Nebraska Public Employees Retirement Systems

Proposal for Actuarial Services – Technical Proposal

Solicitation Number 120961 O5

March 21, 2025

Submitted by: Gabriel, Roeder, Smith & Company
One Towne Square, Suite 800
Southfield, Michigan 48076
www.grsconsulting.com

Bonita J. Wurst, ASA, EA, FCA, MAAA
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| P: 800.521.0498 | www.grsconsulting.com

March 21, 2025

Ms. Connie Heinrichs and Ms. Brook Taylor
Procurement Contract Officers
State Purchasing Bureau
1526 K. Street, Suite 130
Lincoln, Nebraska 68508

Re: GRS' Response to Request for Proposal for Actuarial Services Solicitation #120961 O5

Dear Ms. Heinrichs and Ms. Taylor:

Gabriel, Roeder, Smith & Company (GRS) is very pleased to have this opportunity to submit a Proposal to provide professional actuarial services to the Nebraska Public Employees Retirement Systems (NPERS). The attached Proposal sets forth our understanding of the work to be performed and the qualifications and capabilities of the consultants and resources of GRS.

GRS offers the NPERS the opportunity to work with the nation's premier provider of actuarial consulting services to the public sector community and to partner with an actuarial team that excels in communicating complex items in terms that are understandable to all interested parties. GRS has been in business since 1938 and has a nationally renowned reputation, an excellent research center that specializes in public sector benefit programs and a clear understanding of the issues public retirement systems face across the nation. The employees of GRS are the company's shareholders. As shareholders, our employees have a stake in providing the best possible service and the most independent consulting advice possible.

GRS is the prominent provider of actuarial and consulting services to the public sector community in the country. As the Public Sector Leader, we serve more than 1,000 public sector retirement systems and healthcare programs, including 41 statewide public pension retirement systems, 28 of which have 50,000 or more members. The location of our clients ranges from Rhode Island to Hawaii and from Minnesota to Texas.

GRS has previous experience with the NPERS plans as GRS completed a full replication audit in 2022. If we are awarded this engagement, we will be able to get a jump start on the actuarial work since the plans are familiar to us.

GRS has an exceptional reputation for quality work and commitment to the public sector community. We also have a long-standing reputation for unbiased presentation of facts. Our role is to present impartial information and consulting advice so that governments and boards can make informed decisions.

We believe that GRS' proposed client service team is unmatched by any of our competitors. We have assembled a GRS team that is the perfect match for the NPERS. The consultants that we are proposing have extensive experience providing actuarial consulting to public sector retirement systems across the country which brings a national perspective to their consulting.

We believe there are four key qualification areas that you will want to look for in your actuarial firm. Our Proposal will demonstrate GRS' qualifications in each of these four areas:

- ***Knowledge of the Issues and the Services*** – Our 85+ year reputation for providing sound, technically proficient, independent advice is evidenced by the over 1,000 public sector clients we serve, of which the majority have been clients for more than 30 years. GRS retains clients for long periods of time because we consistently demonstrate knowledge, expertise, timeliness and capabilities that exceed those of our competitors.
- ***Communication*** – Given the vast experience and expertise of our client service team, we believe strongly that we will be able to communicate effectively with the NPERS staff, its Executive Director and the Board. Our work often requires us to speak in front of governing bodies, such as legislatures and city councils, as well as in front of labor and other employee groups. We communicate our results and recommendations in clear, jargon-free terms to maximize understanding by all parties.
- ***Depth in the Issues*** – The NPERS will want the benefit of knowing what other similar public retirement systems are doing and currently experiencing, not only in your region, but across the country, as well. In particular, we can provide the NPERS with knowledge and consulting on the emerging financial and benefit related trends, and the ways in which the NPERS can prepare and respond to these issues as they emerge. GRS is uniquely qualified to fill this role. We serve more public sector retirement systems than any other firm. As the nation's leading consultant to public sector retirement systems, GRS offers consulting expertise and technological capabilities that specifically focus on the needs of public sector employee benefit plans.
- ***Sound and Integrated Approach*** – Our consulting team's depth of expertise in retirement benefit consulting results from strong actuarial science credentials, many years of experience with benefit related government finance issues, specific experience with public sector clients similar to the NPERS, and access to GRS' state-of-the-art technology and research resources. We will work with the NPERS to bring forward solutions that respect the interests of the members, the employers, and the NPERS.

If we are awarded this engagement, we intend to negotiate in good faith with the NPERS to reach an agreement on contract terms as expeditiously as possible. As the nation's largest provider of actuarial services to public entities, we have negotiated mutually acceptable contract terms with our other clients in support of similar opportunities. We expect to also successfully reach agreement with the NPERS on acceptable contract terms for this opportunity.

Bonita J. Wurst and Sheryl L. Christensen are authorized to represent GRS in all matters related to this proposal.

Bonita J. Wurst
277 Coon Rapids Boulevard, Suite 212
Coon Rapids, Minnesota 55433
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Sheryl L. Christensen
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Coon Rapids, Minnesota 55433
Phone: 763.710.9158
sheri.christensen@grsconsulting.com

Judith A. Kermans, our President and CEO, is authorized to legally bind the firm.

Judith A. Kermans
One Towne Square, Suite 800
Southfield, Michigan 48076
Phone: 248.799.9000 ext. 1125
judy.kermans@grsconsulting.com

We trust that this response conveys the depth of our interest in serving the NPERS, our commitment to delivering services of the highest quality, and the strength of our capability.

If you have any questions on our response or need additional information, please feel free to contact Bonita J. Wurst or Sheryl L. Christensen.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, FCA, MAAA
Senior Consultant

Sheryl Christensen

Sheryl L. Christensen, FSA, EA, FCA, MAAA
Senior Consultant

Judith A. Kermans

Judith A. Kermans, EA, FCA, MAAA
President and CEO

CONTRACTUAL AGREEMENT FORM

BIDDER MUST COMPLETE THE FOLLOWING

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

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

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

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

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

THIS FORM MUST BE SIGNED MANUALLY IN INK OR BY DOCUSIGN

COMPANY:	Gabriel, Roeder, Smith & Company
ADDRESS:	One Towne Square, Suite 800 - Southfield, Michigan 48076
PHONE:	248.799.9000 ext. 1125
EMAIL:	judy.kermans@grsconsulting.com
BIDDER NAME & TITLE:	Judith A. Kermans, President and CEO
SIGNATURE:	Judith A. Kermans
DATE:	March 20, 2025

VENDOR COMMUNICATION WITH THE STATE CONTACT INFORMATION (IF DIFFERENT FROM ABOVE)	
NAME:	Sheryl Christensen
TITLE:	Senior Consultant
PHONE:	763.710.9158
EMAIL:	sheri.christensen@grsconsulting.com

SECTION I

CORPORATE OVERVIEW

Corporate Overview

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

Gabriel, Roeder, Smith & Company (GRS) was incorporated on October 2, 1962 from a merger of A. G. Gabriel & Company, a sole proprietorship that was established in 1938, and another younger sole proprietorship, Roeder & Company. In 1995, the company merged with Kruse, O'Connor & Ling, a Florida based consulting firm.

In 2015, the company formed a health & welfare consulting subsidiary, Gabriel, Roeder, Smith & Company Health and Welfare Consulting, LLC from its existing health and welfare practice. For administrative and operating efficiency, both Gabriel, Roeder, Smith & Company and Gabriel, Roeder, Smith & Company Health and Welfare Consulting, LLC are now wholly owned subsidiaries of Gabriel, Roeder, Smith & Company Holdings, Inc., a private Michigan corporation.

We are headquartered in Southfield, Michigan with additional offices in Rockford, Michigan; Colorado; Florida; Illinois; Minnesota and Texas.

Gabriel, Roeder, Smith & Company (Headquarters)
One Towne Square, Suite 800
Southfield, Michigan 48076
www.grsconsulting.com

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

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

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

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

Gabriel, Roeder, Smith & Company is a national actuarial and benefits consulting services leader that has served the public sector for 85+ years. We are not a publicly held corporation; however, we would be happy to provide you with our audited financial statements provided they are kept confidential. As a point of reference, 100% of our revenues come from services to public sector benefits plans. As of our latest financial report dated December 31, 2024:

- GRS has nominal debt and substantial cash reserves on its balance sheet.
- GRS has access to a $2.6 million line of credit from JPMorgan Chase Bank, a bank with which GRS has had a more than 40-year relationship.

Please see the following page for a letter of reference from our bank.

We are fully committed to serving the public sector for many years to come. With over 1,000 public sector clients served by seven offices, GRS is confident of its long-term viability.

We are unaware of any judgments, pending or expected litigation, or other real or potential financial reversals which might materially affect the viability or stability of GRS.

GRS practice areas include pension, OPEB, defined benefit plan administration, and client software; all of which comprise core competencies for GRS. Table 1 below illustrates the services we provide.

Table 1: Actuarial and Benefits Consulting Services

Pension and OPEB Plans	
Actuarial Services	**Best Practice Benefit Design**
Valuations	Defined Benefit
Audits	DB/DC Hybrid
Risk Management	Cash Balance
Funding Policy	Adjustable Pension Plan
Experience Studies	Benefit Adequacy Studies
Asset/Liability Studies	Benefit Policy Development
Legislative and Regulatory	**Client Software**
Cost Impact Studies	GRS Foresight™
GASB Standards Consulting	GRS Snapshot™
Research and Surveys	GRS Trendline™
	GRS Advantage™: Client Services Website
	Exclusion Ratio Calculator
	415 Screening Tool
Defined Benefit Plan Administration	
Core Services	**Client Software**
Benefit Calculations	Plan Sponsor Portal
Data Housing	Participant Benefit Estimator
Call Center	
Communications	

GRS is the only firm that has been dedicated to serving public sector plans since its inception. Public sector work is not a sideline for our primary work, it is our primary work. With 1,000 clients in nearly 50 states, we provide actuarial and benefits consulting services to more public sector clients than any other firm in the country.

The following is representative of our client base:

- Served 1,000 actuarial clients covering pension and OPEB plans.
- 41 statewide retirement systems covering a total of over 7 million participants and nearly $1 trillion in assets.
- 28 statewide retirement systems with 50,000 or more participants.
- 26 statewide retirement systems with more than $10 billion in assets

A full list of our retainer clients is in Appendix B. We have been associated with more than half of our clients for at least 30 years, many for more than 50 years and some for more than 85 years. As far as we know, none of our competitors can make this latter claim. We believe that our clients' long association with our company results from our focus on technological innovation, research and employee professional growth efforts solely focused on managing the challenges faced by the public sector. This means that 100% of our talent is directed to serving public sector benefit plans. We are confident none of our competitors offer the same level of expertise and resources.

We are an employee-owned corporation that is independent of banks, accounting firms, insurance companies, brokerage firms, and multinational corporations. ***This means GRS can provide NPERS with totally independent and unbiased advice and service.*** GRS has 127 employees, including 66 credentialed actuaries and consultants with decades of benefits experience. All of our employees are involved in serving public sector agencies, from consultants to administrative staff.

CHASE

John A. York
Vice President
Commercial Banking

March 18, 2025

Subject: Gabriel, Roeder, Smith & Company's RFP Response

To Whom It May Concern,

This letter is intended to serve as a reference to support Gabriel, Roeder, Smith & Company's response to an RFP.

Gabriel, Roeder, Smith & Company ("the Company") has been a client of JPMorgan Chase Bank, NA ("Chase Bank" or "the Bank") and its predecessor organizations for over 60 years. Chase Bank's relationship with the Company consists of providing banking services including depository and lending activities. The Company maintains average balances with Chase Bank in the low-to-mid seven figure range and has a line of credit in the low seven figure range that has the ability to issue irrevocable letters of credit up to the low seven figure range.

The relationship Chase Bank has with the Company is in good standing and all accounts have been handled as agreed.

If you have any questions, please contact me.

