil Service Pension Plan PO Box 1767 Koror, Palau PW 96940 cspp@palaunet.com
55. Pensacola General Employees' Retirement Fund	1990 – Present Annual actuarial valuations and experience studies	752 $146.5 Million	Ms. Laura Amentler, CPA Accounting Services Manager City of Pensacola P.O. Box 12910 475 East Strong Street Pensacola, FL 32521-0061 850.435.1822 lpicklap@ci.pensacola.fl.us
56. Pinellas Park General Employee's Pension Plan	2010 – Present Annual actuarial valuations and experience studies	861 $99.5 Million	Ms. Cheryl Laser, PCA, CPPT City of Pinellas Park General Employees' Pension Plan Senior Human Resources Analyst 5141 – 78th Avenue Pinellas Park, FL 33781 727.541.0700 Ext. 1307 claser@pinellas-park.com
57. City of Pompano Beach General Employees' Retirement System	2010 – Present Annual actuarial valuations and experience studies	1,024 $251.5 Million	Ms. Madelene L. Klein Executive Director City of Pompano Beach General Employees' Retirement System 555 South Andrews Avenue, Suite 106 Pompano Beach, FL 33069 954.782.2660 pompgers@aol.com

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
58. Employees' Retirement System of the Puerto Rico Electric Power Authority	2008 – Present Actuarial valuations, experience studies, legislation	18,004 $1.2 Billion	Ms. Maria Hernandez Ramirez Administrator Employees' Retirement System of the Puerto Rico Electric Power Authority Juan Ruiz Vélez Building 1110 Ponce de León Avenue San Juan, Puerto Rico 00908 787.521.4746 Mariae.Hernandez@prepa.com
59. Redford Township, Michigan	2022 – Present Annual actuarial valuations	292 $58.9 Million	Mr. Adam Bonarek, Finance Director Charter Township of Redford 15145 Beech Daly Redford, MI 48239 313.387.2769 abonarek@redfordtwp.com
60. Shelby County Retirement System	2009 – Present Annual actuarial valuations, experience studies, legislation	9,459 $1.5 Billion	Ms. Patty Coker Director of Pension Administration Shelby County Government 160 N. Main, Rm. 550 Memphis, TN 38103 901.222.1956 Patty.Coker@shelbycountytn.gov
61. South Dakota Retirement System	2019 - Present Actuarial valuations, experience studies, legislation	92,325 $12.4 Billion	Mr. Travis Almond Executive Director South Dakota Retirement System 222 East Capitol, Suite 8 P.O. Box 1098 Pierre, South Dakota 57501-1098 605.773.3731 Travis.Almond@state.sd.us
62. City of Trenton, Michigan	2021 – Present Annual actuarial valuations	180 $47.3 Million	Ms. Karen Sall City Controller Deputy City Administrator City of Trenton 2800 Third Street, Trenton, MI 48183 734.675.6510 ksall@trenton-mi.com
63. Tuscaloosa Police Officers and Firefighters Retirement Plan	1997 – Present Annual actuarial valuations and experience studies	903 $70 Million	Mr. Alan Kelley Chairman Tuscaloosa Police Officers and Firefighters Retirement Plan P.O. Box 1447 Tuscaloosa, AL 35403 205.242.8397 akelly@tuscaloosa.com
64. University of Puerto Rico Retirement System	2013 - Present Annual actuarial valuations, experience studies, legislation	18,827 $1.4 Billion	Ms. Maria del Carmen Lopez Executive Director University of Puerto Rico Retirement System 1019 Ponce de Leon Avenue Rio Piedras, PR 00915 787.751.4550 Mclopez.ret@upr.edu

APPENDIX A – CLIENT LIST

System	Work Performed	Total # of Participants Total Assets ($)	Contact Information
65. Ventura County, CA	2010 - Present Annual actuarial valuations, GASB 67/68, 73, 74/75	12,000 $30 Million	Ms. Patty Zoll Manager, Deferred Compensation/SRP 457 (Safe Harbor) programs Ventura County 800 S. Victoria Ave, #1970 Ventura, CA 93009 805.477.7234 patty.zoll@ventura.org
66. Washtenaw County Employees Retirement System	2019 – Present Annual actuarial valuations, experience studies, legislation	3,833 $412 Million	Ms. Tina Gavalier Chief Financial Officer Washtenaw County 220 North Main Street P.O. Box 8645 Ann Arbor, MI 48107 734.222.6778 gavaliet@washtenaw.org
67. WaterOne	2013 – Present Annual actuarial valuations, experience studies, and consulting	582 $65.4 Million	Ms. Janet Barrow Director of Human Resources and Administration Water District No. 1 of Johnson County 10747 Renner Boulevard Lenexa, KS 66219 913.895.5790 jbarrow@waterone.org
68. City of Woodhaven, Michigan	2021 – Present Annual actuarial valuations	97 $29.6 Million	Mr. Jeff Daigneau City Treasurer / Finance Director City of Woodhaven 21869 West Road Woodhaven, MI 48183 734.675.4925 jdaigneau@woodhavenmi.org

APPENDIX B – REQUIRED FORMS

Additional required forms are provided on the following pages.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Alisa Bennett, President

(Address) 3550 Busbee Parkway, Suite 250 Kennesaw, GA 30144

(Phone Number) / (Fax Number) 404.317.6351

(Email address) AlisaB@CavMacConsulting.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through *wv*OASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Cavanaugh Macdonald Consulting, LLC.
(Company)

(Signature of Authorized Representative)
Alisa Bennett, President 2/15/2023
(Printed Name and Title of Authorized Representative) (Date)
404.317.6351 - Phone 678.388.1730 - Fax
(Phone Number) (Fax Number)
AlisaB@CavMacConsulting.com
(Email Address)

REQUEST FOR PROPOSAL

(Agency Name and RFP #)

6.8. Availability of Information: Proposal submissions become public and are available for review immediately after opening pursuant to West Virginia Code §5A-3-11(h). All other information associated with the RFP, including but not limited to, technical scores and reasons for disqualification, will not be available until after the contract has been awarded pursuant to West Virginia Code of State Rules §148-1-6.3.d.

By signing below, I certify that I have reviewed this Request for Proposal in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that, to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Cavanaugh Macdonald Consulting, LLC.
(Company)

Alisa Bennett, President
(Representative Name, Title)

404.317.6351 - Phone 678.388.1730 - Fax
(Contact Phone/Fax Number)

2/15/2023
(Date)

APPENDIX C – SAMPLE VALUATION REPORT

A sample report is provided on the following pages.

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Retirement Systems
of Alabama

Report on the Actuarial Valuation of the Employees' Retirement System of Alabama Prepared as of September 30, 2021

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CONSULTING, LLC
The experience and dedication you deserve

June 12, 2022

Board of Control
Employees' Retirement System of Alabama
Montgomery, Alabama

Members of the Board:

In this report are submitted the results of the annual actuarial valuation of the assets and liabilities of the Employees' Retirement System of Alabama, prepared as of September 30, 2021 in accordance with Section 36-27-23(p) of the act governing the operation of the System.

The purpose of this report is to provide a summary of the funded status of the System as of September 30, 2021 and to recommend rates of employer contribution. While not verifying the data at the source, the actuary performed tests for consistency and reasonability.

On the basis of the valuation, it is recommended that the employer make contributions to the System for State employees (members other than State policemen) at the rate of 16.00% of payroll for Tier I members and 15.76% for Tier II members for the fiscal year ending September 30, 2024. It is also recommended that the employer make contributions to the System for State policemen at the rate of 53.38% of payroll for Tier I members and 44.84% for Tier II members for the fiscal year ending September 30, 2024. The contribution rates for local employers for the fiscal year beginning October 1, 2023 will be submitted in a separate report and will include the impact of the employer-elected changes through September 30, 2021, and the impact of any employer elections of Act 2019-132 approved by the Board through September 30, 2021.

Since the previous valuation, various assumptions and methods have been revised to reflect the results of the experience investigation for the five-year period ending September 30, 2020. **The valuation liabilities fully reflect the impact of all assumption changes. The Board approved a phase in of the increase in the required contributions due to the assumption changes over a period not to exceed five years and maintain a floor of the FYE 2023 contribution rates. The contribution rates shown in this report reflect this methodology.** The results shown in this report reflect all assumption changes and local employer elections approved by the Board through October 1, 2021.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144
Phone (678) 388-1700 • Fax (678) 388-1730
www.CavMacConsulting.com
Offices in Kennesaw, GA • Bellevue, NE

In addition, the valuation reflects the provisions of the following legislative Acts:

- Act 2022-348 removes the deadline for local units to elect to provide Tier I benefits for Tier II members. The valuation includes 202 additional employers that elected to provide these benefits under Act 2019-132 since the prior valuation date.
- Act 2022-351 allows Tier II members to retire with 30 years of creditable service regardless of age with an early retirement reduction of 2% for each year that the member is less than age 62 at retirement (age 56 for FLC).
- Act 2022-184 allows surviving spouses of retirement-eligible members who die in active service to receive an Option 2 monthly allowance.
- Act 2022-229 provides a one-time lump sum payment equal to $2 per month for each year of service to retired state employee and state police members in April, 2022. The cost of the lump sum payment will be paid by the state and state police as an increase in the employer contribution rate for the fiscal year beginning October 1, 2023.

The promised benefits of the System are included in the actuarially calculated contribution rates which are developed using the Entry Age Normal cost method. Five-year smoothed market value of assets is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded actuarial accrued liability that is being amortized by regular annual contributions as a level percentage of payroll, on the assumption that payroll will increase by 2.75% annually. The assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the System and to reasonable expectations of anticipated experience under the System. The assumptions and methods used for funding purposes meet the parameters outlined in the Board's funding policy.

In this report we provide the following information and supporting schedules in the Actuarial and Statistical Sections of the Annual Comprehensive Financial Report:

- Summary of Actuarial Assumptions and Methods
- Actuarial Cost Method
- Summary of Plan Provisions as Interpreted for Valuation Purposes
- Schedule of Funding Progress
- Solvency Test
- Schedule of Active Member Valuation Data

We also provide the following schedules for the Annual Comprehensive Financial Report in a separate supplemental report:

- Analysis of Actuarial Gains and Losses
- Schedule of Retirants and Beneficiaries Added and Removed from Rolls
- Retired Members by Type of Benefit as of September 30, 2021
- Ten-Year History of Average Monthly Benefit Payments as of September 30

The necessary GASB Statements No. 67 and 68 disclosure information is provided in separate supplemental reports.

This is to certify Larry Langer and Ed Koebel are members of the American Academy of Actuaries and have experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement system and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

Future actuarial results may differ significantly from the current results 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 (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

In order to prepare the results in this report we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

The actuarial computations presented in this report are for purposes of determining the recommended funding amount for the System. Use of these computations for purposes other than meeting these requirements may not be appropriate.

In our opinion the System is operating on an actuarially sound basis. Assuming that contributions to the System are made by the employer from year to year in the future at the rates recommended on the basis of the successive actuarial valuations, the continued sufficiency of the retirement fund to provide the benefits called for under the System may be safely anticipated.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

Cathy Turcot

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Cathy Turcot
Principal and Managing Director

Edward J. Koebel

Edward J. Koebel, EA, FCA, MAAA
Chief Executive Officer

Table of Contents

Section I: Summary of Principal Results

1. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results for State Employees, State Policemen and Local Employees are summarized below:

SUMMARY OF PRINCIPAL RESULTS FOR STATE EMPLOYEES

VALUATION DATE	September 30, 2021	September 30, 2020
Number of active members	27,535	28,193
Annual compensation	$ 1,422,423,897	$ 1,423,647,929
Number of retired members and beneficiaries[2]	24,851	24,655
Annual retirement allowances[2]	$ 575,717,875	$ 561,863,452
Number of deferred vested members	1,170	1,191
Estimated deferred annual allowances	$ 15,621,806	$ 15,671,444
Assets:		
Actuarial value	$ 5,294,885,093	$ 5,083,172,366
Market value	5,714,042,720	4,931,877,371
Unfunded actuarial accrued liability	$ 3,245,658,150	$ 3,072,685,989
Funded Ratio based on Actuarial Value of Assets	62.0%	62.3%
CONTRIBUTIONS FOR FISCAL YEAR ENDING[1]	**September 30, 2024**	**September 30, 2023**
Tier I (first hired prior to January 1, 2013)		
Employer contribution rate		
Normal	1.10%	0.89%
Accrued liability	13.55	13.56
Death benefit	0.07	0.02
Administration	0.30	0.35
Subtotal	15.02%	14.82%
Act 2022-229	0.98%	N/A
Total	16.00%	14.82%
Tier II (first hired on or after January 1, 2013)		
Employer contribution rate		
Normal	0.86%	0.51%
Accrued liability	13.55	13.56
Death benefit	0.07	0.02
Administration	0.30	0.35
Subtotal	14.78%	14.44%
Act 2022-229	0.98%	N/A
Total	15.76%	14.44%
Blended Amortization period	26.9 years	26.7 years

[1]Contribution rates reflect a phase-in of the cost of assumption changes over a period not to exceed five years.

[2]Includes post-DROP members in suspended status who are also active with a second retirement account.

Section I: Summary of Principal Results

SUMMARY OF PRINCIPAL RESULTS FOR STATE POLICEMEN

VALUATION DATE	September 30, 2021	September 30, 2020
Number of active members	798	826
Annual compensation	$ 50,818,742	$ 51,686,733
Number of retired members and beneficiaries[2]	963	943
Annual retirement allowances[2]	$ 47,644,468	$ 45,974,577
Number of deferred vested members	26	27
Estimated deferred annual allowances	$ 460,671	$ 483,244
Assets:		
Actuarial value	$ 380,495,711	$ 359,723,580
Market value	410,079,481	348,882,581
Unfunded actuarial accrued liability	$ 309,274,541	$ 298,594,604
Funded Ratio based on Actuarial Value of Assets	55.2%	54.6%
CONTRIBUTION FOR FISCAL YEAR ENDING[1]	**September 30, 2024**	**September 30, 2023**
Tier I (first hired prior to January 1, 2013)[3]		
Employer contribution rate		
Normal	9.67%	9.56%
Accrued liability	42.16	41.74
Death benefit	0.07	0.02
Administration	0.30	0.35
Subtotal	52.20%	51.67%
Act 2022-229	1.18%	N/A
Total	53.38%	51.67%
Tier II (first hired on or after January 1, 2013)[4]		
Employer contribution rate		
Normal	1.13%	0.75%
Accrued liability	42.16	41.74
Death benefit	0.07	0.02
Administration	0.30	0.35
Subtotal	43.66%	42.86%
Act 2022-229	1.18%	N/A
Total	44.84%	42.86%
Blended Amortization Period	21.0 years	20.5 years

[1]Contribution rates reflect a phase-in of the cost of assumption changes over a period not to exceed five years.
[2]Includes post-DROP members in suspended status who are also active with a second retirement account.
[3]Includes members with Tier I FLC benefits.
[4]Includes members with Tier II FLC benefits.

Section I: Summary of Principal Results

SUMMARY OF PRINCIPAL RESULTS FOR LOCAL EMPLOYEES

VALUATION DATE	September 30, 2021	September 30, 2020
Number of active members	56,238	56,466
Annual compensation	$ 2,596,107,201	$ 2,535,901,049
Number of retired members and beneficiaries*	29,779	28,769
Annual retirement allowances*	$ 637,689,134	$ 599,532,241
Number of deferred vested members	2,130	2,016
Estimated deferred annual allowances	$ 29,257,392	$ 27,065,034
Assets:		
Actuarial value	$ 8,615,712,374	$ 8,048,279,759
Market value	9,293,003,400	7,809,518,853
Unfunded actuarial accrued liability	$ 3,258,916,073	$ 2,924,015,651
Funded Ratio based on Actuarial Value of Assets	72.6%	73.4%
CONTRIBUTIONS FOR FISCAL YEAR ENDING	**September 30, 2024**	**September 30, 2023**
Employer contribution rate		
Normal	Varies	Varies
Accrued liability	Varies	Varies
Death benefit	0.07%	0.02%
Administration	0.30	0.35
Total	Varies	Varies
Amortization period	Varies	Varies

*Includes post-DROP members in suspended status who are also active with a second retirement account.

Section I: Summary of Principal Results

SUMMARY OF PRINCIPAL RESULTS FOR ALL GROUPS

VALUATION DATE	September 30, 2021	September 30, 2020
Number of active members	84,571	85,485
Annual compensation	$ 4,069,349,840	$ 4,011,235,711
Number of retired members and beneficiaries*	55,593	54,367
Annual retirement allowances*	$ 1,261,051,477	$ 1,207,370,270
Number of deferred vested members	3,326	3,234
Estimated deferred annual allowances	$ 45,339,869	$ 43,219,722
Assets:		
Actuarial value	$ 14,291,093,178	$ 13,491,175,705
Market value	15,417,125,601	13,090,278,805
Unfunded actuarial accrued liability	$ 6,813,848,764	$ 6,295,296,244
Funded Ratio based on Actuarial Value of Assets	67.7%	68.2%

**Includes post-DROP members in suspended status who are also active with a second retirement account.

2. Comments on the valuation results as of September 30, 2021 are given in Section IV and further discussion of the contribution levels is set out in Section V.

3. Schedule B of this report shows the development of the actuarial value of assets.

4. The Board funding policy is shown in Schedule F.

5. Schedule D outlines the full set of actuarial assumptions and methods used in the current valuation. Since the previous valuation, various assumptions and methods have been revised to reflect the results of the experience investigation for the five-year period ending September 30, 2020. **The valuation liabilities fully reflect the impact of all assumption changes. The Board approved a phase in of the increase in the required contributions due to the assumption changes over a period not to exceed five years.** These revised assumptions, as summarized in the following table, were adopted by the Board on September 14, 2021.

Section I: Summary of Principal Results

Summary of Assumption and Method Changes	
Economic Assumptions	
Price Inflation	Lowered assumption from 2.75% to 2.50%
Real Rate of Investment Return	No change in assumption
Total Rate of Investment Return	Lowered assumption from 7.70% to 7.45%
Wage Inflation	Lowered assumption from 3.00% to 2.75%
Payroll Growth	Lowered assumption from 3.00% to 2.75%
Demographic Assumptions	
Withdrawal	Changed rates to a service-based table and decreased rates at most service categories
Retirement	Changed assumed rates to better match experience.
Pre-Retirement Mortality	Changed to Pub-2010 General and Public Safety Employee Below Median Tables projected generationally with 66-2/3% adjustment to MP-2020 improvement scale beginning in 2019
Disability	Lowered assumed rates for state and local members
Merit/Promotion Scale	Increase assumed merit rates in most service categories
Post-Retirement Mortality	Changed to Pub-2010 General and Public Safety Employee Below Median Tables projected generationally with 66-2/3% adjustment to MP-2020 improvement scale beginning in 2019
Actuarial Methods	
Unused Sick Leave	Changed from a 1.50% to a 1.00% load on service retirement liabilities for active members of employers who elected it
Asset Smoothing	No change in method
Pre-retirement Death Benefit	Changed from 0.02% to 0.07% of payroll
Administrative Expenses	Changed from 0.35% to 0.30% of payroll
Spouse's Benefit	Changed assumption to 70% will elect lump sum benefit and 30% will elect annuity (20% spouse/10% non-spouse)
Actuarial Cost Method	No change in method.
Amortization of Liabilities	• Amortize September 30, 2021 UAAL over a closed 27-year period for state employees and closed 21-year period for state police (Benefit improvements over closed 15-year period) • Implement 20-year layered amortization of future experience gains/losses beginning September 30, 2028 for state employees and September 30, 2022 for state police, when the amortization period for the UAAL is 20 years
Funding Methodology	Phase in impact of assumption and method changes on employer contribution rates over a period not to exceed five years and maintain floor of FYE 2023 contribution rates

6. Provisions of the System, as summarized in Schedule H, were taken into account in the current valuation. The valuation reflects the following benefit improvements:

   - Act 2022-348 removes the deadline for local units to elect to provide Tier I benefits for Tier II members. The valuation includes 202 additional employers that elected to provide these benefits under Act 2019-132 since the prior valuation date.
   - Act 2022-351 allows Tier II members to retire with 30 years of creditable service regardless of age with an early retirement reduction of 2% for each year that the member is less than age 62 at retirement (age 56 for FLC).
   - Act 2022-184 allows surviving spouses of retirement-eligible members who die inactive service to receive an Option 2 monthly allowance.
   - Act 2022-229 provides a one-time lump sum payment equal to $2 per month for each year of service to retired state employee and state police members in April, 2022. The cost of the lump sum payment will be paid by the state and state police as an increase in the employer contribution rate for the fiscal year beginning October 1, 2023.

7. The results shown in this report reflect all local employer elections approved by the Board through October 1, 2021. The contribution rates for local employers for the fiscal year beginning October 1, 2023 will be submitted in a separate report.

8. The funded ratio shown in the Summary of Principal Results is the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status would be different based on market value of assets. The funded ratio is an indication of progress in funding the promised benefits. Since the ratio is less than 100%, there is a need for additional contributions towards payment of the unfunded actuarial accrued liability. In addition, this funded ratio does not have any relationship to measuring sufficiency if the plan had to settle its liabilities.

Section II: Membership Data

1. Data regarding the membership of the System for use as a basis of the valuation were furnished by the Retirement System office. The following table shows the number of active members and their annual compensation as of September 30, 2021 on the basis of which the valuation was prepared.

TABLE 1

THE NUMBER AND ANNUAL COMPENSATION OF ACTIVE MEMBERS AS OF SEPTEMBER 30, 2021

GROUP	NUMBER	COMPENSATION
State Employees		
Tier 1	15,986	$946,358,878
Tier 2	11,425	465,741,362
Post-DROP Members Still in Active Service	124	10,323,657
Total	27,535	$1,422,423,897
State Policemen		
Tier 1, Group 1	427	$31,985,444
Tier 1, Group 2	135	7,302,007
Tier 2, Group 1	7	447,452
Tier 2, Group 2	229	11,083,839
Post-DROP Members Still in Active Service	0	0
Total	798	$50,818,742
Local Employees		
Tier 1	29,593	$1,599,674,806
Tier 2	26,591	991,735,033
Post-DROP Members Still in Active Service	54	4,697,362
Total	56,238	$2,596,107,201
All Groups		
Tier 1	46,141	$2,585,321,134
Tier 2	38,252	1,469,007,686
Post-DROP Members Still in Active Service	178	15,021,020
Total	84,571	$4,069,349,840

The table reflects the active membership for whom complete valuation data were submitted. The results of the valuation include an estimated liability for an additional 205 vested inactive members where complete data was not available (with liabilities equal to contribution balances multiplied by a factor of 3), contribution balances for an additional 21,521 non-vested inactive members who have contributed in the last 5 years, and 21,100 non-vested inactive members who have not contributed for more than 5 years.

Section II: Membership Data

2. The following table shows a six-year history of active member valuation data.

TABLE 2

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

STATE EMPLOYEES

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
9/30/2021	27,535	$1,422,423,897	-0.09%	$ 51,659	2.30%
9/30/2020	28,193	1,423,647,929	4.84%	50,497	6.11%
9/30/2019	28,533	1,357,895,545	4.84%	47,590	6.57%
9/30/2018	29,004	1,295,229,592	1.85%	44,657	1.58%
9/30/2017	28,926	1,271,674,805	0.50%	43,963	1.11%
9/30/2016	29,101	1,265,310,969	1.08%	43,480	1.55%

* 2.37% annual increase for total pay since 2016.
** 3.51% annual increase for average pay since 2016.

STATE POLICE

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
9/30/2021	798	$50,818,742	-1.68%	$ 63,683	1.77%
9/30/2020	826	51,686,733	20.19%	62,575	-0.91%
9/30/2019	681	43,004,849	4.43%	63,150	1.21%
9/30/2018	660	41,180,794	2.02%	62,395	-3.86%
9/30/2017	622	40,366,017	-2.06%	64,897	3.14%
9/30/2016	655	41,213,571	-0.26%	62,921	6.75%

* 4.28% annual increase for total pay since 2016.
** 0.24% annual increase for average pay since 2016.

LOCAL EMPLOYEES

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
9/30/2021	56,238	$2,596,107,201	2.37%	$ 46,163	2.79%
9/30/2020	56,466	2,535,901,049	5.97%	44,910	3.82%
9/30/2019	55,320	2,393,056,664	2.15%	43,258	5.06%
9/30/2018	56,901	2,342,770,725	3.09%	41,173	1.65%
9/30/2017	56,109	2,272,659,180	0.28%	40,504	-1.60%
9/30/2016	55,058	2,266,366,656	4.53%	41,163	3.71%

* 2.75% annual increase for total pay since 2016.

** 2.32% annual increase for average pay since 2016.

Section II: Membership Data

TOTAL EMPLOYEES

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
9/30/2021	84,571	$4,069,349,840	1.45%	$ 48,118	2.55%
9/30/2020	85,485	4,011,235,711	5.73%	46,923	4.55%
9/30/2019	84,534	3,793,957,058	3.12%	44,881	5.60%
9/30/2018	86,565	3,679,181,111	2.64%	42,502	1.56%
9/30/2017	85,657	3,584,700,002	0.33%	41,849	-0.66%
9/30/2016	84,814	3,572,891,196	3.23%	42,126	2.92%

* 2.64% annual increase for total pay since 2016.
** 2.70% annual increase for average pay since 2016.

3. The following table shows the number and annual retirement allowances payable to retired members and their beneficiaries on the rolls of the Retirement System as of the valuation date.

Section II: Membership Data

TABLE 3

**THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES
OF RETIRED MEMBERS AND BENEFICIARIES OF
DECEASED MEMBERS ON THE ROLLS AS OF SEPTEMBER 30, 2021**

TYPE OF RETIREMENT	GROUP			
	STATE EMPLOYEES[1]	STATE POLICEMEN[2]	LOCAL EMPLOYEES[3]	TOTAL
Service:				
Number[4]	20,851	815	25,166	46,832
Annual Allowances[4]	$ 516,348,466	$ 43,680,581	$ 575,470,111	$ 1,135,499,158
Disability:				
Number	2,185	44	1,990	4,219
Annual Allowances	$ 31,979,847	$ 1,445,436	$ 29,381,467	$ 62,806,750
Beneficiaries:				
Number	1,815	104	2,623	4,542
Annual Allowances	$ 27,389,562	$ 2,518,451	$ 32,837,556	$ 62,745,569
Total:				
Number	24,851	963	29,779	55,593
Annual Allowances	$ 575,717,875	$ 47,644,468	$ 637,689,134	$ 1,261,051,477

[1] In addition, there are 1,170 vested inactive members with estimated deferred annual allowances totaling $15,621,806.
[2] In addition, there are 26 vested inactive members with estimated deferred annual allowances totaling $460,671.
[3] In addition, there are 2,130 vested inactive members with estimated deferred annual allowances totaling $29,257,392.
[4] Includes post-DROP members in suspended status who are also active with a second retirement account.

4. Tables in Schedule I show the distribution by age and service of the number and average annual compensation of active members included in the valuation. In addition, tables in Schedule I show the distribution by age and benefit type of the number, annual benefits, and average annual benefits of retired members included in the valuation.

Section III: Assets

1. The current retirement law provides for the maintenance of five funds for the purpose of recording the fiscal transactions of the System, namely, the Annuity Savings Fund, the Pension Accumulation Fund, the Deferred Retirement Option Plan Fund, the Pre-Retirement Death Benefit Fund, and the Expense Fund.

(a) Annuity Savings Fund

The Annuity Savings Fund is the fund to which are credited all contributions made by members together with regular interest thereon. When a member retires or when a survivor allowance becomes payable, the amount of the member's accumulated contributions are transferred from the Annuity Savings Fund to the Pension Accumulation Fund. On September 30, 2021, the market value of assets credited to this Fund amounted to $3,292,498,344 which represent the contributions of members to this date.

(b) Pension Accumulation Fund

The Pension Accumulation Fund is the fund to which are credited all contributions made by the employers, except those contributions made to the Pre-Retirement Death Benefit Fund which was created October 1, 1983. When a member retires or when a survivor allowance becomes payable, the pension is paid from this fund. The market value of assets credited to this fund amounted to $12,069,811,540 on September 30, 2021.

(c) DROP Fund

The DROP Fund is the fund to which are credited deferred retirement benefits on behalf of members who elect to participate in the DROP, together with regular interest thereon. In addition, member contributions while participating in the DROP, together with regular interest therein, are credited to the Fund. At the end of the DROP deferral period, the member receives the amount of the deferred retirement benefits and contributions plus interest in the member's DROP account. The DROP is closed to new participants as of June 1, 2011. On September 30, 2021, the market value of assets credited to this Fund amounted to $54,815,717.

(d) Pre-Retirement Death Benefit Fund

The Pre-Retirement Death Benefit Fund is the fund to which are credited contributions made by the employer for the special pre-retirement death benefit which became effective October 1, 1983. On September 30, 2021, the market value of assets credited to this fund amounted to $22,968,724. These assets are not included in the valuation and the liabilities associated with these death benefits are <u>not</u> included in the valuation.

(e) Expense Fund

The Expense Fund is the fund from which the expenses of the administration of the Retirement System are paid. Any amounts credited to the accounts of members withdrawing before retirement and not returnable under the provisions of Code Section 36-27-16(c) are credited to the Expense Fund. Additional contributions required to meet the expenses of the Retirement System made by the employer are also credited to this fund. On September 30, 2021, the book value of assets credited to this fund amounted to $(3,701,366). These assets are not included in the valuation.

2. As of September 30, 2021 the total market value of assets exclusive of the Pre-Retirement Death Benefit Fund and the Expense Fund amounted to $15,417,125,601 as shown in the following table.