Sincerely,

John A. York

John A. York
Vice President

JPMorgan Chase Bank, NA | 1116 W. Long Lake Rd, Floor 2, Bloomfield Hills, MI 48302
T: 248 839 0125 | john.york@chase.com | chase.com/commercialbanking

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

No such changes are anticipated.

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

Services for the Nebraska Public Employees Retirement Systems will be provided from our Minneapolis and Dallas offices, located below.

Minneapolis	Dallas
277 Coon Rapids Blvd. NW, Suite 212	5605 N. MacArthur Blvd., Suite 870
Coon Rapids, Minnesota 55433	Irving, Texas 75038
800.521.0498	469.524.0000

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

GRS completed a full replication audit of the 2021 actuarial valuation results of the five NPERS plans, with work concluding in 2022. Our contract for this work was executed on September 29, 2021 and signed by Randy Gerke of the Nebraska Public Employees Retirement Systems.

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

No such relationship has existed.

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

No such relationship exists.

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

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

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

   None.

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

   The bidder should address the following:

   i. **Provide narrative descriptions to highlight the similarities between the bidder's experience and this Solicitation. These descriptions should include:**
      a) **The time period of the project,**
      b) **The scheduled and actual completion dates,**
      c) **The bidder's responsibilities,**
      d) **For reference purposes, a customer name (including the name of a contact person, a current telephone number, a facsimile number, and e-mail address); and**
      e) **Each project description should identify whether the work was performed as the prime Vendor or as a subcontractor. If a bidder performed as the prime Vendor, the description should provide the originally scheduled completion date and budget, as well as the actual (or currently planned) completion date and actual (or currently planned) budget.**

   ii. **Bidder and Subcontractor(s) experience should be listed separately. Narrative descriptions submitted for Subcontractors should be specifically identified as subcontractor projects.**

   iii. **If the work was performed as a subcontractor, the narrative description should identify the same information as requested for the bidders above. In addition, subcontractors should identify what share of contract costs, project responsibilities, and time period were performed as a subcontractor.**

   iv. **Additional corporate experience must be completed on Attachment C.**

GRS Corporate Experience

Name	Time Period	Scheduled and Actual Completion Dates	GRS Responsibilities (No Subcontractors)	Reference	Project Description	Original and Actual Budget
Minnesota State Retirement System (MSRS)	July 2024 to November 2024	November 26, 2024 scheduled and actual completion	GRS is the retained actuary for MSRS	Ms. Erin Leonard Executive Director 60 Empire Drive, Suite 300 St. Paul, Minnesota 55103 Phone: (651) 284-7848 E-mail: erin.leonard@msrs.us	Actuarial funding and GASB 67/68 valuations of MSRS' five plans	$152,000 (original and actual)
North Dakota Public Employees Retirement System (NDPERS)	August 2024 to December 2024	October 23, 2024 (funding) and December 31, 2024 (GASB 67/68) scheduled and actual completion	GRS is the retained actuary for NDPERS	Ms. Rebecca Fricke Executive Director 1600 East Century Avenue, Suite 2 Bismarck, ND 58502-1657 Phone: (701) 328-3978 Email: rfricke@nd.gov	Actuarial funding and GASB 67/68 valuations of NDPERS' three plans; GASB 67/68 reports include proportionate share calculations for the System's 500+ employers	$126,750 (original and actual)
Public Employee Retirement Association of Minnesota (PERA)	February 2022 to May 2022	May 31, 2022 scheduled and actual completion	GRS is the retained actuary for PERA	Mr. Doug Anderson Executive Director 60 Empire Drive, Suite 200 St. Paul, Minnesota 55103 Phone: (651) 201-2690 E-mail: doug.anderson@mnpera.org	Cost impact of various changes in the annual post-retirement benefit increase for PERA's three plans; 30 cost studies were completed in total.	$45,000-50,000 budget $46,147 actual

Additional corporate experience is provided in Attachment C, as requested, beginning on page 24 of this proposal.

i. **SUMMARY OF BIDDER'S PROPOSED PERSONNEL/MANAGEMENT APPROACH. The bidder should present a detailed description of its proposed approach to the management of the project.**

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

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

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

We use a "client service team" approach in order to leverage our resources in the most effective and efficient way. This approach ensures that work is performed at the most appropriate level so that we deliver services to the NPERS at the lowest possible cost without compromising quality. It also ensures that a number of associates are familiar with the NPERS account, preventing any disruption to the services provided to the NPERS.

We propose the following team for the NPERS:

Bonita J. Wurst, ASA, EA, FCA, MAAA, will serve as co-lead actuary for the NPERS. Bonnie is a Senior Consultant and Team Leader in GRS' Minneapolis, Minnesota office. She has more than 30 years of actuarial and consulting experience. Bonnie has served public sector clients located across the country, with current clients in Illinois, Indiana, Minnesota, and North Dakota. Bonnie consults to statewide, large municipal, and church-sponsored retirement systems. Her actuarial experience covers pension and OPEB actuarial valuation services, funding projections, plan design studies, experience studies, plan merger and implementation consulting and benefit administration services.

Sheryl L. Christensen, FSA, EA, FCA, MAAA, will serve as co-lead actuary for the NPERS. Sheri is a Senior Consultant in GRS' Minnesota office. She has more than 30 years of actuarial and consulting experience. Sheri has served clients in Delaware, Indiana, Minnesota, New York, North Dakota, South Dakota and Wisconsin. During Sheri's career, she has worked with statewide and municipal retirement systems, church plans, not-for-profit organizations, and corporate plans. Sheri's areas of expertise include traditional and hybrid defined benefit pension plans and retiree health care benefits. Her work covers valuations, actuarial audits, cost analyses for proposed plan and/or assumption changes, experience studies, funding projections, and service purchase calculations.

As co-lead actuaries, Bonnie and Sheri will be the primary contact for the NPERS staff. They will both be responsible for all projects, ensuring quality work, timely delivery and results that are clearly communicated to both the NPERS staff and the Retirement Board.

James D. Anderson, FSA, EA, FCA, MAAA, will serve as peer review actuary for the NPERS, and co-presented the most recent audit of NPERS delivered in March 2022 to the Board. Jim is a Senior Consultant in GRS' Grand Rapids (Rockford), Michigan office. He has more than 30 years of actuarial and benefits consulting experience. Jim has served public sector clients located across the country, and currently serves statewide clients in Virginia and Wisconsin. His areas of expertise include plan design, funding, accounting, and administration and communication of defined benefit plans, defined contribution plans, and post-retirement medical plans. Jim has significant experience providing assumption reviews, experience studies, cash flow projections, and actuarial audits.

As peer review actuary, Jim Anderson will bring significant experience to the NPERS team. In addition, **Jim was a key member of the GRS team that completed the full replication audit of the 2021 actuarial valuation results of the five NPERS plans; GRS' prior experience with the NPERS plans on this audit will allow GRS to get a head start on the replication valuations.**

Joseph Newton, FSA, EA, FCA, MAAA, will serve as support actuary for the NPERS. Joe is a nationally recognized public sector actuary who works with numerous statewide, regional, and local retirement systems and is located in GRS' Dallas, Texas office. He has more than 20 years of actuarial and benefits consulting experience for both traditional and cash balance pension plans. Joe's clients are located in Colorado, Hawaii, Rhode Island, South Carolina, Kentucky, and Texas. Joe is also a member of the GRS Office of the Chief Actuary. In this capacity, he provides strategic thought leadership to public sector clients as well as ensuring that service is being provided at the highest level by all GRS employees.

Janie Shaw, ASA, EA, MAAA, will serve as support actuary for the NPERS. Janie is a consultant in the GRS Dallas, Texas office. She has 14 years of public sector pension consulting experience. Janie has experience working with statewide and municipal retirement systems in multiple states including Kentucky, Michigan, New Mexico, North Carolina, Oklahoma, Texas, and Utah. Janie's actuarial consulting experience includes annual valuation services for both traditional and cash balance pension plans. She currently consults on two large statewide cash balance retirement plans, with significant experience on funding policy and benefit plan design for these systems.

As support actuaries, Joe Newton and Janie Shaw will bring their extensive experience with cash balance plans to the NPERS team. Joe's experience on a national level, as GRS' Pension Market Leader, member of GRS' Office of the Chief Actuary and leadership within the National Association of State Retirement Administrators (NASRA) provides strategic thought leadership to public sector clients.

References for all team members are provided in Appendix A.

Co-Lead Approach to Actuarial Services

GRS has had much success with a co-lead approach to providing actuarial services. The Co-Lead approach assigns two actuaries to manage the account, Bonnie Wurst and Sheri Christensen, with both sharing in all of the responsibilities typically held by a single lead consulting actuary. This approach allows the NPERS to have more direct senior contact and receive a more seasoned and proactive consulting experience. Further, this allows our actuaries to have a broader client base, while keeping an appropriate client load, and permits more flexibility around meetings and presentations, as well as for stronger relationships. In addition, the transition plan, if one is ever needed, is already in place.

Bonnie and Sheri are supported by a fully-staffed team, and no subcontractors will be used for this contract. Fully-staffed teams have senior consultants, consultants, senior analysts, analysts, and administrative staff, all dedicated to your account. The key members of your team —all experienced consultants — will give direction to a staff of associates selected according to the appropriate levels of experience and expertise for the project at hand. It is important to GRS that our clients are provided with excellent and timely service.

Each team has access to a full complement of technology resources which include network servers (including virtual private network capabilities), computer equipment, and actuarial and business software. These resources allow team members to work independently or together from any location.

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

i. name, address, and telephone number of the subcontractor(s);
i. specific tasks for each subcontractor(s);
ii. percentage of performance hours intended for each subcontract; and
iii. total percentage of subcontractor(s) performance hours

We will not use a subcontractor on this project. We partner with firms only in cases when either Gabriel, Roeder, Smith & Company or the partner bring a specialized set of services or skills not otherwise available at the firm. For public sector pension and OPEB work we do not use subcontractors.

By not partnering with another firm, our client is assured that Professional Standards and our internal Code of Ethics policies will be enforced.

Additional benefits for the client include:

- Our quality and peer review process are under our control. When our work is audited by other firms, those firms will not be engaged in providing services for this engagement.
- You can be assured that our advice is only our own and unbiased towards all stakeholders and is not in any way influenced by another firm.
- Our clients can be assured that GRS will only provide services that it is qualified to provide.
- We are a fee for service firm (we bill based on time and expense incurred). Our clients can be assured that our advice is impartial since we do not receive any revenue other than for work completed and delivered to our client.

SECTION II

TECHNICAL RESPONSE

Technical Response

a. Understanding of the Project Requirements

We understand the requirements of the assignment to include:

1. Original Contractual Agreement Form signed manually in ink or by DocuSign;
2. Clarity and responsiveness;
3. Completed Corporate Overview, including Attachment C – Additional Corporate Experience;
4. Completed Sections II through VI;
5. Completed Attachment A – Mandatory Qualification Certification and Questionnaire,
6. Completed Technical Response, including Attachment B – Technical Approach; and
7. Completed Cost Sheet.

b. Attachment A: Mandatory Qualifications

Attachment A is provided on the following page.

ATTACHMENT A

Mandatory Qualification Certification and Questionnaire

Request for Proposal Number 120961 O5

All bidders are required to complete this attachment.

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

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

__X__ Yes. _____ No.

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

__X__ Yes. _____ No.

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

__X__ Yes. _____ No.

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

__X__ Yes. _____ No.

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

__X__ Yes. _____ No.

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

__X__ Yes. _____ No.

March 22, 2025	Gabriel, Roeder, Smith & Company
Date	Name of firm
Judith A. Kermans, President & CEO	Judith A. Kermans
Name and title of individual signing for the firm.	Signed Manually in Ink or by DocuSign

c. Attachment B: Proposed Technical Approach

Attachment B is provided on the following pages.

ATTACHMENT B

Technical Approach

Request for Proposal Number 120961 O5

Bidder Name: Gabriel, Roeder, Smith & Company

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

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

TECHNICAL APPROACH
1. Describe bidder's understanding of the Scope of Work for this RFP.