TABLE 4

**MARKET VALUE OF ASSETS BY FUND
AS OF SEPTEMBER 30, 2021**

FUND	MARKET VALUE OF ASSETS
Annuity Savings Fund	$ 3,292,498,344
Pension Accumulation Fund	12,069,811,540
DROP Fund	54,815,717
Total Market Value of Assets	$ 15,417,125,601

3. The five-year market related actuarial value of assets as of September 30, 2021 was $14,291,093,178. The following table shows the actuarial value of assets used for the current valuation allocated among State employees, State policemen and local employees.

TABLE 5

**COMPARISON OF ACTUARIAL VALUE OF ASSETS
AT SEPTEMBER 30, 2021 AND SEPTEMBER 30, 2020**

GROUP	SEPTEMBER 30, 2021 ACTUARIAL VALUE	SEPTEMBER 30, 2020 ACTUARIAL VALUE
State Employees	$ 5,294,885,093	$ 5,083,172,366
State Policemen	380,495,711	359,723,580
Local Employees	8,615,712,374	8,048,279,759
Total Assets	$ 14,291,093,178	$ 13,491,175,705

4. Schedule C shows the receipts and disbursements of the System for the year preceding the valuation date and a reconciliation of the fund balances at market value.

Section IV: Comments on Valuation

1. Schedule A of this report contains the valuation balance sheets which show the present and prospective assets and liabilities of the System as of September 30, 2021. Separate balance sheets are shown for each employee group as well as in total for all groups.

2. The total valuation balance sheet shows that the System has total prospective liabilities of $24,008,200,260. Of this amount, $11,794,824,709 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and DROP participants, $398,336,697 is for the prospective benefits payable on account of present inactive members and $11,815,038,854 is for the prospective benefits payable on account of present active members. Against these liabilities the System has total actuarial value of assets of $14,291,093,178 as of September 30, 2021. The difference of $9,717,107,082 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future. Of this amount, $1,957,846,783 is the present value of future contributions expected to be made by members to the Annuity Savings Fund, and the balance of $7,759,260,299 represents the present value of future contributions payable by the employers.

3. The employers' contributions to the System consist of normal contributions and unfunded actuarial accrued liability (UAAL) contributions. Prospective employer normal contributions have a present value of $945,411,535. When this amount is subtracted from $7,759,260,299, which is the present value of the total future contributions to be made by the employers, there remains $6,813,848,764 as the amount of future UAAL contributions.

4. The funding policy adopted by the Board, as shown in Schedule F, provides that the initial total UAAL established as of September 30, 2021 shall be amortized over a closed 27-year period for state employees and a closed 21-year period for state police. Each subsequent valuation may produce a New Incremental UAAL consisting of all benefit changes that have occurred since the previous valuation which shall be amortized over a closed 15-year period. Each valuation beginning with the September 30, 2028 valuation for State employees, and the September 30, 2022 valuation for State police will produce a New Incremental UAAL consisting of all assumption and method changes and

experience gains and/or losses that have occurred since the previous valuation and will be amortized over closed 20- year periods. All gains and losses occurring after the establishment of the initial total UAAL and before those dates, except for those due to benefit improvements, shall be included in the remaining initial total UAAL each year and amortized over the remaining closed period.

5. The total UAAL rate payable by the State is 13.55% of payroll for State employees and 42.16% of payroll for State Policemen determined in accordance with the Board's funding policy and the phase-in methodology adopted by the Board. The UAAL contribution rate has been calculated on the assumption that each incremental component of accrued liability contribution will increase by 2.75% each year. Schedule G of this report shows the amortization schedules for all bases as of September 30, 2021.

6. The following table shows the components of the total UAAL and the derivation of the accrued liability contribution rate in accordance with the funding policy for State employees and State policemen:

Section IV: Comments on Valuation

TABLE 6

TOTAL UAAL AND UAAL CONTRIBUTION RATE

STATE EMPLOYEES

	UAAL	Amortization Period	Amortization Payment
Initial Total UAL 9/30/2021	$3,235,144,946	27	$216,878,236
Benefit Improvements Effective 10/1/2021*	10,513,204	15	1,010,983
Total	$3,245,658,150		$217,889,219
Total Amortization Payment Adjusted for Timing			210,064,323
Total Estimated Payroll**			$1,475,804,350
UAAL Contribution Rate			14.23%
UAAL Contribution Rate Phase-in Methodology***			13.55%

STATE POLICE

	UAAL	Amortization Period	Amortization Payment
Initial Total UAL 9/30/2021	$309,010,437	21	$23,844,813
Benefit Improvements Effective 10/1/2021*	264,104	15	25,397
Total	$309,274,541		$23,870,210
Total Amortization Payment Adjusted for Timing			23,012,977
Total Estimated Payroll**			$53,504,748
UAAL Contribution Rate			43.01%
UAAL Contribution Rate Phase-in Methodology***			42.16%

* The benefit improvements effective with the 10/1/2021 valuation are as follows:

- Act 2022-351 allows Tier II members to retire with 30 years of creditable service regardless of age with an early retirement reduction of 2% for each year that the member is less than age 62 at retirement (age 56 for FLC).
- Act 2022-184 allows surviving spouses of retirement-eligible members who die in active service to receive an Option 2 monthly allowance.

** Estimated payroll based on applying the assumed salary scale to current salaries.

*** Phase in impact of assumption and method changes on employer contribution rates over a period not to exceed five years and maintain floor of FYE 2023 contribution rates.

7. The Pre-Retirement Death Benefit Program was established October 1, 1983 under Act No. 83-616. The liabilities and assets associated with the pre-retirement death benefit are not included in the annual actuarial valuation of the System; however, the sufficiency of the Fund to provide the promised benefits is reviewed annually. The contribution requirements are determined every five years during our experience investigation. For all employers, an additional contribution of 0.07% of payroll will be required to meet the cost of the pre-retirement death benefit program this year.

8. For all employers, an additional contribution of 0.30% is required to cover the expenses of administering the System.

9. An additional contribution of 0.98% for State employees and 1.18% for State police is required for fiscal year ending September 30, 2024, to fund the one-time lump sum payment provided for in Act 2022-229.

10. In our opinion, the current experience, assumptions, and methods adopted by the Board support the funding policy and generally accepted and emerging practice. Assuming that required contributions continue to be made each year, the funding of the System and the objectives of the Funding Policy will continue to remain on track.

Section V: Contributions Payable by Employers

1. The retirement act provides that the Board of Control shall certify to the Chief Fiscal Officer of each employer the rates of contribution required to be paid by the employer.

2. On the basis of the actuarial valuation prepared as of September 30, 2021 it is recommended that the State make contributions at the following rates for the fiscal year beginning October 1, 2023:

TABLE 7

ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTION RATES

CONTRIBUTION RATE***	PERCENTAGE OF MEMBERS' COMPENSATION FOR FISCAL YEAR ENDING SEPTEMBER 20, 2024			
	STATE EMPLOYEES		STATE POLICEMEN	
	Tier I	Tier II	Tier I	Tier II
Employer Normal Cost	1.10%*	0.86%*	9.67%**	1.13%**
Accrued liability	13.55	13.55	42.16	42.16
Death benefit	0.07	0.07	0.07	0.07
Administration	0.30	0.30	0.30	0.30
Subtotal	15.02%	14.78%	52.20%	43.66%
Act 2022-229	0.98%	0.98%	1.18%	1.18%
Total	16.00%	15.76%	53.38%	44.84%

* The total Normal Cost rate is 8.73% for Tier I and 6.94% for Tier II. Tier I members contribute 7.50% (8.50% for FLC members) and Tier II members contribute 6.00% (7.00% for FLC members).

** The total Normal Cost rate is 19.38% for Tier I and 8.25% for Tier II. All Police Group 1 members contribute 10.00%. Tier I Police Group 2 members contribute 8.50% and Tier II Police Group 2 members contribute 7.00%.

*** Contribution rates reflect a phase-in of the cost of assumption changes over a period not to exceed five years with a floor equal to the 2023 fiscal year contribution rates.

3. **The total employer contribution rates without the phase-in would have been 17.37% of compensation for State employees Tier I, 16.90% of compensation for State employees Tier II, 55.73% of compensation for State Police Tier I, and 46.71% of compensation for State Police Tier II.**

4. Contribution rates for Local Employers will be submitted in a separate report. The rates for the fiscal year beginning October 1, 2023 were determined as of September 30, 2021, and will reflect any elections made pursuant to Act 2011-676, Act 2019-132, and Act 2022-229 as of September 30, 2021.

Section VI: Analysis of Financial Experience

The calculation of the System's liabilities and actuarial value of assets requires the use of several assumptions concerning the future experience of the System and its members. In each annual actuarial valuation, the experience of the System is compared with what was expected based on the actuarial assumptions. The differences between the actual and expected experience are called actuarial gains or losses depending on whether the difference increases or decreases the UAAL. For State employees, the UAAL increased $172,972,161; for State policemen, the UAAL increased $10,679,937. The most significant item contributing to the increase was the changes in assumptions due to the experience study. This increase was partially offset by gains due to investment earnings greater than expected as well as service retirement and withdrawal gains. Other sources of gains and losses were relatively small and there appear to be no trends developing that would be of concern to the System. The following tables show the reconciliation of the UAAL of the System and a breakdown by source of the actuarial gains and losses for State employees and State policemen. These sources include the expected return on assets, salary increases, retirement, withdrawal, disability, and mortality.

Since the benefits, assumptions and accrued liability rates vary by location for the Local employees, we do not develop an analysis of financial experience by source for this group.

Section VI: Analysis of Financial Experience

RECONCILIATION OF THE UNFUNDED ACTUARIAL ACCRUED LIABILITY
FOR THE YEAR ENDING SEPTEMBER 30, 2021
(Dollar amounts in thousands)

		STATE EMPLOYEES	STATE POLICEMEN
(1)	UAAL at beginning of year	$ 3,072,686	$ 298,595
(2)	Total normal cost beginning of the year	107,253	8,721
(3)	Actual contributions	314,369	30,687
(4)	Interest accrual: [[(1) + (2)] - ½ [(3)]] x .07700	232,752	22,482
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	3,098,322	299,111
(6)	Increase from benefit changes	10,513	264
(7)	Changes from revised actuarial assumptions and methods	269,469	24,822
(8)	Expected UAAL after changes: (5) + (6) + (7)	3,378,304	324,197
(9)	Actual UAAL at end of year	3,245,658	309,275
(10)	Total (Gain)/Loss: (9) - (8)	$ (132,646)	$ (14,922)

Section VI: Analysis of Financial Experience

DEVELOPMENT OF (GAIN)/LOSS
FROM INVESTMENT RETURN
FOR THE YEAR ENDING SEPTEMBER 30, 2021
(Dollar amounts in thousands)

		STATE EMPLOYEES	STATE POLICEMEN
(1)	Actuarial Value of Assets (BOY)	$ 5,083,172	$ 359,724
(2)	Adjustment	0	0
(3)	Net Cash Flow	(288,075)	(14,652)
(4)	Expected Return: [(1) + (2) + ½ [(3)]] x .07700	380,313	27,135
(5)	Expected Actuarial Value of Assets: [(1) + (2) + (3) + (4)]	5,175,410	372,207
(6)	Actual Actuarial Value of Assets (EOY)	5,294,885	380,496
(7)	(Gain)/Loss: (5) – (6)	$ (119,475)	$ (8,289)

Section VI: Analysis of Financial Experience

(GAINS)/ LOSSES BY SOURCE
FOR THE YEAR ENDING September 30, 2021
(Dollar amounts in thousands)

Source	STATE EMPLOYEES Total	STATE EMPLOYEES % of Actuarial Accrued Liability	STATE POLICEMEN Total	STATE POLICEMEN % of Actuarial Accrued Liability
Age and Service Retirements. Generally, earlier retirements cause losses and later retirements cause gains.	$ (15,321)	(0.19%)	$ (936)	(0.14%)
Withdrawal. More withdrawals than expected usually cause gains and less withdrawals than expected cause losses.	(14,843)	(0.18%)	(1,747)	(0.26%)
Disability Retirements. More disabilities than expected generally cause losses and less disabilities than expected cause gains.	(45)	0.00%	(77)	(0.01%)
Death-In-Service Benefits. If survivor claims are less than assumed, there is a gain. If claims are more than assumed, there is a loss.	2,608	0.03%	207	0.03%
Salary Increases. If salaries increase more than expected, there is a loss. If salaries increase less than expected, there is a gain.	(807)	(0.01%)	(4,162)	(0.63%)
New Members/Rehires. Any past service causes losses.	19,376	0.23%	2,804	0.42%
Retiree Mortality. More deaths than expected cause gains, less than expected cause losses.	(4,450)	(0.05%)	(2,519)	(0.38%)
Investment Return. Investment income greater than expected causes gains while investment income less than expected cause losses.	(119,475)	(1.45%)	(8,289)	(1.25%)
Other. Miscellaneous gains and losses resulting from data corrections, timing of financial transactions, unit transfers, changes in valuation software, etc.	311	0.00%	(203)	(0.03%)
Total (Gain)/Loss	$ (132,646)	(1.62%)	$ (14,922)	(2.25%)

Section VI: Analysis of Financial Experience

(GAINS)/ LOSSES BY SOURCE
Historical Trends
(Dollar amounts in thousands)

STATE EMPLOYEES

SOURCE	September 30 2021	2020	2019	2018	2017
Age and Service Retirements	$ (15,321)	$ (14,306)	(9,517)	(4,114)	(5,384)
Withdrawal	(14,843)	(7,618)	(4,000)	(585)	3,433
Disability Retirements	(45)	400	485	629	429
Death-In-Service Benefits	2,608	3,512	305	(754)	626
Salary Increases	(807)	87,419	99,221	(6,128)	(2,484)
New Members/Rehires	19,376	16,550	18,713	12,294	12,475
Retiree Mortality	(4,450)	(10,301)	27,728	(145)	(10,442)
Investment Return	(119,475)	(6,741)	19,518	(65,023)	(92,749)
Other	311	(1,853)	(6,256)	499	(13,016)
Total (Gain)/Loss	$ (132,646)	$ 67,062	146,197	(63,328)	(107,110)

STATE POLICEMEN

SOURCE	September 30 2021	2020	2019	2018	2017
Age and Service Retirements	$ (936)	$ (1,136)	487	1,563	(67)
Withdrawal	(1,747)	(2,170)	(2,371)	(1,276)	78
Disability Retirements	(77)	57	244	50	(251)
Death-In-Service Benefits	207	197	187	(92)	177
Salary Increases	(4,162)	1,908	7,061	(4,511)	(1,501)
New Members/Rehires	2,804	6,144	1,226	3,137	803
Retiree Mortality	(2,519)	104	1,204	717	(522)
Investment Return	(8,289)	(242)	1,594	(4,245)	(6,239)
Other	(203)	228	308	601	40
Total (Gain)/Loss	$ (14,922)	$ 5,090	9,940	(4,056)	(7,481)

Section VII: Accounting Information

The information required under Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 is issued in separate reports. The following information is provided for informational purposes only.