Bidder response:

We understand the State of Nebraska (State), Department of Administrative Services (DAS), Materiel Division, State Purchasing Bureau (SPB), is issuing this Request for Proposal (RFP) Number 120961 O5 for the purpose of selecting a qualified bidder to provide the following Actuarial Services for the Nebraska Public Employees Retirement Systems (NPERS):

1. Consulting Services
2. Valuation Services
3. Governmental Accounting Standards Board (GASB) Services
4. Projection Services
5. Actuarial Experience Study
6. Benefit Adequacy Study
7. Supplemental Services

GRS has been providing all of the requested services for over 85 years. Based on our experience with 41 statewide retirement systems and 1,000 local governments, we provide more year end reporting for public sector clients than any other consulting firm in the country. Virtually all of the statewide systems we work on, as well as local municipalities, require timely and accurate information for the System's annual financial report. This information is typically needed within a month or two after the close of the fiscal year. This requires reconciling the valuation data, producing data schedules, reviewing financial information, computing actuarial liabilities and contribution requirements as well as providing the various disclosure requirements all in a short period of time. Since all of our valuation software and technology tools have been designed specifically for public sector clients, we have the capability of providing all of the necessary information for year-end reporting in a fast and efficient manner.

At some actuarial and benefits consulting firms, the provision of consulting services is secondary to completion of the annual actuarial valuation. In contrast, at GRS we consider the provision of retirement consulting services to be equally as important as the actuarial valuation itself. We focus on providing real value to our clients by integrating pension funding and accounting into their overall business and financial plans (as compared to merely "running the numbers"). We view the provision of consulting services as making our clients' lives easier and providing them with complete information such that they will be able to make informed decisions, and anticipate events that may impact this process.

2. Describe bidder’s approach for providing Actuarial Consulting Services for public pension funds.
Bidder response: We view the Public Employees Retirement Board and Staff as policy makers and managers; as your consulting actuaries, we serve as your trusted technical and strategic advisors. Our continuing objective is to remain a trusted advisor to clients and to continue to partner with them as risk managers and subject matter experts. We view the provision of consulting services as making our clients' lives easier and providing them with complete information such that they will be able to make informed decisions, and anticipate events that may impact this process. A key building block to our approach is the integration of pension funding and accounting into overall business and financial plans (as compared to merely “running the numbers”). GRS emphasizes accountability, transparency, education, risk management and honesty in its work for our clients. We will make sure decision makers are able to base their decisions on broad understanding of not only the top line numbers, but their limitations, their risks, what strategies have been implemented and how the System will react in adverse scenarios. We will also hold ourselves accountable to previous estimates and provide transparent discussions on either (1) how consistent the new information is, or (2) why the new information is different. As your partner, we view our client relationships as a dynamic process in which both GRS and NPERS take an active role. We value client input and perspectives as it makes us better advisors and results in recommendations that are informed and mutually understood. Our consulting philosophy rests on these fundamental principles and focus on providing real value to our clients. Further solidifying our approach and philosophy are the following attributes which make GRS' consulting expertise invaluable to the public sector. ▪ Reputation for an unbiased presentation of facts. Our role is to present unbiased information and consulting advice so that Boards and governments can make decisions; ▪ Experienced with providing testimony on benefit issues to state legislatures and commissions, county commissions and city councils; ▪ Clear understanding that the plan operates towards the beneficial interest of the plan participants through the operation of the entire Board; and ▪ Sensitive to the considerations of the various stakeholders, management, labor management, private citizens, and board members.
3. Describe bidder’s approach for providing Actuarial Valuation Services for defined benefit and cash balance public pension funds. Give examples.
Bidder response: The proposed GRS team has experience meeting the valuation and reporting deadlines of large, complex retirement systems, including cash balance systems. **Please see the sample client experience noted in Attachment C on page 25 for a highlight of our experience with traditional and cash balance funds.** Listed below is the basic approach we would use in performing actuarial valuation services for the NPERS defined benefit and cash balance plans. **A sample public pension valuation report is provided in Appendix D.** 1. **Hold Planning Meeting**. Each year’s work starts with a planning meeting. We will have a meeting with NPERS soon after we receive notification that we have been selected to provide actuarial consulting services. We believe that meeting with you up front to clarify the deliverables is critical to developing a

strong working relationship. We will discuss any special concerns that you may have including the effects of any recent benefit changes or special data needs. GRS will review with the Board/Staff the flow of events for the valuations and make note of important dates and issues to be addressed in the valuations. We will discuss the methods and assumptions used in the previous year's valuation and recommend any changes to NPERS, as needed. The result of the meeting is a work plan for the upcoming valuation process.

2. **Review Current Plan Provisions.** GRS will review State statutes, actuarial standards and request and review information such as, plan documents, summary plan descriptions, bargaining agreements, and other communications to active and retired members in order to evaluate the nature of the pension benefits of NPERS members.

3. **Perform Replication Valuations**. GRS will request census data files and assumption tables used in the previous year's valuation from the former actuary. We will perform a replication valuation of the previous year's valuation. We consider the replication valuation a standard practice and crucial to understanding the intricacies of NPERS. This parallel valuation also serves as an "audit" in that it replicates the work of the prior actuary and will highlight any exceptions in the valuation process that may merit discussion. **Because GRS has previous experience with NPERS plans from the 2021 full replication audit, we will be able to get a jump start on the replication valuations.**

4. **Request Member Data.** GRS will request data files including records on each person who is actively participating in the plans as of the valuation date, receiving a benefit as of the valuation date, or who retains a right to future benefits. We request that the census information be provided electronically, in Access, Excel or some other format. GRS and the Board/Staff will discuss the method of data transmission – via email with password protected files, with a secure FTP site (file transfer portal), or by other means. **GRS has 1,000 public sector clients and has never had a breach of confidential information in its entire history, which dates back to 1938.**

5. **Prepare Data.** Once data has been received, it is checked for general reasonableness, and compared with the prior year. Selected individual cases are reviewed in detail to ensure that the data changed as expected from year to year. For example, we would confirm that active member test cases had an increase in service and that their reported pay amounts compare well between the two years. Retirees would be checked to confirm that they received the proper COLA, if applicable. A letter outlining any issues found in the reasonableness check along with comparative statistics is then sent to the client for their review and confirmation. Once NPERS staff has provided a reasonable check of the information provided, GRS will prepare the data for the valuations.

6. **Produce Valuation Results**. Once the data files are ready for use, they will be run through our valuation programs to produce initial results. The results will be thoroughly checked and costs and liabilities will be developed along with the contribution rate for the Defined Benefit Plan. The valuations will compare the actuarial assumptions and actual experience of the plan each year. Any unusual or unexpected results are discussed immediately with the Board/Staff. The gain/loss analysis is provided as part of the valuation process.

7. **Present Results**. We will then present the valuation to the Retirement Board, highlighting the most important results along with any trends emerging from the current and prior years' results. We will also inform the Retirement Board of the latest developments in the public sector benefits field as they apply to NPERS.

8. **Prepare Draft and Final Reports**. The valuation reports will then be drafted. The format is normally consistent from year to year for ease of use. At the initial planning meeting, we will discuss report content and format to ensure all the necessary information is provided. Our draft reports will typically be delivered approximately 8 weeks following the receipt of complete and usable data. **Please see our proposed detailed work plan in Table 2 on the following page. Dates to be filled in at planning meeting.**

Table 2 – GRS' Proposed Detailed Pension Work Plan

	Task Description	Responsibility GRS	Responsibility System	Due Date
Planning Meeting	Meeting with the NPERS and team regarding scope of actuarial services	✓	✓	
Transition	**Commence Parallel Valuation**			
	GRS requests the following information from the prior actuary ▪ Valuation-ready data ▪ Historical reports and documents	✓	✓	
	Replicate Valuation Results			
	▪ Write and test valuation programs ▪ Run parallel valuations and confirm discrepancies with prior actuary ▪ Submit and discuss replication results with the System	✓		
Data	**Census Data**			
	▪ Receipt of census data from System		✓	
	▪ Review and load data and email questions to the System	✓		
	▪ Data answers received from System		✓	
	▪ Load data answers, finalize data and prepare schedule	✓		
	Financial Data			
	▪ Receipt of financial statements from System		✓	
	▪ Assets entered and reviewed	✓		
Valuation	**Calculations and Programs**			
	▪ Test Life program check	✓		
	▪ Test Life program review	✓		
	▪ Financing work papers input	✓		
	▪ Financing work papers review	✓		
	▪ Run gain/loss programs and analyze	✓		
	▪ Review gain/loss by source	✓		
	Report			
	▪ Draft valuation report	✓		
	▪ Valuation report review	✓		
	▪ Consultant final review of valuation report	✓		
	Deliverable Schedule			
	▪ Draft report to System	✓		
	▪ Final report to System	✓		
	▪ Presentation of report to Retirement Board	✓		

4. Describe bidder's approach for providing GASB Services for single and multiple employer public pension funds. Give examples.

Bidder response:

Based on our experience listed in the few examples provided below, your proposed GRS consulting team has the infrastructure necessary to develop the appropriate GASB disclosure information to the numerous employers participating in the NPERS Plans.

Illinois Municipal Retirement Fund: provide individual valuation reports to the 3,000 cities that participate in the Fund, as well as allocating individual contribution rates to the cities.

North Dakota Public Employees Retirement System: prepare annual GASB reports with proportionate share calculations for the System's 500+ employers.

Virginia Retirement System: produce GASB results for five statewide pension plans, three statewide OPEB plans, and proportionate shares and individual reports for over 600 Political Subdivision pension plans and over 200 Political Subdivision OPEB plans.

Wisconsin Retirement System: provide GASB 67/68 results for retirement system and GASB 67/68 results for sick leave program, along with detailed proportionate share calculations for the System's 1,500+ employers.

Listed on the following page is the basic approach we would use in performing the GASB actuarial valuations for the NPERS.

Table 3 – GRS' Proposed Detailed GASB 67/68 Work Plan

	Task Description	Responsibility GRS	Responsibility System	Due Date
Planning Meeting	Meeting with the NPERS team regarding timing and deliverables	✓	✓	
Transition	**Commence Parallel Valuation**			
	GRS requests the following information from the prior actuary ▪ Valuation-ready data ▪ Historical reports and documents	✓	✓	
	Replicate Valuation Results			
	▪ Write and test valuation programs ▪ Run parallel valuations and confirm discrepancies with prior actuary ▪ Submit and discuss replication results with the System	✓		
Data	**Data**			
	▪ Receipt of data from System		✓	
	▪ Review and email questions to the System	✓		
	▪ Receipt of financial statements from the System		✓	
	▪ Assets entered and reviewed	✓		
	▪ Receipt of component unit information from System		✓	
	▪ Review of component unit information from System	✓		
Valuation	**Calculations and Programs**			
	▪ Test Life program and projection check	✓		
	▪ Test Life program and projection review	✓		
	▪ Financing work papers input	✓		
	▪ Financing work papers review	✓		
	Report			
	▪ Draft valuation report	✓		
	▪ Valuation report review	✓		
	▪ Consultant final review of valuation report	✓		
	Deliverable Schedule			
	▪ Draft report to the System	✓		
	▪ Final report to the System	✓		

A sample GASB report is provided in Appendix D.

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

Bidder Response:

We provide cash flow projections for many of our clients upon request. We offer both open and closed group projections or projections that vary certain parameters. GRS Foresight™, our projection technology, has the ability to efficiently test various funding policies or strategies, along with ranges of actuarial assumptions, to improve the sustainability of the retirement system. The software is a true advancement in the area of public pension projection technology. More information on our technology services is provided in Appendix F.

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

Bidder Response:

Experience studies provide a basis for evaluating assumptions and revising them to better measure a plan's financial progress. We have helped clients refine these measurements to enhance the quality of funding recommendations, develop more level funding patterns, and ensure that inputs for benefit cost proposals are up-to-date.