1. The following is a distribution of the number of employees by type of membership.

NUMBER OF ACTIVE AND RETIRED MEMBERS
AS OF SEPTEMBER 30, 2021

GROUP	NUMBER			
	State Employees	State Police	Local Employees	Total
Retirees and beneficiaries currently receiving benefits	24,851	963	29,779	55,593
Terminated employees entitled to benefits but not yet receiving benefits	6,446	61	18,545	25,052
Non-vested inactive members who have not contributed for more than 5 years	21,100	0	0	21,100
Active Members	27,535	798	56,238	84,571
Total	79,931	1,822	104,563	186,316

Section VII: Accounting Information

2. The schedule of funding progress is shown below.

SCHEDULE OF FUNDING PROGRESS
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b – a) / c)
			TOTAL ALL GROUPS			
9/30/2016[1]	$11,082,280	$16,728,009	$5,645,729	66.2%	$3,572,891	158.0 %
9/30/2017[1]	11,690,952	17,250,834	5,559,883	67.8	3,584,700	155.1
9/30/2018[1]	12,240,597	17,829,735	5,589,138	68.7	3,679,181	151.9
9/30/2019	12,645,789	18,543,542	5,897,753	68.2	3,793,957	155.5
9/30/2020[2]	13,491,176	19,786,472	6,295,296	68.2	4,011,236	156.9
9/30/2021[1,2,3]	14,291,093	21,104,942	6,813,849	67.7	4,069,350	167.4
			STATE EMPLOYEES			
9/30/2016[1]	$4,598,818	$7,404,587	$2,805,769	62.1%	$1,265,311	221.7%
9/30/2017[1]	4,759,602	7,581,147	2,821,545	62.8	1,271,675	221.9
9/30/2018[1]	4,887,403	7,723,822	2,836,419	63.3	1,295,230	219.0
9/30/2019	4,964,556	7,964,131	2,999,575	62.3	1,357,896	220.9
9/30/2020	5,083,172	8,155,858	3,072,686	62.3	1,423,648	215.8
9/30/2021[1,3]	5,294,885	8,540,543	3,245,658	62.0	1,422,424	228.2
			STATE POLICEMEN			
9/30/2016[1]	$318,103	$590,658	$272,555	53.9%	$41,214	661.3%
9/30/2017[1]	333,960	607,107	273,147	55.0	40,366	676.7
9/30/2018[1]	341,389	620,411	279,022	55.0	41,181	677.6
9/30/2019	346,309	639,187	292,878	54.2	43,005	681.0
9/30/2020	359,724	658,319	298,595	54.6	51,687	577.7
9/30/2021[1,3]	380,496	689,771	309,275	55.2	50,819	608.6
			LOCAL EMPLOYEES			
9/30/2016[1]	$6,165,359	$8,732,588	$2,567,405	70.6%	$2,266,367	113.3%
9/30/2017[1]	6,597,390	9,062,580	2,465,190	72.8	2,272,659	108.5
9/30/2018[1]	7,011,805	9,485,502	2,473,697	73.9	2,432,771	105.6
9/30/2019	7,334,924	9,940,224	2,605,299	73.8	2,393,057	108.9
9/30/2020[2]	8,048,280	10,972,295	2,924,016	73.4	2,535,901	115.3
9/30/2021[1,2,3]	8,615,712	11,874,628	3,258,916	72.6	2,596,107	125.5

[1] Reflects changes in actuarial assumptions and methods.
[2] Reflects impact of Act 2019-132.
[3] Reflects impact of Act 2022-351 and Act 2022-184.

3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at September 30, 2021. Additional information as of the latest actuarial valuation follows.

	State Employees	State Policemen	Local Employees
Valuation date	9/30/2021	9/30/2021	9/30/2021
Actuarial cost method	Entry age	Entry age	Entry age
Amortization method	Level percent Closed	Level percent Closed	Level percent Closed
Single equivalent remaining amortization period	26.9 years	21.0 years	Within 30 years - Varies by employer
Asset valuation method	Five-year market related value	Five-year market related value	Five-year market related value
Actuarial assumptions:			
Investment rate of return*	7.45%	7.45%	7.45%
Projected salary increases*	3.25 – 6.00%	4.00 – 7.75%	3.25 – 6.00%
Cost-of-living adjustment	None	None	None
*Includes price inflation at	2.50%	2.50%	2.50%

Section VIII: Risk Assessment

Overview

Actuarial Standards of Practice (ASOP) No. 51, issued by the Actuarial Standards Board, provides guidance on assessing and disclosing risks related to pension plan funding. This guidance is binding on all credentialed actuaries practicing in the United States. This standard was issued as final in September 2017 with application to measurement dates on or after November 1, 2018.

The term "risk" frequently has a negative connotation, but from an actuarial perspective, it can simply be considered that what actually happens in the real world will not always match what was expected, based on actuarial assumptions. Of course, when actual experience is better than expected, the favorable risk is easily absorbed. The risk of unfavorable experience will likely be unpleasant, and so understandably, there is a focus on aspects of risk that are negative.

Risk can usually be reduced or eliminated at some cost. Consumers, for example, buy auto and home insurance to reduce the risk of accidents or catastrophes. Another way to express this concept, however, is that there is generally some reward for assuming risk. Thus, retirement plans invest not just in US Treasury bonds, which have almost no risk, but also in equities, which are considerably riskier – because they have an expected reward of a higher return that justifies the risk.

Under ASOP 51, the actuary is called upon to identify the significant risks to the pension plan and provide information to help those sponsoring and administering the plan understand the implications of these risks. In this section, we identify some of the key risks for the System and provide information to help interested parties better understand these risks.

Section VIII: Risk Assessment

Investment Risk

The investment return on assets is the most obvious risk – and usually the largest risk – to funding a pension plan. To illustrate the magnitude of this risk, the following chart shows the Asset Volatility Ratio (AVR), defined as the fair value of assets divided by covered payroll.

STATE EMPLOYEES
($ in thousands)

Valuation	Fair Value of Assets	Covered Payroll	Asset Volatility Ratio
2016	$4,615,916	$1,265,311	3.65
2017	$4,910,513	$1,271,675	3.86
2018	$5,059,401	$1,295,230	3.91
2019	$4,917,295	$1,357,896	3.62
2020	$4,931,877	$1,423,648	3.46
2021	$5,714,043	$1,422,424	4.02

STATE POLICE
($ in thousands)

Valuation	Fair Value of Assets	Covered Payroll	Asset Volatility Ratio
2016	$318,885	$41,214	7.74
2017	$343,920	$40,366	8.52
2018	$352,888	$41,181	8.57
2019	$342,665	$43,005	7.97
2020	$348,883	$51,687	6.75
2021	$410,079	$50,819	8.07

The asset volatility ratio is especially useful to compare across plans or through time. It is also frequently useful to consider how the AVR translates into changes in the Required Contribution Rate (actuarially determined employer contribution rate). The greater the AVR, the more volatility there is in the Required Contribution Rate. For plans with low AVRs, the impact of investment gains and losses on Required Contribution Rates is less than for plans with high AVRs. The AVR for State Employees as of September 30, 2021 is 4.02 and the AVR for State Police is 8.07.

Section VIII: Risk Assessment

As shown in the table below, if the market value return is 5% below assumed, or 2.45% (7.45% minus 5.00%) for the System, there will be an increase in the Required Contribution Rate of 0.52% of payroll in the first year for State Employees and 1.05% for State Police. Without asset smoothing or without returns above the expected return in the next four years, the impact on the Required Contribution Rate would be 2.62% for State Employees and 5.27% for State Police.

AVR	Amortization	Amortization
4.00	2.61%	0.52%
4.02	2.62%	0.52%
5.00	3.26%	0.65%

STATE POLICE

AVR	Unsmoothed Amortization	Smoothed Amortization
8.00	5.22%	1.04%
8.07	5.27%	1.05%
9.00	5.87%	1.17%

Section VIII: Risk Assessment

Sensitivity Measures

Valuations are generally performed with a single set of assumptions that reflects the best estimate of future conditions, in the opinion of the actuary and typically the governing board. Note that under actuarial standards of practice, the set of economic assumptions used for funding must be consistent. To enhance the understanding of the importance of an assumption, a sensitivity test can be performed where the valuation results are recalculated using a different assumption or set of assumptions.

The following tables contain the key measures for the System using the valuation assumption for investment return of 7.45%, along with the results if the assumption were 6.45% or 8.45%. In this analysis, only the investment return assumption is changed. Consequently, there may be inconsistencies between the investment return and other economic assumptions such as inflation or payroll increases. In addition, simply because the valuation results under alternative assumptions are shown here, it should not be implied that CMC believes that either assumption (6.45% or 8.45%) would comply with actuarial standards of practice. The contribution rates below represent the full ADEC with phase in.

Section VIII: Risk Assessment

STATE EMPLOYEES
($ in thousands)

As of September 30, 2021	Current Discount Rate (7.45%)	-1% Discount Rate (6.45%)	+1% Discount Rate (8.45%)
Accrued Liability	$8,540,543	$9,429,916	$7,766,700
Unfunded Liability	$3,245,658	$4,135,031	$2,471,814
Funded Ratio (AVA)	62.0%	56.1%	68.2%
ADEC Rate*			
Tier I	17.37%	21.64%	13.42%
Tier II	16.90%	20.33%	13.23%

STATE POLICE
($ in thousands)

As of September 30, 2021	Current Discount Rate (7.45%)	-1% Discount Rate (6.45%)	+1% Discount Rate (8.45%)
Accrued Liability	$689,771	$761,350	$628,619
Unfunded Liability	$309,275	$380,855	$248,123
Funded Ratio (AVA)	55.2%	50.0%	60.5%
ADEC Rate*			
Tier I	55.73%	66.55%	46.09%
Tier II	46.71%	54.38%	39.24%

* Contribution rates are determined based on the Board's current Funding Policy and do not reflect phase in of contributions.

Section VIII: Risk Assessment

Mortality Risk

The mortality assumption is a significant assumption for valuation results, second only to the investment assumption in most situations. The System's mortality assumption utilizes a mortality table (with separate rates for males and females, as well as different rates by status) and a projection scale for how the mortality table is expected to improve through time.

The future, however, is unknown, and actual mortality improvements may occur at a faster rate than expected, or at a slower rate than expected. Although changes in mortality will affect the benefits paid, this assumption is reviewed carefully during the regular experience studies that the System conducts so that incremental changes can be made to smoothly reflect emerging experience. Since the last valuation, an experience investigation was prepared for the five-year period ending September 30, 2020, and based on the results of the investigation, a new mortality table with generational approach to future improvements in mortality was adopted. The risk to the System due to mortality is significantly reduced due to the use of the generational improvement method. The next actuarial experience study will be for the period from October 1, 2020 to September 30, 2025.

Contribution Risk

The System is funded primarily by member and employer contributions to the trust fund, together with the earnings on those accumulated contributions. Each year in the valuation, the Actuarial Determined Employer Contribution (ADEC) rate is determined, based on the System's funding policy. This rate is the sum of the rates for the normal cost for the plan (which includes expected administrative expenses), and the rate necessary to amortize the UAAL. Since the level percentage of payroll method is used to determine the UAAL amortization amounts, there is an expectation that future payments will grow at the assumed 2.75% annual rate of increase in covered payroll. If payroll grows at a slower rate, under this amortization method, less than expected UAAL amortization payments would result in a greater UAAL in future years and may require increases to either the amortization rate or the amortization period. From a policy perspective, since the ADEC rate has always been made by the plan sponsors, and that procedure is expected to continue, there is no risk to the System associated with the contribution amounts being less than the ADEC.

Schedule A: Valuation Balance Sheet & Solvency Test

VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

STATE EMPLOYEES

	SEPTEMBER 30, 2021
ASSETS	
Actuarial Value of Assets	$ 5,294,885,093
Present value of future members' contributions to the Annuity Savings Fund	$ 741,432,000
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	$ 173,746,627
Unfunded accrued liability contributions	3,245,658,150
Total prospective employer contributions	$ 3,419,404,777
Total Assets	$ 9,455,721,870
LIABILITIES	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	$ 4,672,739,131
Disability Retirements	279,530,515
Beneficiaries of Deceased Members	205,477,996
DROP Participant Accounts	40,283,643
Total	$ 5,198,031,285
Inactive Members	$ 126,936,874
Inactive T-section accounts	$ 21,165,957
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	$ 3,608,810,915
Disability retirement allowances	204,643,273
Death Benefits	38,858,204
Termination Benefits	257,275,362
Total	$ 4,109,587,754
Total Liabilities	$ 9,455,721,870

Schedule A: Valuation Balance Sheet & Solvency Test

VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF
THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

STATE POLICEMEN

	SEPTEMBER 30, 2021
ASSETS	
Actuarial Value of Assets	$ 380,495,711
Present value of future members' contributions to the Annuity Savings Fund	$ 33,741,632
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	$ 30,028,011
Unfunded accrued liability contributions	309,274,541
Total prospective employer contributions	$ 339,302,552
Total Assets	$ 753,539,895
LIABILITIES	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	$ 432,221,830
Disability Retirements	13,636,751
Beneficiaries of Deceased Members	17,997,041
DROP Participant Accounts	0
Total	$ 463,855,622
Inactive Members	$ 3,054,639
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	$ 267,486,093
Disability retirement allowances	7,341,192
Death Benefits	1,060,930
Termination Benefits	10,741,419
Total	$ 286,629,634
Total Liabilities	$ 753,539,895

Schedule A: Valuation Balance Sheet & Solvency Test

VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

LOCAL EMPLOYEES

	SEPTEMBER 30, 2021
ASSETS	
Actuarial Value of Assets	$ 8,615,712,374
Present value of future members' contributions to the Annuity Savings Fund	$ 1,182,673,151
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	$ 741,636,897
Unfunded accrued liability contributions	3,258,916,073
Total prospective employer contributions	$ 4,000,552,970
Total Assets	$ 13,798,938,495
LIABILITIES	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	$ 5,586,748,907
Disability Retirements	263,344,519
Beneficiaries of Deceased Members	268,312,302
DROP Participant Accounts	14,532,074
Total	$ 6,132,937,802
Inactive Members	$ 247,179,227
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	$ 6,548,700,001
Disability retirement allowances	310,067,259
Death Benefits	62,968,393
Termination Benefits	497,085,813
Total	$ 7,418,821,466
Total Liabilities	$ 13,798,938,495

Schedule A: Valuation Balance Sheet & Solvency Test

VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

TOTAL - ALL GROUPS

	SEPTEMBER 30, 2021
ASSETS	
Actuarial Value of Assets	$ 14,291,093,178
Present value of future members' contributions to the Annuity Savings Fund	$ 1,957,846,783
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	$ 945,411,535
Unfunded accrued liability contributions	6,813,848,764
Total prospective employer contributions	$ 7,759,260,299
Total Assets	$ 24,008,200,260
LIABILITIES	
Present value of benefits payable on account of retired members, beneficiaries of deceased members now drawing retirement allowances, and DROP participants	
Service Retirements	$ 10,691,709,868
Disability Retirements	556,511,785
Beneficiaries of Deceased Members	491,787,339
DROP Participant Accounts	54,815,717
Total	$ 11,794,824,709
Inactive Members	$ 377,170,740
Inactive T-section accounts	$ 21,165,957
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	$ 10,424,997,009
Disability retirement allowances	522,051,724
Death Benefits	102,887,527
Termination Benefits	765,102,594
Total	$ 11,815,038,854
Total Liabilities	$ 24,008,200,260

Schedule A: Valuation Balance Sheet & Solvency Test

SOLVENCY TEST
($1000's)

Valuation Date	Aggregate Accrued Liabilities For (1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active Members (Employer Financed Portion)	Reported Assets	Portion of Accrued Liabilities Covered by Reported Asset (1)	(2)	(3)
9/30/2021[1,2,3]	$3,292,498	$11,794,825	$6,017,619	$14,291,093	100%	93%	0%
9/30/2020[2]	3,038,594	10,300,063	5,594,541	13,491,176	100	94	0
9/30/2019	3,038,594	10,300,063	5,204,885	12,240,597	100	93	0
9/30/2018[1]	2,922,432	9,944,503	4,962,800	12,240,597	100	93	0
9/30/2017[1]	2,817,368	9,567,278	4,866,189	11,690,952	100	93	0
9/30/2016[1]	2,707,129	9,209,857	4,811,023	11,082,280	100	91	0

[1] Reflects changes in actuarial assumptions and methods.
[2] Reflects impact of Act 2019-132.
[3] Reflects impact of Act 2022-351 and Act 2022-184.