We perform experience studies including the review of demographic and economic assumptions for most of our clients on a regular basis. These studies are an important part of the actuarial services provided to our retirement system clients. Given our large public sector client base and our extensive experience, we offer a special advantage in this area.

In order to perform the valuation, assumptions must be made regarding the future experience of the System with regard to the following risk areas:

- Rates of withdrawal of active members
- Rates of disability among active members
- Patterns of salary increases to active members
- Rates of retirement among active members
- Rates of mortality among active members, retirees, and beneficiaries
- Long-term rates of investment return

In conducting experience studies, actuaries generally use data over a period of several years. This is necessary in order to gather enough data so that the results are statistically significant. In addition, if the study period is too short, the impact of the current economic conditions may lead to misleading results.

It is known, for example, that the health of the general economy can impact salary increase rates and withdrawal rates. Using results gathered during a short-term boom or bust will not be representative of the long-term trends in these assumptions.

Also, the adoption of legislation, such as plan improvements or changes in salary schedules, will sometimes cause a short-term distortion in the experience. For example, if an early retirement window was opened during the study period, we would typically see a short-term spike in the number of retirements followed by a dearth of retirements for the following two-to-four years. Using a longer period prevents giving too much weight to such short-term effects. On the other hand, using a much longer period could water down real changes that may be occurring, such as mortality improvement or a change in the ages at which members retire.

Based upon actuarial audits we have performed on the work of other actuaries, we are convinced that the experience study we provide clients is one of the highest quality reports being done in the industry. Other studies we have seen by well-known actuaries display a much smaller amount of data and recommendations without providing the amount of foundation that we do.

7. Describe bidder's approach for providing Benefit Adequacy Studies for public pension funds.

Bidder Response:

In 2008, the severe decline in the financial markets and subsequent downturn in the global economy resulted in steep investment declines for public pension plans. This, in turn, affected the funded status of many public plans and has produced substantial increases in contributions. These events put additional budgetary pressures on state and local governments at a time when they also face fiscal stress from declining revenues. In response, public retirement systems and plan sponsors began to pursue various pension reform initiatives and are expected to continue to do so for the foreseeable future given the slow economic recovery. GRS has been very involved in helping its clients, nationwide, balance three priorities when considering the most appropriate route for reform: benefit adequacy, competitiveness, and cost.

Competitiveness
GRS has over 1,000 public pension actuarial clients, which include 36 statewide plans, some with hundreds of thousands of active plan participants. Therefore, we have access to the most comprehensive library of information available on State and municipal pension plans in our industry.

GRS gathers key information on public plans as part of the routine valuation process. This makes our survey results timely and relevant. Using our database, we can produce surveys that provide industry-wide information or customized information for a pre-defined peer group.

The results of surveys can include a variety of statistics (such as the mean, median, and mode) for fields that contain numeric values. The results can also indicate the range of practice in areas, such as job classification or years of experience.

Benefit Adequacy
When assessing the benefit adequacy of current benefit programs, and possible alternative approaches, it is important to understand the goals and priorities of the decision makers relative to benefit adequacy. Most decision makers want to reduce costs while, if possible, not materially impacting member benefits. Unfortunately, greater savings are generated from plan redesign as a result of deeper benefit cuts.

Cost Implications
A balance between cost reduction and benefit adequacy is always needed when assessing the overall success of a retirement system, but it is generally difficult to accomplish both of these goals only through plan design.

8. Describe bidder's approach for providing Supplemental Services for public pension funds.

Bidder Response:

GRS has over 85 years of experience working with large statewide retirement systems and municipal retirement systems. Most of our clients have multiple benefit structures and employer groups. Therefore, it is unlikely that there is any public sector benefit design or funding issue that GRS has not already helped another client manage or solve. Over the years, GRS' has made this accumulated wealth of knowledge available to all GRS consultants through internal communications and training provided by our internal subject matter experts.

Our proposed consulting team is prepared to bring this experience to the NPERS in the manner that is most beneficial to the NPERS, even if this requires services outside of the anticipated Scope of Services.

9. Describe bidder's experience at providing Legislative Expertise for public pension funds.

Bidder Response:

GRS serves 41 statewide retirement systems and we are an integral part of their legislative response team. We work with each of them not only in providing hundreds of impact statements during legislative sessions but also to help them prepare for each session in advance by providing our expert advice and consulting services. We routinely review and comment on legislation language and in some cases draft legislation for these systems.

GRS will provide thoughtful and complete cost estimates for proposed legislative changes to the NPERS by the requested delivery date. Our vast experience with the legislative processes for other retirement systems has taught us that response time to cost requests is of paramount importance in providing actuarial services to a public retirement system so as not to damage the system's standing with the legislature. On average we are able to provide our analysis within a week. In some cases, we have managed turnaround times of less than 24 hours.

We are able to accomplish this type of timeline, while still providing thoughtful and accurate analyses as a result of our team-based approach and processes. For example, we always have multiple actuaries assigned to each client (all of whom are up-to-date on the client) so that a team member is always available to provide assistance. In addition, our processes are developed and implemented ahead of the beginning of the session so that programming and setup time are minimized.

Very little, if any, legislation is introduced that we have not seen before. We are able to draw from these prior experiences to provide thorough analysis of any situation.

d. Attachment C: Additional Corporate Experience

Attachment C is provided on the following pages.

ATTACHMENT C

Additional Corporate Experience

Request for Proposal Number 120961 O5

Bidder Name: Gabriel, Roeder, Smith & Company

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

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

CORPORATE OVERVIEW – Additional Corporate Experience (Section VI.A.1.h.iv.)
1. Qualification One: As of December 31, 2024, bidder has a minimum of three (3) public pension fund clients. <u>Please submit a written description of how this qualification is satisfied, including, at a minimum, a list of at least three (3) public pension fund clients for whom the bidder currently provides actuarial consulting services. These descriptions should include:</u> **a)** The time period of the project; **b)** The scheduled and actual completion dates; **c)** The Contractor's responsibilities; **d)** For reference purposes, a customer name (including the name of a contact person, a current telephone number, and e-mail address); and, **e)** Each project description should identify whether the work was performed as the prime Contractor or as a subcontractor. If a bidder performed as the prime Contractor, the description should provide the originally scheduled completion date and budget, as well as the actual (or currently planned) completion date and actual (or currently planned) budget.
Bidder Response: With 1,000 clients in nearly 50 states, we provide actuarial and benefits consulting services to more public sector clients than any other firm in the country. The following is representative of our client base: ▪ Served 1,000 actuarial clients covering pension and OPEB plans. ▪ 41 statewide retirement systems covering a total of over 7 million participants and nearly $1 trillion in assets. ▪ 28 statewide retirement systems with 50,000 or more participants. ▪ 26 statewide retirement systems with more than $10 billion in assets. Listed on the following page are five pension fund clients similar in size and scope to NPERS for whom GRS performed as the Prime Contractor.

MINNESOTA STATE RETIREMENT SYSTEM (MSRS)
Ms. Erin Leonard
Executive Director
60 Empire Drive, Suite 300
St. Paul, Minnesota 55103
Phone: (651) 284-7848
E-mail: erin.leonard@msrs.us

MSRS administers retirement plans that provide retirement, survivor and disability benefit coverage for Minnesota state employees, the Metropolitan Council and many non-faculty employees at the University of Minnesota and Minnesota State university system. Separate plans exist for Minnesota's state employees, correctional officers, state patrol officers, judges and legislative officers. Retirement benefits are determined ("defined") using a formula based on salary and years of service. MSRS serves over 130,000 active, deferred and retired Minnesota public employees. MSRS has combined assets that total $20 billion.

GRS has served MSRS since 2012 as the prime Contractor (with no subcontractors), preparing an actuarial valuation as of every June 30. The project typically commences in July with the receipt of the annual valuation data and concludes, as scheduled, mid-November. The results of the valuations are generally presented at the Board meeting held in January, although preliminary results may be presented prior to this meeting as requested. The valuations provide financial information, including the Statutory and actuarially recommended contribution rates, the contribution sufficiency/deficiency and the primary reason(s) for changes since the prior year.

Every four years GRS also performs an experience study that reviews all the economic and demographic assumptions used in the actuarial valuation. These results and recommendations are presented to the Board for their approval before being incorporated into the actuarial valuation.

GRS also provides MSRS assistance with issues arising in connection with the operation and administration of the Retirement System. The spectrum of issues includes plan administration, data integrity, compliance with applicable IRS requirements, and GASB accounting.

Finally, GRS has assisted MSRS with pension reform resulting in changes to each of the General, Correctional, State Patrol and Judges plans in the last 10 years that have put the plans on firmer financial footing.

TEXAS MUNICIPAL RETIREMENT SYSTEM (TMRS)
Leslee S. Hardy, ASA, FCA, EA, MAAA
Director of Plan Design & Funding
2717 Perseverance Drive, Suite 300
Austin, TX 78731
Telephone: (512) 225-3760
Email: LHardy@tmrs.com

TMRS is an agent employer plan with more than 650 municipalities and authorities across the State of Texas that participates in the System. We deliver almost 2,000 valuations annually through this process, including GASB 68 for all reporting entities.

The TMRS performance over the last 15 years while we have been actuaries is one of the largest success stories in the industry. Since 1947, TMRS had historically been a cash balance plan with separate trust funds for active employee contribution balances, employer asset balances, and retiree reserves. This fund structure created the possibility of extreme volatility in the employer contribution rates for member cities since the city assets held the burden of absorbing all of the investment volatility, even though the city assets only represented less than half of the total plan assets. For an entire two-year period, GRS worked with TMRS, the various stakeholders, and the Texas Legislature to "restructure" the Trust Fund so that the employer and retiree reserves would become incorporated into the employer's asset balance. These changes were enacted in May 2012 and have resulted in substantial deleveraging of the member city's contribution rates, which has resulted in less volatile and lower, more predictable contributions in future years without reducing any member benefits. The funded ratio of TMRS has risen from 74% when we were retained as the actuary to 90% as of the last valuation. The contribution rates from year to year have been very stable and the benefit levels have seen a net improvement during a time when systems across the country were seeing declines. This successful restructure has resulted in GRS having tremendous credibility across the State of Texas due to these outcomes and it shows that GRS knows how to create a sustainable retirement system for all stakeholders. We have had employers and members alike comment on how much trust they have that the TMRS structure will continue to thrive.

KENTUCKY PUBLIC PENSIONS AUTHORITY (KPAA)
Ms. Rebecca Adkins
Deputy Executive Director
1260 Louisville Road   Frankfort KY 40601
Telephone: (502) 696.8604
Email: rebecca.adkins@kyret.ky.gov

KPPA is a System that consists of five retirement systems (traditional and cash balance) and five retiree health plans that cover state employees (Non-Hazardous and Hazardous), county and municipal employees (Non-Hazardous and Hazardous), and State Police. Our services include providing a funding valuation for each of the systems as well as accounting information under GASB 67/68 and 74/75.

Since GRS became the actuary for KPPA in 2017, the consulting we provided has resulted in the reversal of the pattern of underfunding the Kentucky Employees Retirement System (KERS) and County Employees Retirement System (CERS) funds. The work for KPPA required significant education of the Board, legislators, and employers to make these significant changes. Similarly, the assumptions and funding policy for the CERS funds are now in a successful position to begin a trend of increasing funded ratios and a declining unfunded actuarial accrued liability. For example, in 2017 the KERS Non-Hazardous System was 12% funded and the system has substantially increased to 30% as of 2024.

Now attention and effort will be necessary to educate the Board and stakeholders that while the funds are much better funded than expected due to the favorable investment experience, it is as important as ever to understand that the plan's funding strategy is a long-term commitment and that stakeholders need to remain committed to the current funding plan.