Schedule B: Actuarial Value of Assets

DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2021
STATE EMPLOYEES

(1)	Actuarial Value of Assets on September 30, 2020	
	a. Actuarial Value on September 30, 2020	$5,083,172,366
	b. Adjustment	0
	c. Adjusted Actuarial Value on September 30, 2020	$5,083,172,366
(2)	Market Value of Assets on September 30, 2021	$5,714,042,720
(3)	Market Value of Assets on September 30, 2020	
	a. Market Value on September 30, 2020	$4,931,877,371
	b. Adjustment	0
	c. Adjusted Market Value on September 30, 2020	$4,931,877,371
(4)	Cash Flow	
	a. Contributions	$314,368,989
	b. Benefit Payments and DROP Disbursements	(583,408,137)
	c. Refunds to Members	(15,274,821)
	d. Transfers to Expense Fund - Interest Forfeitures	(3,362,180)
	e. Transfers to/from Police/Locals	(398,457)
	f. Investment Expenses	(5,815,000)
	g. Net	($293,889,606)
(5)	Investment Income	
	a. Market total: (2) – (3)c – (4)g	$1,076,054,955
	b. Assumed Rate	7.70%
	c. Amount for Immediate Recognition [(3)c x (5)b] + ([(4)a +(4)b +(4)c + (4)d + (4)e] * (5)b * 0.5) - (4)f	$374,478,685
	d. Amount for Phased-in Recognition (5)a – (5)c	$701,576,270
(6)	Phased-In Recognition of Investment Income	
	a. Current Year: 0.20*(5)d	$140,315,254
	b. First Prior Year	(18,733,249)
	c. Second Prior Year	(50,653,722)
	d. Third Prior Year	15,007,906
	e. Fourth Prior Year	45,187,459
	f. Total Recognized Investment Gain	$131,123,648
(7)	Actuarial Value of Assets on September 30, 2021: (1)c + (4)g + (5)c + (6)f	$5,294,885,093

Schedule B: Actuarial Value of Assets

DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2021
STATE POLICEMEN

(1)	Actuarial Value of Assets on September 30, 2020	
	a. Actuarial Value on September 30, 2020	$359,723,580
	b. Adjustment	0
	c. Adjusted Actuarial Value on September 30, 2020	$359,723,580
(2)	Market Value of Assets on September 30, 2021	$410,079,481
(3)	Market Value of Assets on September 30, 2020	
	a. Market Value on September 30, 2020	$348,882,581
	b. Adjustment	0
	c. Adjusted Market Value on September 30, 2020	$348,882,581
(4)	Cash Flow	
	a. Contributions	$30,687,456
	b. Benefit Payments and DROP Disbursements	(45,557,605)
	c. Refunds to Members	(291,474)
	d. Transfers to Expense Fund - Interest Forfeitures	0
	e. Transfers to/from Police/Locals	510,032
	f. Investment Expenses	0
	g. Net	($14,651,591)
(5)	Investment Income	
	a. Market total: (2) – (3)c – (4)g	$75,848,491
	b. Assumed Rate	7.70%
	c. Amount for Immediate Recognition	
	[(3)c x (5)b] + ([(4)a +(4)b +(4)c + (4)d + (4)e] * (5)b * 0.5) - (4)f	$26,299,873
	d. Amount for Phased-in Recognition (5)a – (5)c	$49,548,618
(6)	Phased-In Recognition of Investment Income	
	a. Current Year: 0.20*(5)d	$9,909,724
	b. First Prior Year	(1,334,858)
	c. Second Prior Year	(3,524,396)
	d. Third Prior Year	1,002,248
	e. Fourth Prior Year	3,071,130
	f. Total Recognized Investment Gain	$9,123,848
(7)	Actuarial Value of Assets on September 30, 2021:	
	(1)c + (4)g + (5)c + (6)f	$380,495,711

Schedule B: Actuarial Value of Assets

DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2021
LOCAL EMPLOYEES

(1)	Actuarial Value of Assets on September 30, 2020	
	a. Actuarial Value on September 30, 2020	$8,048,279,759
	b. Adjustment	0
	c. Adjusted Actuarial Value on September 30, 2020	$8,048,279,759
(2)	Market Value of Assets on September 30, 2021	$9,293,003,400
(3)	Market Value of Assets on September 30, 2020	
	a. Market Value on September 30, 2020	$7,809,518,853
	b. Adjustment	0
	c. Adjusted Market Value on September 30, 2020	$7,809,518,853
(4)	Cash Flow	
	a. Contributions	$442,342,543
	b. Benefit Payments and DROP Disbursements	(631,330,002)
	c. Refunds to Members	(36,497,979)
	d. Transfers to Expense Fund - Interest Forfeitures	0
	e. Transfers to/from Police/Locals	(111,575)
	f. Investment Expenses	0
	g. Net	($225,597,013)
(5)	Investment Income	
	a. Market total: (2) – (3)c – (4)g	$1,709,081,560
	b. Assumed Rate	7.70%
	c. Amount for Immediate Recognition	
	[(3)c x (5)b] + ([(4)a +(4)b +(4)c + (4)d + (4)e] * (5)b * 0.5) - (4)f	$592,647,467
	d. Adjustment for Employer Lump Sums	($33,872)
	e. Adjusted Amount for Immediate Recognition (5)c - (5)d	$592,613,595
	f. Amount for Phased-in Recognition (5)a – (5)e	$1,116,467,965
(6)	Phased-In Recognition of Investment Income	
	a. Current Year: 0.20*(5)d	$223,293,593
	b. First Prior Year	(29,735,042)
	c. Second Prior Year	(73,179,710)
	d. Third Prior Year	20,070,608
	e. Fourth Prior Year	59,966,585
	f. Total Recognized Investment Gain	$200,416,034
(7)	Actuarial Value of Assets on September 30, 2021:	
	(1)c + (4)g + (5)e + (6)f	$8,615,712,374

Schedule B: Actuarial Value of Assets

DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2021
TOTAL - ALL GROUPS

(1)	Actuarial Value of Assets on September 30, 2020	
	a. Actuarial Value on September 30, 2020	$13,491,175,705
	b. Adjustment	0
	c. Adjusted Actuarial Value on September 30, 2020	$13,491,175,705
(2)	Market Value of Assets on September 30, 2021	$15,417,125,601
(3)	Market Value of Assets on September 30, 2020	
	a. Market Value on September 30, 2020	$13,090,278,805
	b. Adjustment	0
	c. Adjusted Market Value on September 30, 2020	$13,090,278,805
(4)	Cash Flow	
	a. Contributions	$787,398,988
	b. Benefit Payments and DROP Disbursements	(1,260,295,744)
	c. Refunds to Members	(52,064,274)
	d. Transfers to Expense Fund - Interest Forfeitures	(3,362,180)
	e. Transfers to/from Police/Locals	0
	f. Investment Expenses	(5,815,000)
	g. Net	($534,138,210)
(5)	Investment Income	
	a. Market total: (2) – (3)c – (4)g	$2,860,985,005
	b. Assumed Rate	7.70%
	c. Amount for Immediate Recognition	
	[(3)c x (5)b] + ([(4)a +(4)b +(4)c + (4)d + (4)e] * (5)b * 0.5) - (4)f	$993,426,025
	d. Adjustment for Employer Lump Sums	($33,872)
	e. Adjusted Amount for Immediate Recognition (5)c = (5)d	$993,392,153
	f. Amount for Phased-in Recognition (5)a – (5)e	$1,867,592,852
(6)	Phased-In Recognition of Investment Income	
	a. Current Year: 0.20*(5)d	$373,518,571
	b. First Prior Year	(49,803,149)
	c. Second Prior Year	(127,357,828)
	d. Third Prior Year	36,080,762
	e. Fourth Prior Year	108,225,174
	f. Total Recognized Investment Gain	$340,663,530
(7)	Actuarial Value of Assets on September 30, 2021:	
	(1)c + (4)g + (5)e + (6)f	$14,291,093,178

Schedule B: Actuarial Value of Assets

DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2021

Date	Investment Gain/(Loss)	Amount Recognized	Remaining Balance as of 9/30/2021
9/30/2017	$541,125,873	$541,125,873	$0
9/30/2018	180,403,814	144,323,048	36,080,766
9/30/2019	(636,789,142)	(382,073,484)	(254,715,658)
9/30/2020	(249,015,747)	(99,606,298)	(149,409,449)
9/30/2021	1,867,592,852	373,518,571	1,494,074,281

Schedule C: Summary of Receipts & Disbursements

SUMMARY OF RECEIPTS AND DISBURSEMENTS
FOR THE YEAR ENDING SEPTEMBER 30, 2021

Receipts for the Period		
Contributions:		
Members	$286,395,890	
Employers	501,003,098	
Total		$787,398,988
Investment Income*		2,864,950,149
TOTAL		$3,652,349,137
Disbursements for the Period		
Benefit Payments		($1,240,738,391)
Refunds to Members		(52,064,274)
DROP Distributions		(19,557,353)
Miscellaneous:		
Transfers to Plant Fund	$0	
Transfers to Expense Fund-Interest Forfeitures	(3,362,180)	
Transfers to Expense Fund-Investment Expenses	(4,001,905)	
Transfers to Pre-retirement Death Benefit Fund	(5,778,238)	
Unit Withdrawal	0	
TOTAL		(13,142,323)
TOTAL		($1,325,502,341)
Excess of Receipts Over Disbursements		$2,326,846,796
Reconciliation of Asset Balances		
Market Value of Assets as of September 30, 2020		$13,090,278,805
Adjustment		$0
Excess of Receipts Over Disbursements		$2,326,846,796
Market Value of Assets as of September 30, 2021		$15,417,125,601

*Net of $1,812,852 in investment expenses.

Schedule D: Outline of Actuarial Assumptions & Methods

The assumptions and methods used in the valuation were selected based on the actuarial experience study prepared as of September 30, 2020, adopted by the Board on September 14, 2021.

INVESTMENT RATE OF RETURN: 7.45% per annum, compounded annually, including price inflation at 2.50%.

SALARY INCREASES: Representative values of the assumed annual rates of future salary increases are as follows and include wage inflation at 2.75% per annum:

STATE AND LOCAL EMPLOYEES

Service	Annual Rate *
0	6.00 %
1-5	4.25
6-10	4.00
11-15	3.75
16-19	3.50
20 & Over	3.25

STATE POLICEMEN

Service	Annual Rate *
0-3	7.75 %
4-5	7.50
6	6.25
7-10	5.50
11-14	5.25
15-17	4.75
18-19	4.50
20 & Over	4.00

** Includes wage inflation at 2.75% per annum.*

Schedule D: Outline of Actuarial Assumptions & Methods

SEPARATIONS FROM ACTIVE SERVICE- STATE AND LOCAL EMPLOYEES

TERMINATION: Representative values of the assumed annual rates of withdrawal are shown in the following tables:

Years of Service	Annual Rate of Withdrawal*	
	Non-FLC Members	FLC Members
0-1	20.00%	16.50%
2	16.75	12.00
3	14.00	11.50
4	13.00	11.00
5	7.50	6.50
6	6.75	6.25
7	6.50	6.00
8	5.75	5.40
9	5.25	5.00
10-12	3.50	3.00
13-14	3.50	2.75
15	3.00	2.25
16-18	2.50	2.00
19	2.00	1.50
20+	1.50	1.50

There are no withdrawal decrements after eligibility for service retirement.

* For local employers with fewer than 25 employees the rates are multiplied by 50%.

Schedule D: Outline of Actuarial Assumptions & Methods

SERVICE RETIREMENT: The assumed annual rates of service retirement are as follows:

REGULAR MEMBERS

	Annual Rate[1]			
	TIER I[2]		TIER II	
Age	1ST Eligible	Subsequent	1ST Eligible	Subsequent
49 & Under	16.50%	10.50%	2.50%	2.50%
50 to 54	20.00	10.50	2.50	2.50
55 to 56	20.00	10.50	10.00	10.00
57	20.00	10.50	20.00	20.00
58	25.00	12.50	20.00	20.00
59	23.00	12.50	20.00	20.00
60	12.00	15.00	50.00	50.00
61	13.00	12.00	50.00	50.00
62	23.00	23.00	50.00	50.00
63	23.00	20.00	23.00	20.00
64	23.00	17.00	23.00	17.00
65	32.00	25.00	32.00	25.00
66	35.00	28.50	35.00	28.50
67	35.00	24.00	35.00	24.00
68 to 79	35.00	21.00	35.00	21.00
80 & Above	100.00	100.00	100.00	100.00

[1]For local employers with fewer than 25 employees we assume that all members retire upon first eligibility for a service retirement benefit.
[2]25% are assumed to retire at age 60 with 25 years of service.

FLC MEMBERS

	Annual Rate[1]			
	TIER I[2]		TIER II	
Age	1ST Eligible	Subsequent	1ST Eligible	Subsequent
48 & Under 49	35.00%	22.00%	2.50%	2.50%
50 51	35.00	22.00	10.00	10.00
52 to 55	35.00	22.00	10.00	10.00
56 to 59	35.00	22.00	20.00	20.00
60	35.00	18.00	20.00	20.00
61	40.00	18.00	15.00	15.00
62	17.00	21.00	17.00	17.00
63	40.00	18.50	40.00	18.50
64	40.00	30.00	40.00	30.00
65	40.00	25.00	40.00	25.00
66	40.00	22.00	40.00	22.00
67-69	40.00	27.00	40.00	27.00
70 to 74	40.00	38.00	40.00	38.00
75 & Above	40.00	30.00	40.00	30.00
	60.00	30.00	60.00	30.00
	100.00	100.00	100.00	100.00

[1]For local employers with fewer than 25 employees we assume that all members retire upon first eligibility for a service retirement benefit.
[2]50% are assumed to retire at age 60 with 25 years of service.