WISCONSIN RETIREMENT SYSTEM (WRS)
Mr. John Voelker
Secretary
Wisconsin Retirement System
4822 Madison Yards Way
Madison, WI 53705-9100
Telephone: (608) 266-0301
Email: John.Voelker@etf.wi.gov

The WRS is a cost-sharing hybrid defined benefit plan containing elements of both a 401(k) or defined contribution plan and a defined benefit plan, covering 688,000 members, with assets of $120 billion. GRS has served WRS for almost four decades (since 1976) as the prime Contractor (with no subcontractors), preparing actuarial valuations as of every December 31 with the results of the valuations generally presented at Board meetings held in March and June. The valuation provides financial information, including the actuarially recommended contribution rates for three separate groups of employees – General, Protective with Social Security, and Protective without Social Security.

Each year's Active Lives valuation includes a detailed actuarial gain/loss section developed by GRS, which serves as the basis for the experience study performed once every three years. This persistent investigation of economic and demographic assumptions used in the actuarial valuation is very important in developing contribution rates that are applied to a $17 billion payroll. Triennial Experience Study results and recommendations are usually presented in December to the Board for their approval before being incorporated into the actuarial valuation. In addition, the investigation of economic assumptions involves GRS interacting with the State of Wisconsin Investment Board every other year, to investigate the impact of various asset return scenarios, using stochastic techniques, on the Retirement System financial results.

Once the valuation results are finalized, we prepare a client specific version of the MagValPlus projection software for WRS Staff. This projection software allows WRS Staff to prepare cost projections and model plan provision changes for each major group in the WRS. GRS also assists WRS Division of Trust Finance Staff with GASB Accounting by providing detailed proportionate share calculations for the System's 1,500+ employers. This information is provided within weeks of receiving finalized asset information. Lastly, GRS participates in an annual Staff Retreat in Madison, Wisconsin.

NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM (NDPERS)
Ms. Rebecca Fricke
Executive Director
1600 East Century Avenue, Suite 2
Bismarck, ND 58502-1657
Phone: (701) 328-3978
Email: rfricke@nd.gov

NDPERS is a cost-sharing defined benefit plan with a provision for contribution portability with a 457 deferred compensation plan. NDPERS also maintains a separate defined contribution plan. NDPERS covers 60,000 members and maintains assets of $4 billion.

GRS has served NDPERS since 2016, preparing an actuarial valuation as of every July 1 with the results of the valuation generally presented at Board meetings and to legislators of the Employee Benefits Programs Committee meetings in October. The funding valuation provides financial information including a comparison of the statutory contribution to an actuarially determined contribution for four separate groups of employees – Main System, Judges, Public Safety with Prior Main System Service, and Public Safety without Prior Main System Service. Separate funding reports are also prepared for two additional funds covering members of the Highway Patrol and Job Service. The annual funding valuation report also includes GASB Statement No. 67 reporting information.

After completion of the annual funding valuation, we prepare a GASB Statement Nos. 67 and 68 report, generally delivered in December. Included in the GASB Statement Nos. 67 and 68 report are detailed proportionate share calculations for the System's 500+ employers.

Additionally, GRS provides legislative analysis letters to NDPERS to consult on the actuarial impact, benefits policy issues, funding policy issues, and administrative issues of applicable bills brought forth by the legislature. With legislative sessions sometimes requiring quick timing, we have worked with NDPERS to ensure timely completion of these letters while maintaining thoughtful and complete work.

In addition, sample statewide and public pension fund client lists are provided in Appendix B.

2. Qualification Two:

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

Bidder Response:

GRS has been providing actuarial consulting services to public pension plans for over 85 years and, therefore, has a proven track record of success. We are the only firm that has been dedicated to serving public sector plans since its inception. Public sector work is not a sideline for our primary work, it is our primary work. We derive 100% of our revenue from actuarial and benefits consulting services. GRS practice areas include pension, OPEB, defined benefit plan administration, and client software.

We have been associated with more than half of our clients for at least 30 years, many for more than 50 years and some for more than 85 years. As far as we know, none of our competitors can make this latter claim. We believe that our clients' long association with our company results from our focus on technological innovation, research and employee professional growth efforts solely focused on managing the challenges faced by the public sector. This means that 100% of our talent is directed to serving public sector benefit plans. Since GRS has served clients in nearly every state, we have experience with virtually every benefit design used in the United States. We are confident that none of our competitors offer the same level of expertise and resources.

Our statewide and public pension client lists, including year retained, are provided in Appendix B.

3. Qualification Three:

The bidder's lead consultant on the account must have a minimum of ten (10) years of experience in providing actuarial consulting service to public pension funds. This experience shall include general consulting, experience analysis, and valuation assignments for such funds. This person shall also have experience in testifying before legislative and administrative bodies in support of actuarial positions and the principles used in valuing a public retirement system or pricing legislation, and an ability to discuss in laymen's terms the following: actuarial theory; basis for assumptions; and other actuarial matters. The lead consultant must be a member of the American Academy of Actuaries. <u>Please submit a written description of how this qualification is satisfied, including, at a minimum, a list of the lead consultant's experience in providing actuarial consulting services to public pension funds for at least ten (10) years, and showing past experience at testifying before legislative and administrative bodies.</u>

Bidder Response:

Bonita J. Wurst, ASA, EA, FCA, MAAA, will serve as co-lead actuary for the NPERS. Bonnie is a Senior Consultant and Team Leader in GRS' Minneapolis, Minnesota office. She has more than 30 years of actuarial and consulting experience. Bonnie has served public sector clients located across the country, with current clients in Illinois, Indiana, Minnesota, and North Dakota. Bonnie consults to statewide, large municipal, and church-sponsored retirement systems. Her actuarial experience covers pension and OPEB actuarial valuation services, funding projections, plan design studies, experience studies, plan merger and implementation consulting and benefit administration services. A representative sample of current clients for whom Bonnie provides actuarial and consulting services follows:

- Minnesota State Retirement System
- Public Employees Retirement Association of Minnesota
- North Dakota Public Employees Retirement System

Sheryl L. Christensen, FSA, EA, FCA, MAAA, will serve as co-lead actuary for the NPERS. Sheri is a Senior Consultant in GRS' Minnesota office. She has more than 30 years of actuarial and consulting experience. Sheri has served clients in Delaware, Indiana, Minnesota, New York, North Dakota, South Dakota and Wisconsin. During Sheri's career, she has worked with statewide and municipal retirement systems, church plans, not-for-profit organizations, and corporate plans. Sheri's areas of expertise include traditional and hybrid defined benefit pension plans and retiree health care benefits. Her work covers valuations, actuarial audits, cost analyses for proposed plan and/or assumption changes, experience studies, funding projections, and service purchase calculations. A representative sample of current clients for whom Sheri provides actuarial and consulting services follows:

- Minnesota State Retirement System
- Public Employees Retirement Association of Minnesota
- St. Paul Teachers' Retirement Fund Association

Co-Lead Approach to Actuarial Services

The Co-Lead approach assigns two actuaries to the account, Bonnie Wurst and Sheri Christensen, with both sharing in all of the responsibilities typically held by a single lead consulting actuary. This approach allows the NPERS to have more direct senior contact and receive a more seasoned and proactive consulting experience. Further, this allows our actuaries to have a broader client base, while keeping an appropriate client load, and allows for more flexibility around meetings and presentations, as well as for stronger relationships. In addition, the transition plan, if one is ever needed, is already in place.

With regard to legislative testimony, GRS is distinguished from our competitors because of our unparalleled depth of experience addressing policy and legal issues related to public employee retirement systems across the nation. GRS actuaries have appeared before legislative committees throughout the United States. Bonnie has testified before the Minnesota Legislative Commission on Pensions and Retirement and the North Dakota State Legislature.

When it comes to discussing actuarial theory, basis for assumptions and other actuarial matters in layman's terms, your GRS Team is particularly experienced. GRS' motto when it comes to presentations and written communication is "education, not information." Our presentations will be concise, illustrative, and focused on "telling the story." We commonly find that our Boards continue to improve their understanding of the actuarial concepts with each presentation that we deliver, which indicates to us that we are fulfilling our role.

Resumes for Bonnie and Sheri are provided in Appendix A.

4. Qualification Four: Professional staff assigned to the account shall have a minimum of five (5) years of experience in the field of actuarial science and will include persons with appropriate professional credentials such as Fellow or Associate of Society of Actuaries, and/or Fellow of the Conference of Actuaries in Public Practice, and/or Member of the American Academy of Actuaries, and/or meet standards of a qualified actuary under the provisions of the Employee Retirement Income Security Act of 1974. <u>Please submit a written description of how this qualification is satisfied, including, at a minimum, a list of the professional staffs' experience in providing actuarial consulting services to public pension funds for at least five (5) years, and showing the professional staffs' credentials.</u>
Bidder Response: **James D. Anderson, FSA, EA, FCA, MAAA,** will serve as peer review actuary for the NPERS. Jim Anderson is a Senior Consultant in GRS' Grand Rapids (Rockford), Michigan office. He has more than 30 years of actuarial and benefits consulting experience. Jim has served public sector clients located across the country, and currently in Michigan, Virginia and Wisconsin. His areas of expertise include plan design, funding, accounting, and administration and communication of defined benefit plans, defined contribution plans, and post-retirement medical plans. Jim has significant experience providing assumption reviews, experience studies, cash flow projections, and actuarial audits. **In fact, Jim was a key member of the GRS team that completed the full replication audit of the 2021 actuarial valuation results of the five NPERS plans.** **Joseph Newton, FSA, EA, FCA, MAAA,** will serve as support actuary for the NPERS. Joe is a nationally recognized public sector actuary who works with numerous statewide, regional, and local retirement systems and is located in GRS' Dallas, Texas office. He has more than 20 years of actuarial and benefits consulting experience for both traditional and cash balance pension plans. Joe's clients are located in Colorado, Hawaii, Rhode Island, South Carolina, Kentucky, and Texas. Joe is also a member of the GRS Office of the Chief Actuary. In this capacity, he provides strategic thought leadership to public sector clients as well as ensuring that service is being provided at the highest level by all GRS employees. **Janie Shaw, ASA, EA, MAAA,** will serve as support actuary for the NPERS. Janie is a consultant in the GRS Dallas, Texas office. She has 14 years of public sector pension consulting experience. Janie has experience working with statewide and municipal retirement systems in multiple states including Kentucky, Michigan, New Mexico, North Carolina, Oklahoma, Texas, and Utah. Janie's actuarial consulting experience includes annual valuation services for both traditional and cash balance pension plans. She currently consults on two large statewide cash balance retirement plans, with significant experience on funding policy and benefit plan design for these systems. Resumes for Jim, Joe and Janie are provided in Appendix A.

e. Deliverables and due dates (Cost Proposal)

The Cost Proposal is provided on the following page.