Schedule D: Outline of Actuarial Assumptions & Methods

RATES OF DEATH: Representative values of the assumed annual rates of death are as follows:

Age	Annual Rate of Death*			
	Non FLC State & Local		FLC State & Local	
	Male	Female	Male	Female
20	0.040%	0.014%	0.042%	0.016%
25	0.040	0.011	0.049	0.025
30	0.050	0.017	0.054	0.034
35	0.065	0.027	0.060	0.046
40	0.089	0.043	0.074	0.062
45	0.132	0.066	0.101	0.085
50	0.201	0.099	0.147	0.115
55	0.297	0.145	0.216	0.157
60	0.432	0.218	0.323	0.213
65	0.631	0.344	0.499	0.290
69	0.866	0.512	0.793	0.466

*Base mortality rates as of 2010 before application of the improvement scale

RATES OF DISABILITY: Representative values of the assumed annual rates of disability are as follows:

STATE EMPLOYEES

Age	Annual Rate of Disability*				
	Tier I			Tier II	
	Service < 25		Service >=25		
	Male	Female		Male	Female
20	0.014%	0.013%		0.014%	0.013%
25	0.082	0.075		0.082	0.075
30	0.150	0.138		0.150	0.138
35	0.180	0.200		0.180	0.200
40	0.350	0.300		0.350	0.300
45	0.650	0.500	0.250%	0.650	0.500
50	1.000	0.800	0.250	1.000	0.800
55	1.350	1.100	0.250	1.350	1.100
60	1.200	1.450	0.250	1.200	1.450
65	0.600	0.750	0.250	0.600	0.750
69	0.200	0.270		0.200	0.270

LOCAL EMPLOYEES

	Annual Rate of Disability*				
	Tier I			Tier II	
	Service < 25		Service >=25		
Age	Male	Female		Male	Female
20	0.006%	0.014%		0.006%	0.014%
25	0.033	0.082		0.033	0.082
30	0.060	0.150		0.060	0.150
35	0.120	0.080		0.120	0.080
40	0.290	0.230		0.290	0.230
45	0.470	0.350	0.250%	0.470	0.350
50	0.800	0.600	0.250	0.800	0.600
55	1.300	0.900	0.250	1.300	0.900
60	1.000	0.550	0.250	1.000	0.550
65	0.500	0.160	0.250	0.500	0.160
69	0.100	0.032		0.100	0.032

*There are no disability rates for members with less than 10 years of service.

Schedule D: Outline of Actuarial Assumptions & Methods

STATE POLICE

GROUP 1: MEMBERS HIRED BEFORE JANUARY 1, 2015

Withdrawal			Death		Disability		Retirement		
Years of Service	Rate	Age	Male	Female	Male	Female	10-19	20-24	25+
0	6.00%	20	0.042%	0.016%	0.050%	0.012%			
1-5	6.00	25	0.049	0.025	0.250	0.060			
6-10	1.50	30	0.054	0.034	0.500	0.120			
11-15	1.50	35	0.060	0.046	0.300	0.180			
20+	1.00	40	0.074	0.062	0.200	0.290			
		45	0.101	0.085	0.550	0.440			
		50	0.147	0.115	0.500	0.500			
		55	0.216	0.157					40.00%
		60	0.323	0.213					40.00
		62	0.383	0.241					40.00
		65	0.499	0.290			5.00%	33.00%	33.00
							20.00	35.00	35.00
							20.00	35.00	35.00
							100.00	100.00	100.00

GROUP 2: MEMBERS HIRED AFTER JANUARY 1, 2015

RATES OF WITHDRAWAL

Years of Service	Annual Rate of Withdrawal
0-1	16.50%
2	12.00
3	11.50
4	11.00
5	6.50
6	6.25
7	6.00
8	5.40
9	5.00
10-12	3.00
13-14	2.75
15	2.25
16-18	2.00
19	1.50
20+	1.50

There are no withdrawal decrements after eligibility for service retirement.

Schedule D: Outline of Actuarial Assumptions & Methods

RATES OF SERVICE RETIREMENT

	Annual Rate			
	TIER I[1]		TIER II	
Age	1ST Eligible	Subsequent	1ST Eligible	Subsequent
51 & Under	35.00%	22.00%		
52 to 55	35.00	18.00	15.00%	
56 to 59	40.00	18.00	17.00	15.00%
60	17.00	21.00	40.00	17.00
61	40.00	18.50	40.00	18.50
62	40.00	30.00	40.00	30.00
63	40.00	25.00	40.00	25.00
64	40.00	22.00	40.00	22.00
65	40.00	27.00	40.00	27.00
66	40.00	38.00	40.00	38.00
67	40.00	30.00	40.00	30.00
68-69	40.00	30.00	60.00	30.00
70 to 74	60.00	30.00	100.00	30.00
75 & Above	100.00	100.00		100.00

[1] 50% are assumed to retire at age 60 with 25 years of service.

RATES OF DEATH: Representative values of the assumed annual rates of death are as follows:

	Annual Rate of Death*	
Age	Male	Female
20	0.042%	0.016%
25	0.049	0.025
30	0.054	0.034
35	0.060	0.046
40	0.074	0.062
45	0.101	0.085
50	0.147	0.115
55	0.216	0.157
60	0.323	0.213
65	0.499	0.290
69	0.793	0.466

*Base mortality rates as of 2010 before application of the improvement scale

Schedule D: Outline of Actuarial Assumptions & Methods

RATES OF DISABILITY: Representative values of the assumed annual rates of disability are as follows:

Age	Annual Rate of Disability*				
	Tier I			Tier II	
	Service < 25		Service >=25		
	Male	Female		Male	Female
20	0.014%	0.013%		0.014%	0.013%
25	0.082	0.075		0.082	0.075
30	0.150	0.138		0.150	0.138
35	0.180	0.200		0.180	0.200
40	0.350	0.300		0.350	0.300
45	0.650	0.500	0.250%	0.650	0.500
50	1.000	0.800	0.250	1.000	0.800
55	1.350	1.100	0.250	1.350	1.100
60	1.200	1.450	0.250	1.200	1.450
65	0.600	0.750	0.250	0.600	0.750
69	0.200	0.270		0.200	0.270

DEATH AFTER RETIREMENT: Rates of mortality are according to the Pub-2010 Below-Median Tables, projected generationally using the MP-2020 scale, which is adjusted by 66-2/3% beginning with year 2019:

Group	Membership Table	Set Forward (+)/ Setback (-)	Adjustment to Rates
Non FLC Service Retirees	General Healthy Below Median	Male: +2, Female: +2	Male: 90% ages < 65, 96% ages >= 65 Female: 96% all ages
FLC/State Police Service Retirees	Public Safety Healthy Below Median	Male: +1, Female: none	None
Beneficiaries	Contingent Survivor Below Median	Male: +2, Female: +2	None
Non-FLC Disabled Retirees	General Disability	Male: +7, Female: +3	None
FLC/State Police Disabled Retirees	Public Safety Disability	Male: +7, Female: none	None

Schedule D: Outline of Actuarial Assumptions & Methods

DEATH IN ACTIVE SERVICE BENEFIT: For those eligible for service retirement who die in active service, it is assumed that 70% of beneficiaries will elect the lump sum death benefit, 20% will elect the Option 2 allowance, and 10% will elect the Option 3 allowance.

BENEFITS PAYABLE UPON SEPARATION FROM SERVICE: For active members who separate from service prior to eligibility for a service retirement allowance, the liability is assumed to be the greater of the value of the refund of contributions and the value of the deferred annuity.

UNUSED SICK LEAVE: 1.00% load on service retirement liabilities for active members (No load for Tier II members).

PERCENT MARRIED: 100% of employees are assumed to be married, with the wife 3 years younger than the husband.

ACTUARIAL METHOD: Individual entry age normal cost method. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability.

ASSET METHOD: Actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value.

LIABILITY FOR CURRENT INACTIVE MEMBERS: Member Contribution Balance is multiplied by a factor of 3.0 for vested local employees with incomplete data and by a factor of 1.0 for all non-vested inactive members.

LIABILITY FOR POST-DROP ACTIVE MEMBERS: Members are assumed to retire immediately and receive their accrued benefit.

COLA: No future ad hoc cost of living adjustments (COLAs) are assumed.

FUTURE SERVICE CREDIT: One year of creditable service per year of employment.

Schedule E: Actuarial Cost Method

1. The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 7.45%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to retired members and beneficiaries to obtain the present value of all expected benefits payable to the present group of members and beneficiaries.
2. The employer contributions required to support the benefits of the System are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.
3. The normal contribution is determined using the "individual entry age normal" method. Under this method, a calculation is made to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of each new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.
4. The unfunded accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from the System. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.

Schedule F: Board Funding Policy

FUNDING POLICY OF THE EMPLOYEES' RETIREMENT SYSTEM BOARD OF CONTROL

Effective 9/30/2021

The purpose of the funding policy is to state the overall funding objectives for the Employees' Retirement System of Alabama (System), the benchmarks that will be used to measure progress in achieving those goals, and the methods and assumptions that will be employed to develop the benchmarks.

The Board's funding policy applies to all plans administered by the Board of Control. The funding policy reflects the Board's long-term strategy for stability in funding of the plans.

I. Funding Objectives

The goal in requiring employer and member contributions to the System is to accumulate sufficient assets during a member's employment to fully finance the benefits the member is expected to receive throughout retirement. In meeting this objective, the System will strive to meet the following funding objectives:

- To maintain an increasing funded ratio (ratio of system actuarial value of assets to actuarial accrued liabilities) that reflects a trend of improved actuarial condition. The long-term objective is to attain a funded ratio which is consistent with the fiscal health and long-term stability of the System.
- To maintain adequate asset levels to finance the benefits promised to members and monitor the future demands for liquidity.
- To develop a pattern of contribution rates expressed as a percentage of member payroll or as a dollar amount for employers with no active members as measured by valuations prepared in accordance with applicable State laws and the principles of practice prescribed by the Actuarial Standards Board. In no event will the employer contribution rate be negative.
- To provide intergenerational equity for taxpayers with respect to System costs.

Schedule F: Board Funding Policy

II. Benchmarks

To track progress in achieving the previously outlined funding objectives, the following benchmarks will be measured annually as of the valuation date. The valuation date is the date that the annual actuarial valuation of the System's assets and liabilities is prepared. This date is currently September 30^{th} each year with due recognition that a single year's results may not be indicative of long-term trends:

- **Funded ratio** – The funded ratio, defined as the actuarial value of assets divided by the actuarial accrued liability, should increase over time, before adjustments for changes in benefits, actuarial methods, and/or actuarial assumptions.
- **Unfunded Actuarial Accrued Liability (UAAL) for State Employees and State Police**
  - ➢ **Initial Total UAAL** - The initial total UAAL established as of the initial valuation date (September 30, 2021) for which this funding policy is adopted shall be amortized over a closed period. (A closed amortization period is one which is calculated over a fixed period and at the end of that period, the amount is fully amortized). All gains and losses occurring after the initial valuation date and before September 30, 2028 for State Employees, and September 30,2021 for State Police, with the exception of those due to benefit improvements, shall be included in the remaining initial total UAAL each year and amortized over the remaining closed period.
  - ➢ **New Incremental UAAL** - Each valuation after the initial valuation date will produce a New Incremental UAAL consisting of all benefit changes that have occurred since the previous valuation. Each valuation beginning with the September 30, 2028 valuation for State Employees and the September 30, 2022 valuation for State Police, will produce a New Incremental UAAL consisting of all assumption and method changes and experience gains and/or losses that have occurred since the previous valuation
- **UAAL Amortization Period and Contribution Rates for State Employees and State Police**
  - ➢ The Initial Total UAAL will be amortized over a 27-year closed period for State Employees and a 21-year closed period for State Police.
  - ➢ Except as noted later, each New Incremental UAAL shall be amortized over a closed 20-year period.
  - ➢ Incremental UAAL resulting from plan changes that grant benefit improvements shall be amortized over a period not to exceed 15 years.
  - ➢ Employer Normal Contribution Rate – the contribution rate determined as of the valuation

date each year based on the provisions of Alabama Code Section 36-27-24.

- In each valuation subsequent to the adoption of this funding policy, the required employer contribution rate will be determined by the summation of the employer Normal Contribution Rate, a contribution rate for administrative expenses, a contribution rate for the pre-retirement death benefit fund, the individual amortization rate for each of the New Incremental UAAL bases, and the amortization rate for the remaining initial total UAAL.

- **UAAL and UAAL Amortization Period and Contribution Rates for Local Employers**

  Local employers have assumptions and funding appropriate for their situations as deemed by Actuary and staff

- **UAAL Amortization Period for Employers joining the System after the Implementation of this Funding Policy**

  - For Employers joining the System after the implementation of this Funding Policy, the employer contribution rate shall be computed as the sum of the employer Normal Contribution rate, a contribution rate for administrative expenses, a contribution rate for the pre-retirement death benefit fund and the initial UAAL contribution rate. The initial UAAL contribution rate shall be determined by amortizing the initial UAAL over a closed period equal to the expected future working lifetime of the active membership. This initial amortization period shall not be less than 10 years nor greater than 20 years.

- **Special Consideration**--If the resulting contribution rate will not support the cash flow and projected benefit payment needs of a particular unit or employer, then the RSA staff may approve a more aggressive funding policy for these units or employers. In addition, If the resulting contribution rate is determined to be in excess of the cash flow and projected benefit payment needs of a particular unit or employer, then the RSA staff may approve a less aggressive funding policy for these units or employers.

III. Methods and Assumptions

The actuarial funding method used to develop the benchmarks will be the Entry Age Normal (EAN) actuarial cost method. The actuarial methods and assumptions used will be those last adopted by the Board based upon the advice and recommendation of the actuary. The actuary shall conduct an investigation into the system's experience at least every five years and utilize the results of the investigation to form the basis for those recommendations.

Schedule F: Board Funding Policy

IV. Funding Policy Progress

The Board will periodically have projections of funded status performed to assess the current and expected future progress towards the overall funding goals of the System.