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COST PROPOSAL

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

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

Bidder Name: Gabriel, Roeder, Smith & Company

Description	Unit of Measure	Initial Year One	Initial Year Two	Initial Year Three
Consultation Service and Reports for the Annual Valuation of the School Defined Benefit Plan	$	28,000	28,700	29,400
Consultation Service and Reports for the Annual Valuation of the Omaha School Defined Benefit Plan	$	22,000	22,500	23,100
Consultation Service and Reports for the Annual Valuation of the Judges Defined Benefit Plan	$	22,000	22,500	23,100
Consultation Service and Reports for the Annual Valuation of the Patrol Defined Benefit Plan	$	22,000	22,500	23,100
Consultation Service and Reports for the Annual Valuation of the State Cash Balance Plan and ERBF	$	28,000	28,700	29,400
Consultation Service and Reports for the Annual Valuation of the County Cash Balance plan and ERBF	$	28,000	28,700	29,400
Consultation Services and Reports for GASB 67	$	22,000	22,500	23,100
Consultation Services and Reports for GASB 68	$	32,000	32,800	33,600
Annual 5-year projection report	EA	0	0	0
Annual 30-year projection report	EA	0	0	0
Projection modeling software	YR	0*	0*	0*
2025 Actuarial Experience Study for Omaha School Defined Benefit Plan	EA	19,500		
One Time Benefit Adequacy Study to be completed as required by NPERS	EA	125,000**		

* *A projection tool, such as GRS Foresight or other tool, will be provided to NPERS at no charge (see Appendix F for a description of GRS Foresight, including screenshots). If plan design changes are requested, we will provide a fixed fee quote once the scope of services is defined.*

** *Estimate based on limited information regarding the scope of service and may be revised once more detail is provided.*

OPTIONAL SUPPLEMENTAL SERVICES:

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

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

Position Title	Initial Year One Hourly Rate	Initial Year Two Hourly Rate	Initial Year Three Hourly Rate
Principal	$465	$477	$489
Senior Consultant II	$450	$461	$473
Senior Consultant I	$440	$451	$462
Consultant II	$425	$436	$447
Consultant I	$400	$410	$420
Actuarial Analyst II	$380	$390	$400
Actuarial Analyst I	$345	$354	$363
Support Staff	$170	$174	$178

OPTIONAL THREE (3) YEAR - RENEWAL 1

Description	Unit of Measure	Optional Renewal One Year Four	Optional Renewal One Year Five	Optional Renewal One Year Six
Consultation Service and Reports for the Annual Valuation of the School Defined Benefit Plan	$	$30,100	$30,900	$31,600
Consultation Service and Reports for the Annual Valuation of the Omaha School Defined Benefit Plan	$	$23,600	$24,200	$24,800
Consultation Service and Reports for the Annual Valuation of the Judges Defined Benefit Plan	$	$23,600	$24,200	$24,800
Consultation Service and Reports for the Annual Valuation of the Patrol Defined Benefit Plan	$	$23,600	$24,200	$24,800
Consultation Service and Reports for the Annual Valuation of the State Cash Balance Plan and ERBF	$	$30,100	$30,900	$31,600
Consultation Service and Reports for the Annual Valuation of the County Cash Balance plan and ERBF	$	$30,100	$30,900	$31,600
Consultation Services and Reports for GASB 67	$	$23,600	$24,200	$24,800
Consultation Services and Reports for GASB 68	$	$34,400	$35,300	$36,200
Annual 5 year projection report	EA	0	0	0
Annual 30 year projection	EA	0	0	0
Projection modeling software	YR	0*	0*	0*
2028 Actuarial Experience Study for School, Judges, State Patrol, State Cash Balance, and County Cash Balance Plans	EA	$61,000		
2029 Actuarial Experience Study for Omaha School Defined Benefit Plan	EA		$21,500	

* *A projection tool, such as GRS Foresight or other tool, will be provided to NPERS at no charge (see Appendix F for a description of GRS Foresight, including screenshots). If plan design changes are requested, we will provide a fixed fee quote once the scope of services is defined.*

OPTIONAL SUPPLEMENTAL SERVICES DURING OPTIONAL RENEWAL PERIOD ONE:

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

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

Position Title	Optional Renewal Two - Year Seven Hourly Rate	Optional Renewal Two - Year Eight Hourly Rate	Optional Renewal Two - Year Nine Hourly Rate
Principal	$501	$514	$527
Senior Consultant II	$485	$497	$509
Senior Consultant I	$474	$486	$498
Consultant II	$458	$469	$481
Consultant I	$431	$442	$453
Actuarial Analyst II	$410	$420	$431
Actuarial Analyst I	$372	$381	$391
Support Staff	$182	$187	$192

OPTIONAL THREE (3) YEAR - RENEWAL 2

Description	Unit of Measure	Optional Renewal Two Year Seven	Optional Renewal Two Year Eight	Optional Renewal Two Year Nine
Consultation Service and Reports for the Annual Valuation of the School Defined Benefit Plan	$	$32,400	$33,200	$34,100
Consultation Service and Reports for the Annual Valuation of the Omaha School Defined Benefit Plan	$	$25,500	$26,100	$26,800
Consultation Service and Reports for the Annual Valuation of the Judges Defined Benefit Plan	$	$25,500	$26,100	$26,800
Consultation Service and Reports for the Annual Valuation of the Patrol Defined Benefit Plan	$	$25,500	$26,100	$26,800
Consultation Service and Reports for the Annual Valuation of the State Cash Balance Plan and ERBF	$	$32,400	$33,200	$34,100
Consultation Service and Reports for the Annual Valuation of the County Cash Balance plan and ERBF	$	$32,400	$33,200	$34,100
Consultation Services and Reports for GASB 67	$	$32,400	$33,200	$34,100
Consultation Services and Reports for GASB 68	$	$37,100	$38,000	$38,900
Annual 5-year projection report	EA	0	0	0
Annual 30-year projection	EA	0	0	0
Projection modeling software	YR	0*	0*	0*
2032 Actuarial Experience Study for School, Judges, State Patrol, State Cash Balance, and County Cash Balance Plans	EA		$67,300	
2033 Actuarial Experience Study for Omaha School Defined Benefit Plan	EA			$23,800

* *A projection tool, such as GRS Foresight or other tool, will be provided to NPERS at no charge (see Appendix F for a description of GRS Foresight, including screenshots). If plan design changes are requested, we will provide a fixed fee quote once the scope of services is defined.*

OPTIONAL SUPPLEMENTAL SERVICES DURING OPTIONAL RENEWAL PERIOD TWO:

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

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

Position Title	Optional Renewal Two - Year Seven Hourly Rate	Optional Renewal Two - Year Eight Hourly Rate	Optional Renewal Two - Year Nine Hourly Rate
Principal	$540	$554	$568
Senior Consultant II	$522	$535	$548
Senior Consultant I	$510	$523	$536
Consultant II	$493	$505	$518
Consultant I	$464	$476	$488
Actuarial Analyst II	$442	$453	$464
Actuarial Analyst I	$401	$411	$421
Support Staff	$197	$202	$207

SECTION III

ADDITIONAL REQUIRED FORMS

II. TERMS AND CONDITIONS

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

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

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

Accept All Terms and Conditions Within Section as Written (Initial)	**Exceptions Taken to Terms and Conditions Within Section as Written (Initial)**	**Exceptions:** (Bidder must note the specific clause, including section reference, to which an exception has been taken, an explanation of why the bidder took exception to the clause, and provide alternative language to the specific clause within the solicitation response.)
		If we are awarded this engagement, we intend to negotiate in good faith with the State of Nebraska to reach an agreement on contract terms as expeditiously as possible. As the nation's largest provider of actuarial services to public entities, we have negotiated mutually acceptable contract terms with our other clients in support of similar opportunities. We expect to also successfully reach agreement with the State of Nebraska on acceptable contract terms for this opportunity. With that said, we respectfully ask consideration of the following changes to the terms and conditions. **Section M – Indemnification, 1. General** – GRS requests the following redline change to this requirement. The Vendor agrees to defend, indemnify, and hold harmless the State and its employees, volunteers, agents, and its elected and appointed officials ("the indemnified parties") from and against ~~any and all~~ third party claims, liens, demands, damages, liability, actions, causes of action, losses, judgments, costs, and expenses ~~of every nature,~~ including investigation costs and expenses, settlement costs, and reasonable attorney fees and expenses ("the claims"), sustained or asserted against the State for personal injury, death, or property loss or damage, arising out of, resulting from, or attributable to the willful misconduct, negligence or ~~,~~ error~~, or omission~~ of the Vendor, its employees, Subcontractors, consultants, representatives, and agents, resulting from this contract, except to the extent such Vendor liability is attenuated by any action of the State which directly and proximately contributed to the claims. **Section N – Attorney's Fees** – GRS requests the following redline change to this requirement. In the event of any litigation, appeal, or other legal action to enforce any provision of the contract, the Parties agree to pay all expenses of such action, as permitted by law and if ordered by the court, including reasonable attorney's fees and costs, if the other Party prevails. **Section T – Contract Closeout, Item 1 and 2.** – GRS requests that partially completed deliverables is stricken from this section as they may not meet our standards for deliverables. **Section T – Contract Closeout, Item 5.** – If another vendor succeeds GRS as Client's actuary; GRS shall cooperate in the transition of responsibilities in accordance with actuarial standards of practice and the code of conduct for actuaries.

III. VENDOR DUTIES

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

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

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

Accept All Vendor Duties Within Section as Written (Initial)	**Exceptions Taken to Vendor Duties Within Section as Written (Initial)**	**Exceptions:** (Bidder must note the specific clause, including section reference, to which an exception **has been taken, an explanation of why the bidder took exception to the clause, and provide** alternative language to the specific clause within the solicitation response.)
		If we are awarded this engagement, we intend to negotiate in good faith with the State of Nebraska to reach an agreement on contract terms as expeditiously as possible. As the nation's largest provider of actuarial services to public entities, we have negotiated mutually acceptable contract terms with our other clients in support of similar opportunities. We expect to also successfully reach agreement with the State of Nebraska on acceptable contract terms for this opportunity. With that said, we respectfully ask consideration of the following changes to the terms and conditions. **Section J – Insurance Requirements** – GRS requests the following redline change to this policy requirement. In the event that any policy written on a claims-made basis terminates or is canceled during the term of the contract or within five (5) years of termination or expiration of the contract, the Vendor shall obtain an extended discovery or reporting period, or a new insurance policy, providing coverage required by this contract for the term of the contract and ~~five (5)~~ three (3) years following termination or expiration of the contract. In addition, GRS requests that you accept our standard insurance coverage. Please see our Statement of Professional Liability Insurance in Appendix E of the proposal.

IV. PAYMENT

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

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

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

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

A. PROHIBITION AGAINST ADVANCE PAYMENT (Nonnegotiable)

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

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

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

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

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

prior to the Effective Date of the contract, and the Vendor hereby waives any claim or cause of action for any such goods or services.

F. LATE PAYMENT (Nonnegotiable)

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

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

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

H. RIGHT TO AUDIT (First Paragraph is Nonnegotiable)

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

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

Appendix A

Proposed Team Member Biographies

Bonita J. Wurst, ASA, EA, FCA, MAAA

Senior Consultant

bonnie.wurst@grsconsulting.com

Expertise

Bonnie Wurst is a Senior Consultant and Team Leader in GRS' Minneapolis, Minnesota office. She has more than 30 years of actuarial and consulting experience. Bonnie has served public sector clients located across the country, with current clients in Illinois, Indiana, Minnesota, and North Dakota.

Bonnie consults to statewide, large municipal, and church-sponsored retirement systems. Her actuarial experience covers pension and OPEB actuarial valuation services, funding projections, plan design studies, experience studies, plan merger and implementation consulting and benefit administration services.

Bonnie also has experience managing actuarial teams. As a manager of a GRS pension team, Bonnie oversees project plans, budgets, and interaction between GRS and clients.

Professional Designations

- Associate, Society of Actuaries
- Enrolled Actuary
- Fellow, Conference of Consulting Actuaries
- Member, American Academy of Actuaries

Presentations

Bonnie frequently provides client and employee education sessions, and has served as a speaker for professional association conferences. Bonnie's presentations have covered topics such as current public sector trends in pension benefit design and funding, overview of actuarial valuations, and client specific retirement program overviews. Bonnie currently serves as a member of the Program Committee for the CCA Enrolled Actuaries Conference.

Examples of recent speaking experience:

- 2023 NCTR Panel “We Put the DISCO in Discount Rates”
- 2021 NCTR Panel “Asset Allocation and the Investment Return Assumption”
- 2021 CCA Enrolled Actuaries Conference Session “Lessons Learned: Closed Public Pension Plans”
- 2019 Enrolled Actuaries Meeting Session “ASOP 51: Practical Approaches”
- 2014 Conference of Consulting Actuaries Webcast “Actuarial Assumptions”

Education

Bachelors, Mathematics and Speech Communication, Summa Cum Laude Graduate, Mankato State University, Mankato, Minnesota.

References

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Phone: (651) 201-2690
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Minnesota State Retirement System
Ms. Erin Leonard
Executive Director
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North Dakota Public Employees Retirement System
Ms. Rebecca Fricke
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Sheryl L. Christensen, FSA, EA, FCA, MAAA

Senior Consultant

sheri.christensen@grsconsulting.com

Expertise

Sheri Christensen is a Senior Consultant in GRS' Minnesota office. She has more than 30 years of actuarial and consulting experience. Sheri has served clients in Delaware, Indiana, Minnesota, New York, North Dakota, South Dakota and Wisconsin.

During Sheri's career, she has worked with statewide and municipal retirement systems, church plans, not-for-profit organizations, and corporate plans. Sheri's areas of expertise include traditional and hybrid defined benefit pension plans and retiree health care benefits. Her work covers valuations, actuarial audits, cost analyses for proposed plan and/or assumption changes, experience studies, funding projections, and service purchase calculations.

Professional Designations

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

Professional Activities

Sheri regularly attends national and regional conferences held by associations serving public employee retirement systems and church plans. She regularly provides her clients with education sessions covering actuarial valuation fundamentals. Sheri's conference presentations include "Long-Term Policy Considerations with an Aging Population" and "Risk Management in the Face of Extremes."

Education

Bachelors of Science, Mathematics (emphasis on actuarial science) and minor in Statistics, University of Minnesota, Institute of Technology

References

Public Employee Retirement Association of Minnesota
Mr. Doug Anderson
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St. Paul Teachers Retirement Fund Association
Mr. Phillip Tencick, CFA
Executive Director and Chief Investment Officer
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St. Paul, Minnesota 55114
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James D. Anderson, FSA, EA, FCA, MAAA

Senior Consultant
jim.anderson@grsconsulting.com

Expertise

Jim Anderson is a Senior Consultant in GRS' Grand Rapids (Rockford), Michigan office. He has more than 30 years of actuarial and benefits consulting experience. Jim has served public sector clients located across the country, and currently in Michigan, Virginia and Wisconsin.

His areas of expertise include plan design, funding, accounting, and administration and communication of defined benefit plans, defined contribution plans, and post-retirement medical plans. Jim has significant experience providing assumption reviews, experience studies, cash flow projections, and actuarial audits. His plan design expertise covers Deferred Retirement Option Plans (DROP), defined benefit to defined contribution conversion studies, hybrid plans, including cash balance, and early retirement incentive programs. In addition, he regularly assists his clients with benefit administration functions such as reporting, communications, and implementation of their pension and post-retirement medical plans.

Professional Designations

- Fellow, Society of Actuaries
- Enrolled Actuary
- Fellow, Conference of Consulting Actuaries
- Member, American Academy of Actuaries

Professional Affiliations

- Elected Member of Society of Actuaries Retirement Section Council (2017-2019)

Presentations and Publications

Prior to their effective dates, Jim co-authored an article regarding GASB Statements 67 and 68 for the Michigan Association of Public Employees Retirement Systems (MAPERS).

Jim also regularly serves as a conference speaker:

- Nationally at meetings of Enrolled Actuaries, the Conference of Consulting Actuaries and the Association of Public Pension Fund Auditors.
- Locally at meetings of MAPERS and MPELRA in Michigan, Pennsylvania PAPERS, and at the Government Finance Officers Association (GFOA) in Arizona, Michigan and Wisconsin.

Education

Bachelor of Science, Actuarial Mathematics, University of Michigan

References

Virginia Retirement System
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Chief Trust Finance Officer
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Kent County Employees Retirement Plan and Trust
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HR Manager - Retirement Benefits
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Joseph Newton, FSA, EA, FCA, MAAA
Pension Market Leader and Office of the Chief Actuary
joe.newton@grsconsulting.com

Expertise

Joe Newton is a nationally recognized public sector actuary who works with numerous statewide, regional, and local retirement systems and is located in GRS' Dallas, Texas office. He has more than 20 years of actuarial and benefits consulting experience. Joe's clients are located in Colorado, Hawaii, Rhode Island, South Carolina, Kentucky, and Texas.

Joe is the Pension Market Leader for GRS. In this capacity, Joe functions in one of the most senior professional roles in GRS, providing significant firm-wide leadership and contribution at the highest levels. This role bridges the gap between industry requirements, internal processes, and client deliverables to further strengthen GRS' position in the marketplace.

Joe is also a member of the GRS Office of the Chief Actuary. In this capacity, he provides strategic thought leadership to public sector clients as well as ensuring that service is being provided at the highest level by all GRS employees.

As well respected in our industry, several of Joe's projects have changed the way services are provided, and how pensions are understood, in the public sector community. There are several examples of plan redesign projects, including optimized funding mechanisms and creative plan design features that originated with Joe's consulting and have been further implemented by other systems. Joe has a unique ability to create innovative solutions to specific problems, and then be able to communicate these sometimes complex solutions to all stakeholders.

Joe stresses a top-down approach to pension plan consulting, which integrates the major goals of stakeholders, addresses human capital needs, and utilizes projection and valuation techniques that manage risk. He has built an enviable reputation in the public sector actuarial community for his creative ability to communicate difficult and complex ideas to Boards and Stakeholders. Most importantly, Joe believes he has helped its clients increase their credibility with the legislative and executive branches of the state government. In many cases, we have annual educational sessions for legislative leaders are of paramount importance in establishing and maintaining this credibility.

Joe is an appointed member on the Associate Advisory Committee of the National Association of State Retirement Administrators (NASRA) where he provides support for NASRA's vital initiatives to support public employee benefit programs across the country.

Professional Designations

- Fellow, Society of Actuaries
- Enrolled Actuary
- Fellow, Conference of Consulting Actuaries
- Member, American Academy of Actuaries

Education

Bachelor of Arts, Mathematics, and Business Administration, Austin College (Sherman, Texas)

References

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Employees' Retirement System of Rhode Island
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Janie Shaw, ASA, EA, MAAA
Consultant
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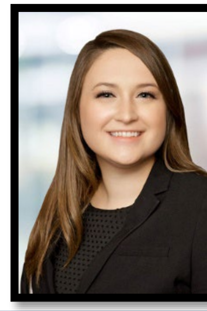

Expertise

Janie Shaw is a Consultant in the GRS Dallas, Texas office. She has more than 10 years of public sector pension consulting experience. Janie has experience working with statewide and municipal retirement systems in multiple states including Kentucky, Michigan, New Mexico, North Carolina, Oklahoma, Texas, and Utah.

Janie's actuarial consulting experience includes annual valuation services for both traditional and cash balance pension plans. Her experience has focused on plan sustainability through funding policy and benefit plan design. She has worked with her clients to find long-term solutions for all Stakeholders that build a more sustainable future for the retirement system. She has also worked with her clients to implement contribution rate stabilization policies that provide more predictable pension costs that work within the Stakeholders' budgets but also provide sound funding for the retirement system.

She also has significant experience with analyzing and revising demographic and economic assumptions through actuarial experience studies and actuarial audits. Janie's compliance work and experience covers GASB reporting requirements as they apply to pension and OPEB plans, 415(b) calculations and non-discrimination testing for DB and DC plans.

Professional Designations

- Associate, Society of Actuaries
- Enrolled Actuary
- Member, American Academy of Actuaries

Education

Bachelor of Science, Mathematics, University of Texas, Austin

References

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APPENDIX B

SAMPLE CLIENT LISTS

GRS Statewide Client List

System	Plan Structure	Year Retained	Assets (in billions)	Actives	Retired
Arizona State Retirement System	Cost Sharing Multiple Employer	2016	$50.0	215,000	171,000
Arkansas Judicial Retirement System	Single Employer	1982	$0.3	145	176
Arkansas Local Police and Fire Retirement System	Cost Sharing Multiple Employer	1981	$2.8	7,017	4,500
Arkansas Public Employees Retirement System	Cost Sharing Multiple Employer	1962	$10.0	43,000	42,000
Arkansas State Police Retirement System	Single Employer	1962	$0.4	478	716
Arkansas Teacher Retirement System	Cost Sharing Multiple Employer	1956	$22.0	68,000	56,000
Colorado Fire and Police Pension Association (FPPA)	Agent Multiple Employer	2004	$5.5	15,800	9,900
Employees' Retirement System of Rhode Island	Cost Sharing Multiple Employer	2001	$8.0	24,000	23,000
Hawaii Employees' Retirement System	Cost Sharing Multiple Employer	2001	$22.0	64,000	55,000
Illinois General Assembly Retirement System	Single Employer	2012	$0.8	122	443
Illinois Judges' Retirement System	Single Employer	2012	$1.2	940	1,323
Illinois Municipal Retirement Fund	Agent Multiple Employer	1992	$48.0	175,000	150,000
Illinois State Employees Retirement System	Single Employer	2001	$22.0	62,000	78,000
Kentucky Employee Retirement Systems	Cost Sharing Multiple Employer	2017	$4.5	35,000	53,000
Maryland State Retirement and Pension Agency	Cost Sharing Multiple Employer	2008	$64.0	155,000	225,000
Maryland Transit Administration	Single Employer	2021	$0.4	2,532	2,033
Michigan Judges Retirement System	Cost Sharing Multiple Employer	2006	$0.3	71	528
Michigan Public School Employees Retirement System	Cost Sharing Multiple Employer	2006	$63.0	155,000	225,000
Michigan State Employee Retirement System	Single Employer	2006	$14.0	4,500	60,000
Michigan State Police Retirement System	Single Employer	2006	$1.8	2,013	3,324
Minnesota State Employees Retirement System	Cost Sharing Multiple Employer	2012	$17.0	52,000	48,000
Missouri Dept. of Transportation and Highway Patrol	Cost Sharing Multiple Employer	1999	$3.0	6,600	9,600
Missouri Local Government Employees Retirement System	Agent Multiple Employer	1967	$10.0	36,000	29,000
Municipal Employees Retirement System of Michigan	Agent Multiple Employer	2017	$11.0	30,000	45,000

GRS Statewide Client List (Concluded)

System	Plan Structure	Year Retained	Assets (in billions)	Actives	Retired
New Hampshire Retirement System	Cost Sharing Multiple Employer	2006	$11.0	49,000	42,000
New Mexico Educational Retirement Board	Cost Sharing Multiple Employer	2001	$15.0	60,000	53,000
New Mexico Public Employees Retirement Association	Cost Sharing Multiple Employer	2022	$16.0	48,000	45,000
North Dakota Public Employees Retirement System	Cost Sharing Multiple Employer	2016	$4.0	25,000	15,000
North Dakota Teachers Fund for Retirement	Cost Sharing Multiple Employer	2023	$3.0	12,000	9,600
Ohio Public Employees Retirement System	Cost Sharing Multiple Employer	1954	$92.0	282,000	227,000
Oklahoma Teachers' Retirement System	Cost Sharing Multiple Employer	2001	$20.0	101,000	69,000
Public Employees Retirement Association of Minnesota	Cost Sharing Multiple Employer	2012	$28.0	154,000	119,000
Rhode Island Municipal Retirement System	Cost Sharing Multiple Employer	2001	$2.0	8,100	6,800
South Carolina Retirement System	Cost Sharing Multiple Employer	2011	$34.0	205,000	153,000
State Universities Retirement System of Illinois	Cost Sharing Multiple Employer	1996	$23.0	75,000	73,000
Texas Employees Retirement System	Single Employer	2013	$34.0	140,000	124,000
Texas Municipal Retirement System	Agent Multiple Employer	2008	$36.0	119,000	80,000
Texas Teacher Retirement System	Cost Sharing Multiple Employer	2001	$187.0	953,000	490,000
Utah Retirement System	Cost Sharing Multiple Employer	2001	$38.0	98,000	73,000
Virginia Retirement System	Agent Multiple Employer	2022	$98.0	337,000	263,000
Wisconsin Retirement System	Cost Sharing Multiple Employer	1976	$125.0	259,000	223,000
Wyoming Retirement System	Cost Sharing Multiple Employer	2009	$8.4	34,000	30,000

Sample Public Pension Client List

Alaska

Alaska Retirement Management Board (auditing actuary)