Schedule G: Amortization of Bases

AMORTIZATION SCHEDULE FOR THE INITIAL TOTAL UAL
ON SEPTEMBER 30, 2021

STATE EMPLOYEES

Valuation Date	Balance of Initial UAAL as of 9/30/2021	Amortization Period	Annual Amortization Payment
9/30/2021	**$3,235,144,946**	**27**	**$216,878,236**
9/30/2022	3,259,285,008	26	222,842,387
9/30/2023	3,279,259,354	25	228,970,553
9/30/2024	3,294,593,623	24	235,267,243
9/30/2025	3,304,773,605	23	241,737,092
9/30/2026	3,309,242,147	22	248,384,862
9/30/2027	3,307,395,825	21	255,215,446
9/30/2028	3,298,581,368	20	262,233,871
9/30/2029	3,282,091,809	19	269,445,303
9/30/2030	3,257,162,346	18	276,855,048
9/30/2031	3,222,965,893	17	284,468,562
9/30/2032	3,178,608,290	16	292,291,448
9/30/2033	3,123,123,160	15	300,329,462
9/30/2034	3,055,466,373	14	308,588,523
9/30/2035	2,974,510,095	13	317,074,707
9/30/2036	2,879,036,390	12	325,794,262
9/30/2037	2,767,730,339	11	334,753,604
9/30/2038	2,639,172,645	10	343,959,328
9/30/2039	2,491,831,679	9	353,418,209
9/30/2040	2,324,054,930	8	363,137,210
9/30/2041	2,134,059,812	7	373,123,483
9/30/2042	1,919,923,785	6	383,384,379
9/30/2043	1,679,573,728	5	393,927,449
9/30/2044	1,410,774,522	4	404,760,454
9/30/2045	1,111,116,770	3	415,891,367
9/30/2046	778,003,602	2	427,328,379
9/30/2047	408,636,491	1	439,079,910
9/30/2048	0	0	0

Schedule G: Amortization of Bases

AMORTIZATION SCHEDULE FOR THE INITIAL TOTAL UAL ON SEPTEMBER 30, 2021

STATE POLICE

Valuation Date	Balance of Initial UAAL as of 9/30/2021	Amortization Period	Annual Amortization Payment
9/30/2021	**$309,010,437**	**21**	**$23,844,813**
9/30/2022	308,186,902	20	24,500,546
9/30/2023	306,646,280	19	25,174,311
9/30/2024	304,317,117	18	25,866,604
9/30/2025	301,122,138	17	26,577,936
9/30/2026	296,977,801	16	27,308,829
9/30/2027	291,793,818	15	28,059,822
9/30/2028	285,472,635	14	28,831,467
9/30/2029	277,908,879	13	29,624,333
9/30/2030	268,988,757	12	30,439,002
9/30/2031	258,589,417	11	31,276,074
9/30/2032	246,578,255	10	32,136,166
9/30/2033	232,812,169	9	33,019,911
9/30/2034	217,136,765	8	33,927,958
9/30/2035	199,385,496	7	34,860,977
9/30/2036	179,378,738	6	35,819,654
9/30/2037	156,922,800	5	36,804,695
9/30/2038	131,808,854	4	37,816,824
9/30/2039	103,811,790	3	38,856,787
9/30/2040	72,688,981	2	39,925,348
9/30/2041	38,178,962	1	41,023,295
9/30/2042	0	0	0
9/30/2043	0	0	0
9/30/2044	0	0	0
9/30/2045	0	0	0
9/30/2046	0	0	0
9/30/2047	0	0	0
9/30/2048	0	0	0

Schedule G: Amortization of Bases

**AMORTIZATION SCHEDULE FOR BASE
CLOSED ON SEPTEMBER 30, 2021
DUE TO BENEFIT IMPROVEMENTS**

STATE EMPLOYEES

Valuation Date	Balance of UAAL Due to Benefit Improvements as of 9/30/2021	Amortization Period	Annual Amortization Payment
9/30/2021	**$10,513,204**	**15**	**$1,010,983**
9/30/2022	10,285,455	14	1,038,785
9/30/2023	10,012,936	13	1,067,352
9/30/2024	9,691,548	12	1,096,704
9/30/2025	9,316,864	11	1,126,863
9/30/2026	8,884,107	10	1,157,852
9/30/2027	8,388,121	9	1,189,693
9/30/2028	7,823,343	8	1,222,410
9/30/2029	7,183,772	7	1,256,026
9/30/2030	6,462,937	6	1,290,566
9/30/2031	5,653,860	5	1,326,057
9/30/2032	4,749,016	4	1,362,524
9/30/2033	3,740,294	3	1,399,993
9/30/2034	2,618,953	2	1,438,493
9/30/2035	1,375,572	1	1,478,052
9/30/2036	0	0	0

Schedule G: Amortization of Bases

AMORTIZATION SCHEDULE FOR BASE CLOSED ON SEPTEMBER 30, 2021 DUE TO BENEFIT IMPROVEMENTS

STATE POLICE

Valuation Date	Balance of UAAL Due to Benefit Improvements as of 9/30/2021	Amortization Period	Annual Amortization Payment
9/30/2021	**$264,104**	**15**	**$25,397**
9/30/2022	258,383	14	26,096
9/30/2023	251,537	13	26,813
9/30/2024	243,464	12	27,551
9/30/2025	234,051	11	28,308
9/30/2026	223,180	10	29,087
9/30/2027	210,720	9	29,887
9/30/2028	196,532	8	30,708
9/30/2029	180,466	7	31,553
9/30/2030	162,358	6	32,421
9/30/2031	142,033	5	33,312
9/30/2032	119,302	4	34,229
9/30/2033	93,961	3	35,170
9/30/2034	65,791	2	36,137
9/30/2035	34,555	1	37,129
9/30/2036	0	0	0

Schedule G: Amortization of Bases

AMORTIZATION SCHEDULE FOR TOTAL UAAL
AS OF SEPTEMBER 30, 2021

STATE EMPLOYEES

Year	Projected UAAL	Payment for year Beginning September 30,
2021	$3,245,658,150	$217,889,219
2022	3,269,570,463	223,881,172
2023	3,289,272,290	230,037,905
2024	3,304,285,171	236,363,947
2025	3,314,090,469	242,863,955
2026	3,318,126,254	249,542,714
2027	3,315,783,946	256,405,139
2028	3,306,404,711	263,456,281
2029	3,289,275,581	270,701,329
2030	3,263,625,283	278,145,614
2031	3,228,619,753	285,794,619
2032	3,183,357,306	293,653,972
2033	3,126,863,454	301,729,455
2034	3,058,085,326	310,027,016
2035	2,975,885,667	318,552,759
2036	2,879,036,390	325,794,262
2037	2,767,730,339	334,753,604
2038	2,639,172,645	343,959,328
2039	2,491,831,679	353,418,209
2040	2,324,054,930	363,137,210
2041	2,134,059,812	373,123,483
2042	1,919,923,785	383,384,379
2043	1,679,573,728	393,927,449
2044	1,410,774,522	404,760,454
2045	1,111,116,770	415,891,367
2046	778,003,602	427,328,379
2047	408,636,491	439,079,910
2048	0	0

STATE POLICE

Year	Projected UAAL	Payment for year Beginning September 30,
2021	$309,274,541	$23,870,210
2022	308,445,285	24,526,642
2023	306,897,817	25,201,124
2024	304,560,581	25,894,155
2025	301,356,189	26,606,244
2026	297,200,981	27,337,916
2027	292,004,538	28,089,709
2028	285,669,167	28,862,175
2029	278,089,345	29,655,886
2030	269,151,115	30,471,423
2031	258,731,450	31,309,386
2032	246,697,557	32,170,395
2033	232,906,130	33,055,081
2034	217,202,556	33,964,095
2035	199,420,051	34,898,106
2036	179,378,738	35,819,654
2037	156,922,800	36,804,695
2038	131,808,854	37,816,824
2039	103,811,790	38,856,787
2040	72,688,981	39,925,348
2041	38,178,962	41,023,295
2042	0	0
2043	0	0
2044	0	0
2045	0	0
2046	0	0
2047	0	0
2048	0	0

Schedule H: Summary of Main System Provisions

AS INTERPRETED FOR VALUATION PURPOSES

The Employees' Retirement System of Alabama was established on October 1, 1945. The valuation took into account amendments to the System effective through the valuation date. Act 2019-132 allows local employers that participate in the System to elect to provide Tier I retirement benefits to their Tier II employees, upon approval by the Board of Control, until May 8, 2021, and will be reflected in the valuations prepared for the individual employers. Act 2022-138 removes the deadline for this election effective April 13, 2022. There is a new tier (Tier II) of benefits for all members initially joining the System on and after January 1, 2013. Act 2017-360 revised the definition of "state policemen" to include any employee hired by the Alabama State Law Enforcement Agency after January 1, 2015, who is certified by the Alabama Peace Officers' Standards and Training Commission and performs law enforcement duties. These members pay the same employee contribution rate and receive the same benefits as certified law enforcement officers (FLC) of other state agencies and local employers. The following summary describes the main benefit and contribution provisions of the System as interpreted for the valuation.

1 – DEFINITIONS

Average Final Compensation – the average compensation of a member for:

- Tier 1 - the 3 highest years in the last 10 years of creditable service
- Tier 2 - the 5 highest years in the last 10 years of creditable service

Membership Service – all service rendered while a member of the Retirement System and for which contributions are made.

Creditable Service – the sum of membership service, prior service, and any other previous service established as creditable in accordance with the provisions of the retirement law.

Annuity – payments for life derived from accumulated contributions of a member.

Pension – payments for life derived from the accumulated contributions of an employer.

Retirement Allowance – the sum of the annuity and pension payments.

Schedule H: Summary of Main System Provisions

2 – BENEFITS

MEMBERS CLASSIFIED AS STATE EMPLOYEES

Service Retirement Allowance

Condition for Allowance

Tier I	A retirement allowance is payable upon the request of any member who has completed 25 years of creditable service, (except for employees of local employers who did not elect 25-year retirement), or who has attained age 60 and completed at least 10 years of creditable service.
Tier II	A retirement allowance is payable upon the request of any member who has completed 30 years of creditable service or who has attained age 62 and completed at least 10 years of creditable service (age 56 with 10 years of creditable service for a full-time certified firefighter, police officer or correctional officer).

Amount of Allowance

Tier I	Upon service retirement a member receives a retirement allowance equal to 2.0125% of the member's average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as a full-time certified firefighter, police officer or correctional officer.
Tier II	Upon service retirement a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of creditable service. The benefit is capped at 80% of the member's average final compensation. For a member whose age at retirement is less than age 62 (age 56 for a full-time certified firefighter, police officer or correctional officer), the amount of the allowance will be reduced by 2% for each year that the member's age is less than age 62 (age 56 for a full-time certified firefighter, police officer or correctional officer).

Schedule H: Summary of Main System Provisions

Disability Retirement Allowance

Condition for Allowance	A disability retirement allowance may be granted to a member who has 10 or more years of creditable service and becomes permanently incapacitated for duty before reaching eligibility for service retirement.
Amount of Allowance	
Tier I	Upon retirement for disability, a member receives a retirement allowance equal to 2.0125% of the member's average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as a full-time certified firefighter, police officer or correctional officer.
Tier II	Upon disability retirement a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of creditable service. The benefit is capped at 80% of the member's average final compensation.
Benefits Payable on Separation from Service	Any member who withdraws from service is entitled to receive a return of member contributions with allowable interest. A member who has completed 10 years of creditable service may, after separation from service, continue in the membership of the System and file for service retirement after reaching age 60 (age 62 for Tier II members).
Benefits Payable upon Death in Active Service	In the event of the death of a member eligible for service retirement, the designated beneficiary may elect: (1) to exercise option 2 (spouse) or option 3 (non-spouse beneficiary) as defined below under "Special Privileges at Retirement – All Employees" or (2) to receive a return of member contributions and total interest earned plus a death benefit payable from the pre-retirement death benefit fund equal to the salary on which the member made retirement contributions for the previous fiscal year (October 1 – September 30).* In the event of the death of a member with more than one year of service who is not eligible for retirement, the designated beneficiary shall receive a return of member contributions and total interest earned. Also, the designated beneficiary shall receive an additional death benefit payable from the pre-

retirement death benefit fund equal to the salary on which their retirement contributions were made for the previous fiscal year (October 1 – September 30).*

In the event of a job-related death of a member at any age with less than 1 year of service, the designated beneficiary shall receive the return of member contributions and total earned interest plus a death benefit payable from the pre-retirement death benefit fund equal to the annual earnable compensation of the member at the time death occurs.*

In the event of a non job-related death of a member with less than 1 year of service, the beneficiary shall receive the return of member contributions and total interest earned plus a matching death benefit which is limited to a maximum of $5,000.

* However, if the death occurred more than 180 calendar days after the member's last day in pay status, or if the deceased had applied for a refund of contributions or terminated employment, the lump sum will be the same as if the member had less than one year of service and the death was not job-related.

Deferred Retirement Option Plan (DROP)

A member may elect to participate in the Deferred Retirement Option Plan (DROP) upon completion of at least 25 years of service (at least 30 years for employers that did not elect 25 year retirement) of creditable service (excluding sick leave) and attainment of at least 55 years of age. Under the DROP, the member may defer receipt of a retirement allowance and continue employment for a period not to exceed five years, nor to be less than three years. At the end of this period, the member may withdraw from active service and receive the retirement benefit based on his or her years of service credit at the time of enrollment in the DROP, and also receive a payment for the deferred retirement benefits, employee contributions while participating in the DROP, and interest earned on DROP deposits.

The effect of Act 2011-27 is that no new participants will be allowed to enter DROP with an effective participation date after June 1, 2011.

Schedule H: Summary of Main System Provisions

Member Contributions

Tier I	Prior to October 1, 2011, regular members contributed 5.0% of salary. Full-time certified police officers, firefighters and correctional officers contributed 6.0% of salary. DROP participants continue to contribute during the DROP period, but receive a refund of these contributions and regular interest upon retirement. Beginning October 1, 2011, the contribution rates were increased to 7.25% for regular members and 8.25% for full-time certified police officers, firefighters and correctional officers, for all State employees and for local employees whose employers elect to do so. Beginning October 1, 2012, the contribution rates were increased to 7.50% for regular members and 8.50% for full-time certified police officers, firefighters and correctional officers, for all State employees and for local employees whose employers elect to do so.
Tier II	Regular members contribute 6% of salary and full-time certified firefighters, police officers and correctional officers contribute 7% of salary.
Both	If positive investment performance results in a decrease in the total contribution rate paid by employers and employees participating in the System, the Retirement System of Alabama shall first reduce the employee contribution rate. "Regular Interest" is 4% which is the rate adopted by the Board and applied to the balance in each member's account every year; however, if a member receives a refund of contributions, the interest rate applied to the refund is lower than the 4% regular rate (Based on Section 36-27-16.3(c)(1)).

MEMBERS OF LOCAL EMPLOYERS

Members of local employers generally receive the same benefit structure as State employees, however some benefits must be elected by individual employers. Members whose employers have not yet elected to grant retirement upon completion of 25 years of service must have 30 years of service for retirement before age 60 (For Tier I). These employers have the option of electing 25-year retirement for their Tier I members. Employers may also elect to increase Tier I member contribution rates to 7.5% of payroll for regular members and 8.5% of payroll for FLC members. Employers who have not elected to allow sick leave conversion may still elect to do so. Employers may elect to provide Tier I benefits to their Tier II members, provided the members pay the increased members rates shown above.

Schedule H: Summary of Main System Provisions

Members of the City of Montgomery who elected to remain under the City's retirement plan structure are subject to the conditions and benefit structure of that plan. A brief description of this structure is as follows:

Service Retirement Allowance

Condition for Allowance

Group I	For general municipal employees hired before October 1, 2013, a retirement allowance is payable upon the request of any member who has completed 20 years of creditable service, or who has attained age 65 (25 years or age 62 if hired after October 1, 2005 or elected)
Group II	For members of the fire department or police department of the City, a retirement allowance is payable upon the request of any member who has completed 20 years of creditable service or attained age 62 (25 years or age 55 if hired after October 1, 2005, or 25 years or age 55 with 10 years of creditable service if hired after October 1, 2013)

Amount of Allowance

Group I	**20-year retirement plan:** Upon service retirement a member receives a retirement allowance equal to 2.0% of the member's average final compensation multiplied by the number of years of his creditable service (up to 20 years), and 1% of the member's average final compensation multiplied by the number of years of his creditable service over 20 years. Maximum benefit is 60% of average final compensation. **25-year retirement plan:** Upon service retirement a member receives a retirement allowance equal to 2.0% of the member's average final compensation multiplied by the number of years of his creditable service. Maximum benefit is 100% of average final compensation.
Group II	**20-year retirement plan:** Upon service retirement a member receives a retirement allowance equal to 2.5% of the member's average final compensation multiplied by the number of years of his creditable service (up to 20 years), and 1% of the member's average final compensation multiplied by the number of years of his creditable service over 20 years. Maximum benefit is 60% of average final compensation.

Schedule H: Summary of Main System Provisions

25-year retirement plan: Upon service retirement a member receives a retirement allowance equal to 2.5% of the member's average final compensation multiplied by the number of years of his creditable service. Maximum benefit is 100% of average final compensation.

Age 62 retirement plan: Upon service retirement a member receives a retirement allowance equal to 2.5% of the member's average final compensation multiplied by the number of years of his creditable service. Maximum benefit is 100% of average final compensation. Benefit is reduced by early retirement factor (5/9% for each month annuity start date precedes age 62 but not earlier than age 55).

Employee Retention Incentive Program (ERIP)	An employee is eligible to enter the ERIP plan if he or she is an active employee and has at least 20 years of service (25 years for a 25-year retirement plan participant). The participant can effectively elect to retire up to three years prior to termination, and receive the payments that would have been made as a lump sum (accumulated with 5% interest). Subsequent monthly benefits are based on the benefit used to determine the lump sum.
Preretirement Death Benefits	If the member is eligible for a service retirement, 50% of the accrued benefit, reduced for a 50% joint and survivor annuity. If the member is not eligible for a service retirement benefit, a lump sum of member contributions is payable.
Disability Benefits	If a participant has 10 years of service and becomes permanently disabled he is entitled to immediately receive his monthly accrued benefit, based on his current years of service and current final average earnings.
Separation Benefits	
Group I	Return of contributions if less than 10 years of service. If more than 10 years of service, member is entitled to his accrued benefit payable at age 62 (age 65 for 20-year plan).
Group II	Return of contributions if less than 10 years of service. If more than 10 years of service, member is entitled to his accrued benefit payable at age 55 (age 62 for 20-year plan and Age 62 plan).

Schedule H: Summary of Main System Provisions

MEMBERS CLASSIFIED AS STATE POLICEMEN

Service Retirement Allowance

Condition for Allowance

Tier I	Members hired prior to January 1, 2015: A retirement allowance is payable upon the request of any member who has completed 25 years of creditable service or who has attained age 52 and completed at least 10 years of creditable service. Members hired after January 1, 2015: A retirement allowance is payable upon the request of any member who has completed 25 years of creditable service or who has attained age 60 and completed at least 10 years of creditable service.
Tier II	A retirement allowance is payable upon the request of any member who has completed 30 years of creditable service or who has attained age 56 and completed at least 10 years of creditable service.

Amount of Allowance

Tier I

Members hired prior to January 1, 2015: Upon service retirement a member receives a retirement allowance equal to 2.875% of the member's average final compensation multiplied by the number of years of his creditable service.

A member who has attained 20 or more years of creditable service and retires prior to age 60 is eligible to receive a "bonus service credit" up to 4 years as follows:

- Age 56 or older – bonus service of 4 years reduced by 1 month for each month over the age of 56.
- Age 52 to 56 – bonus service of 4 years.
- Age 52 or less (disability retirement only) – bonus service of 4 years.
- Age 52 or less with 25 or more years of service – bonus service of 4 years.

Members hired after January 1, 2015: Upon service retirement a member receives a retirement allowance equal to 2.0125% of the member's average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as an officer.

Tier II	Members hired prior to January 1, 2015: Upon service retirement a member receives a retirement allowance equal to 2.375% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation. Members hired after January 1, 2015: Upon service retirement a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation. For a member whose age at retirement is less than age 56, the amount of the allowance will be reduced by 2% for each year that the member's age is less than age 56.
Disability Retirement Allowance	
Condition for Allowance	A disability retirement allowance may be granted to a member who has 10 or more years of creditable service or who becomes disabled as a result of his employment in line of duty without regard to his years of creditable service, and who becomes permanently incapacitated, mentally or physically, for the further performance of duty before reaching the minimum age for service retirement.
Amount of Allowance	
Tier I	Members hired prior to January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to 2.875% of the member's average final compensation multiplied by the number of years of his creditable service. Members hired after January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to 2.0125% of the member's average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as a full-time officer.
Tier II	Members hired prior to January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to

2.375% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation.

Members hired after January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation.

Benefits Payable on Separation from Service

Any member who withdraws from service is entitled to receive a return of member contributions with allowable interest. A member who has completed 10 years of creditable service may, after separation from service, continue in the membership of the System and file for service retirement after reaching age 52 (age 56 for Tier II members).

Benefits Payable upon Death in Active Service

In the event of the death of a member who is eligible for service retirement, the designated beneficiary may elect: (1) to exercise option 2 (spouse) or option 3 (non-spouse beneficiary) as defined below under "Special Privileges at Retirement – All Employees" or (2) to receive a return of member contributions and total interest earned plus a death benefit payable from the pre-retirement death benefit fund equal to the salary on which the member made retirement contributions for the previous fiscal year (October 1 – September 30).*

In the event of the death of a member with more than one year of service who is not eligible for retirement, the designated beneficiary shall receive a return of member contributions and total interest earned. Also, the designated beneficiary shall receive an additional death benefit payable from the pre-retirement death benefit fund equal to the salary on which their retirement contributions were made for the previous fiscal year (October 1 – September 30).*

In the event of a job-related death of a member at any age with less than 1 year of service, the designated beneficiary shall receive the return of member contributions and total earned interest plus a death benefit payable from the pre-retirement death benefit fund equal to the annual earnable compensation of the member at the time death occurs.*

Schedule H: Summary of Main System Provisions

In the event of a non job-related death of a member with less than 1 year of service, the beneficiary shall receive the return of member contributions and total interest earned plus a matching death benefit which is limited to a maximum of $5,000.

* However, if the death occurred more than 180 calendar days after the member's last day in pay status, or if the deceased had applied for a refund of contributions or terminated employment, the lump sum will be the same as if the member had less than one year of service and the death was not job-related.

Deferred Retirement Option Plan (DROP)

A member may elect to participate in the Deferred Retirement Option Plan (DROP) upon completion of at least 25 years of creditable service (excluding sick leave) and attainment of at least 52 years of age. Under the DROP, the member may defer receipt of a retirement allowance and continue employment for a period not to exceed five years, nor to be less than three years. At the end of this period, the member may withdraw from active service and receive the retirement benefit based on his or her years of service credit at the time of enrollment in the DROP, and also receive a payment for the deferred retirement benefits, employee contributions while participating in the DROP, and interest earned on DROP deposits.

The effect of Act 2011-27 is that no new participants will be allowed to enter DROP with an effective participation date after June 1, 2011.

Member Contributions

Tier I

Members hired prior to January 1, 2015: Each member contributes 10% of salary. DROP participants continue to contribute during the DROP period, but receive a refund of these contributions with interest upon retirement.

Members hired after January 1, 2015: Each member contributes 8.5% of salary.

Tier II

Members hired prior to January 1, 2015: Each member contributes 10% of salary. DROP participants continue to contribute during the DROP period, but receive a refund of these contributions with interest upon retirement.

Members hired after January 1, 2015: Each member contributes 7% of salary.

3 - SPECIAL PRIVILEGES AT RETIREMENT – ALL MEMBERS

In lieu of the full retirement allowance, any member may, at retirement, elect to receive a reduced retirement allowance equal in value to the full allowance, with the provision that:

Option 1. If the member dies before the annuity payments equal or exceed the present value of the member's annuity at the date of retirement, the balance is paid to a designated beneficiary or to the estate, or

Option 2. After the member's death, the member's allowance is continued throughout the life of the designated beneficiary, or

Option 3. After the member's death, one half of the member's allowance is continued throughout the life of the designated beneficiary, or

Option 4. Some other benefit is paid either to the member or to the designated beneficiary provided such benefit, together with the reduced retirement allowance, is of equivalent actuarial value to his retirement allowance and is approved by the Board of Control.

Partial Lump Sum Option Plan (PLOP). For members retiring on or after October 1, 2019, in addition to selecting Options 1, 2, 3, or 4, the member may also elect to receive a one-time lump-sum distribution in addition to the monthly retirement benefit. The PLOP distribution will be made as a single payment at the time the first monthly benefit is paid. Based on the amount of the PLOP and the member's age, the monthly retirement benefit is actuarially reduced.

Schedule I: Schedule of Membership Data

SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2021

ACTIVE STATE EMPLOYEES

Attained Age	Completed Years of Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total	Payroll
Under 25	401	417	4								822	$25,992,766
25 to 29	552	1,382	271	3							2,208	83,793,092
30 to 34	344	1,208	1,068	210	7	2	1				2,840	123,741,413
35 to 39	280	848	879	753	277	8		2			3,047	147,147,796
40 to 44	208	730	676	686	992	254	4		2	2	3,554	186,696,915
45 to 49	209	639	606	567	819	665	126	5	1	4	3,641	200,683,436
50 to 54	189	561	525	487	692	649	535	150	4	2	3,794	216,217,432
55 to 59	113	470	527	425	555	510	419	500	96	1	3,616	205,656,565
60 to 64	69	325	371	327	416	297	261	315	196	52	2,629	149,778,468
65 to 69	14	81	251	135	161	127	96	78	22	26	991	58,852,586
70 & up	6	38	83	87	57	47	30	32	4	9	393	23,863,428
Total	2,385	6,699	5,261	3,680	3,976	2,559	1,472	1,082	325	96	27,535	$1,422,423,897

Average Age:45.88 Average Service: 11.62

Schedule I: Schedule of Membership Data

SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2021

ACTIVE STATE POLICE

Attained Age	Completed Years of Service											
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total	Payroll
Under 25	6	19	1								26	$1,123,806
25 to 29	6	57	19								82	3,922,577
30 to 34	2	42	48	18							110	5,651,804
35 to 39	2	16	10	57	28						113	6,756,811
40 to 44		13	11	37	61	30	2				154	10,234,914
45 to 49		11	5	12	45	53	14				140	10,384,531
50 to 54	1	12	5	14	28	45	19	3			127	9,077,375
55 to 59		2	3	9	8	4	5	3	1		35	2,773,743
60 & up			1	7	1		1	1			11	893,181
Total	17	172	103	154	171	132	41	7	1		798	$50,818,742

Average Age:41.18 Average Service: 13.11

Schedule I: Schedule of Membership Data

SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2021

ACTIVE LOCAL EMPLOYEES

Attained Age	Completed Years of Service											
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total	Payroll
Under 25	1,872	1,801	37								3,710	$109,439,546
25 to 29	1,260	3,031	1,168	20							5,479	206,505,921
30 to 34	887	2,395	2,270	814	35	2					6,403	270,511,554
35 to 39	700	1,699	1,592	1,543	753	23	5	2			6,316	292,667,334
40 to 44	569	1,453	1,243	1,195	1,387	655	12	2	1	1	6,518	321,200,131
45 to 49	507	1,280	1,112	1,089	1,275	1,312	403	7	1	2	6,988	360,265,292
50 to 54	489	1,280	1,179	986	1,080	1,275	766	207	7	2	7,271	373,840,547
55 to 59	374	994	987	960	974	1,002	562	342	116	6	6,317	316,431,354
60 to 64	182	676	772	665	662	673	403	237	138	65	4,473	220,908,901
65 to 69	104	283	396	269	245	194	122	79	43	49	1,784	84,651,906
70 & up	62	245	192	156	103	102	56	37	16	10	979	39,684,715
Total	7,006	15,137	10,948	7,697	6,514	5,237	2,329	913	322	135	56,238	$2,596,107,201

Average Age: 44.03 Average Service: 9.96

Schedule I: Schedule of Membership Data

SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2021

NUMBER OF SERVICE RETIREMENTS
AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	411	$ 13,189,604	$ 32,091
50 – 54	1,667	56,241,895	33,738
55 – 59	3,351	113,621,531	33,907
60 – 64	7,016	199,940,139	28,498
65 – 69	10,765	264,572,893	24,577
70 – 74	10,084	225,515,322	22,364
75 – 79	6,655	136,372,798	20,492
80 – 84	3,837	75,301,259	19,625
85 – 89	2,056	35,521,233	17,277
90 – 94	795	12,454,844	15,666
95 & Over	195	2,767,640	14,193
Total	46,832	$ 1,135,499,158	$ 24,246

Average Age:69.99

*Includes post-DROP members in suspended status who are also active with a second retirement account.

Schedule I: Schedule of Membership Data

NUMBER OF BENEFICIARIES AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	252	$ 2,873,329	$ 11,402
50 – 54	118	1,779,391	15,080
55 – 59	217	3,739,964	17,235
60 – 64	367	5,983,361	16,303
65 – 69	575	9,101,659	15,829
70 – 74	753	10,608,123	14,088
75 – 79	767	10,553,359	13,759
80 – 84	678	9,058,154	13,360
85 – 89	487	5,679,836	11,663
90 – 94	258	2,642,951	10,244
95 & Over	70	725,442	10,363
Total	4,542	$ 62,745,569	$ 13,815

Average Age: 72.97

Schedule I: Schedule of Membership Data

SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2021

NUMBER OF DISABLED RETIREES
AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	311	$ 4,885,171	$ 15,708
50 – 54	400	7,147,884	17,870
55 – 59	681	11,624,665	17,070
60 – 64	884	13,495,234	15,266
65 – 69	833	11,503,387	13,810
70 – 74	597	8,168,876	13,683
75 – 79	318	3,752,901	11,802
80 – 84	125	1,385,791	11,086
85 – 89	55	666,679	12,121
90 – 94	12	152,877	12,740
95 & Over	3	23,285	7,762
Total	4,219	$ 62,806,750	$ 14,887

Average Age:63.54