Arkansas

Arkansas Judicial Retirement System
Arkansas Local Police & Fire Retirement System (LOPFI)
Arkansas Public Employees Retirement System
Arkansas State Police Retirement System
Arkansas Teacher Retirement System
City of Conway
Texarkana Association of Public Employee Retirement Systems

Arizona

Arizona Board of Regents
Arizona State Retirement System
City of Phoenix Employees Retirement System
Gila River Indian Community
Tucson Supplemental Retirement System

Colorado

Adams County Retirement Board
Arapahoe County Board of Retirement
Arvada Fire Protection District
Board of Water Works of Pueblo
Briggsdale Fire Protection District
Chaffee County Fire Protection District
City of Arvada
City of Englewood
City of Longmont
Colorado Fire and Police Pension Association (FPPA)
Cortez Fire Protection District
Craig Rural Fire Protection District
Delta County Fire Protection District #1
Delta County Fire Protection District #3
El Paso County Retirement Plan
Fairmount Fire Protection District
Fort Lupton Fire Protection District
Hudson Fire Protection District
Lincoln County
North Metro Fire Rescue District
Pagosa Fire Protection District
Southwest Adams Co Fire Protection District
Strasburg Fire Protection District

Delaware

New Castle County Employees' Pension Program

Florida

Alachua County School District

Florida

Bal Harbour General Employees Pension Plan
Bal Harbour Village Police Officers' Pension Plan
Boca Raton Executive Employees Retirement Plan
Boynton Beach Municipal Police Officers Retirement Fund
Boynton Beach Pension Plan for General Employees
Bradenton Police Officers' Retirement Fund
City of Altamonte Springs
City of Atlantic Beach General Employees Retirement System
City of Atlantic Beach Police Officers' Retirement System
City of Boynton Beach Municipal Firefighters Pension Trust Fund
City of Clearwater
City of Coral Gables Retirement System
City of Coral Springs General
City of Deerfield Beach - Nonuniformed Employees
City of DeLand General Employee's Retirement Plan
City of DeLand Municipal Police Officer's Retirement Plan
City of Delray Beach Firefighters' Retirement System
City of Delray Beach Police Officers' Retirement System
City of Hialeah Elected Officers Retirement System
City of Hollywood General Employees Retirement System
City of Homestead - New Elected Officials and Senior Management Retirement System
City of Homestead Elected Officials Retirement Plan
City of Homestead General Employees Pension Plan
City of Homestead Police Officers Pension Fund
City of Jacksonville Beach Firefighters' Retirement System
City of Jacksonville Beach General Employees' Retirement System
City of Jacksonville Beach Police Officers' Retirement System
City of Key West General Employees' Retirement System
City of Lakeland Employees Retirement System
City of Largo Municipal Police and Firefighters Retirement Plan
City of Lauderhill - General Employees
City of Miami Beach Firefighters' and Police Retirement Plan
City of North Miami Beach
City of North Miami, Clair T. Singerman Pension Plan
City of Okeechobee General Employees

Sample Public Pension Client List

Florida
City of Okeechobee Municipal Police Officers’ and Firefighters’ Pension Trust Fund
City of Orlando General Employees' Pension Fund
City of Sarasota Firefighters' Pension Fund
City of St. Augustine General Retirement System
City of St. Augustine Police Retirement System
City of Starke Firefighters' Retirement System
City of Starke General Employees' Retirement System
City of Starke Police Officers' Retirement System
City of Sunrise General Employees' Retirement Plan
City of Sweetwater Elected Officers' Retirement Trust
City of Tallahassee
City of Tamarac Police Pension Plan Trust Fund
City of West Palm Beach Restated Employees Defined Benefit Retirement System
City of Wilton Manors General Employee's and Police Officer's Retirement System
City of Wilton Manors Volunteer Firefighters' Retirement System
Cooper City Fire Retirement Plan
Cooper City General Employees Retirement System
Cooper City Police Retirement Plan
Dania Beach General Employees Retirement System
Dania Police & Fire Retirement System
Delray Beach General Employees’ Retirement System
Eustis Police Officers' Retirement System
Florida Auditor General
Florida City Elected Official Retirement Plan
Florida Department of Management Services
Fort Lauderdale General Employees Retirement System
Fort Pierce Police Officers Retirement Fund
Fort Pierce Retirement and Benefit System
Gilchrist County School District
Hialeah Gardens Police Pension Fund
Homestead Firefighters Retirement Plan
Jacksonville Electric Authority
Jacksonville Police & Fire Pension Fund
Kissimmee General Employees Retirement Plan
Lake Mary Firefighters Pension Plan
Lake Worth Firefighters Pension System
City of Okeechobee Municipal Police Officers’ and Firefighters’ Pension Trust Fund
Lake Worth General Employees Pension System
Lake Worth Police Officers Pension System
Lantana Firefighters' Pension Fund

Florida
Marianna Fire
Marianna Police
Martin County School District
Melbourne Firefighters Retirement System
Miami Parking Authority
Miami Shores Village General Employees Pension Plan
Miami Shores Village Police Officers Pension Plan
Miami Springs General Employee Retirement System
Miami Springs Police and Firefighters Retirement Plan
Miramar Consolidated Plan
Mount Dora Firefighters Retirement Fund
Mount Dora General Employees Pension Plan
Mount Dora Police Officers Retirement Fund
New Port Richey Police Officers' Retirement System
North Miami Police Pension Plan
Okeechobee Utility Authority Retirement System
Orlando Utilities Commission
Palm Beach County Fire Disability Retirement Fund
Palm Beach County Firefighters Retirement Insurance Fund
Palm Beach Gardens Police Officers Pension Fund
Palm Springs Village Hazardous Employees Pension Plan
Pembroke Pines Firefighters and Police Officers Pension Fund
Pinellas Park Police Officers Pension Fund
Plantation General Employees Retirement System
Plantation Police Officers Retirement System
Plantation Volunteer Firefighters Retirement System
Retirement Plan for Employees of the Town of Surfside
Retirement System for General Employees of the Utility Board of the City of Key West
Riviera Beach Firefighters' Retirement Fund
Riviera Beach General Employees Retirement System
Riviera Beach Police Pension Fund
Sarasota General Employees Pension Fund
Sarasota Police Officers' Pension Fund
Sebring Police Officers' Relief and Pension Fund
St. Lucie County Fire District Firefighters Pension Trust Fund
Sunrise Police Officers Retirement System
Sweetwater Police Officers' Retirement Plan
Tequesta Public Safety Officers' Pension Trust Fund
Town of Lantana Police Officers Pension Fund
Town of Lauderdale-By-The-Sea Volunteer Firefighters' Pension Plan

Sample Public Pension Client List

Florida

Town of Manalapan
Town of Orange Park General Employees' Pension Plan
Town of Palm Beach Retirement System
Vero Beach Firefighters Retirement Fund
Village of Key Biscayne Police and Firefighters Retirement Plan
Village of North Palm Beach General Retirement Fund
Village of Tequesta General Employees Pension Trust
West Melbourne Police Officers' Retirement Fund
West Palm Beach Firefighters Pension Fund
West Palm Beach Police Pension Fund
Winter Park Firefighters' Retirement System
Winter Park Police Officers' Retirement System
Winter Springs General & Police Retirement System

Hawaii

State of Hawaii Employees' Retirement System

Illinois

General Assembly Retirement System of Illinois
Illinois Municipal Retirement Fund
Judges' Retirement System of Illinois
Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago
Policemen's Annuity and Benefit Fund of Chicago
Public School Teachers' Pension and Retirement Fund of Chicago
Regional Transportation Authority
State Employees' Retirement Systems of Illinois
State Universities Retirement System of Illinois

Kentucky

Kentucky Judicial Retirement System
Kentucky Public Pensions Authority

Louisiana

Louisiana Legislative Auditor

Maryland

Maryland Department of Transportation MTA
Maryland State Retirement and Pension System
Montgomery County Public Schools
Montgomery County Employee Retirement Plans
Prince George’s County Government

Michigan

Bay County Employees' Retirement System
Benton Township Policemen and Firemen Retirement System
Berrien County Employees Amended Retirement Plan
Charter Township of Meridian

Michigan

City of Allen Park Employees Retirement System
City of Alpena Employees Retirement System
City of Ann Arbor Employees' Retirement System
City of Battle Creek Police and Fire Retirement System
City of Berkley Public Safety Retirement System
City of Big Rapids Police & Fire Retirement System
City of Birmingham Employees Retirement System
City of Center Line
City of Dearborn Chapter 21 Retirement System
City of Dearborn Chapter 22 Retirement System
City of Dearborn Chapter 23 Retirement System
City of Dearborn Heights Police and Fire Retirement System
City of Detroit General Retirement System
City of Detroit Police and Fire Retirement System
City of Farmington Hills Employees' Retirement System
City of Ferndale Employee Retirement System
City of Ferndale Police and Fire Retirement System
City of Gibraltar Public Safety Officers Retirement System - Act 345
City of Grand Rapids General Retirement System
City of Grand Rapids Police and Fire Retirement System
City of Iron Mountain Policemen and Firemen Retirement System
City of Ishpeming Policemen and Firemen Retirement System
City of Jackson Act 345 Policemen and Firemen Retirement System
City of Jackson Employees Retirement System
City of Jackson Policemen's and Firemen's Pension Fund
City of Kalamazoo Employees Retirement System
City of Kingsford Policemen and Firemen Retirement System
City of Lincoln Park Police Officers and Firefighters Retirement System
City of Madison Heights Policemen and Firemen Retirement System
City of Marquette Policemen and Firemen Retirement System
City of Melvindale Policemen and Firemen Retirement System
City of Menominee Policemen and Firemen Retirement System
City of Midland Police and Fire Fighter Retirement System
City of Monroe Employees Retirement System
City of Mount Clemens Employees Retirement System
City of Mt Pleasant Fire and Police Pension System

Sample Public Pension Client List

Michigan
City of Pontiac General Employees Retirement System
City of Riverview Retirement System
City of Royal Oak Retirement System
City of Sault Ste. Marie Firemen and Policemen Retirement System
City of Southfield Employees Retirement System
City of Southfield Fire and Police Retirement System
City of Southgate Policemen and Firemen Retirement System
City of St Clair Shores Police and Fire Retirement System
City of St. Clair Shores General Employees Retirement System
City of St. Joseph Employees Retirement System
City of Sterling Heights General Employees' Retirement System
City of Sterling Heights Police and Fire Retirement Systems
City of Sturgis Employees Retirement System
City of Troy Employees Retirement System
City of Wyandotte Employees Retirement System
City of Wyoming Employees Retirement System
City of Ypsilanti Fire and Police Retirement System
Detroit Transportation Corporation
Gogebic County Employees Retirement System
Harrison Township Employees Retirement System
Harrison Township Firemen's Pension Fund
Huron-Clinton Metropolitan Authority Employees' Retirement Plan
Jackson County Employees’ Retirement System
Kalamazoo County Employees' Retirement System
Kent County Employees Retirement Plan and Trust
Kent District Library Employees' Retirement Plan
Michigan Legislative Retirement System
Michigan Office of Retirement Services
Midland County Employees Retirement System
Midland County Retirement System Act 345
Municipal Employees Retirement System of Michigan
Oakland County Employees Retirement System
Retirement Plan for Employees of The Charter Township of West Bloomfield
Retirement Plan for Employees of the Niles Township Police and Fire Department
Road Commission for Oakland County Retirement System
Sanilac County Retirement System
The Detroit Police Benefit and Protective Association Benefit Program

Michigan
Troy Incentive Plan for Volunteer Firefighters
Wayne County Employees' Retirement System
Minnesota
Appleton Firefighters Relief
City of Luverne
Minnesota Corrections Association
Minnesota State Retirement System
Public Employees Retirement Association of Minnesota
St. Paul Teachers' Retirement Fund Association
White Bear Lake Fire Relief Association
Missouri
City of Columbia Police and Firemen's Retirement Fund
City of Joplin Policemen's and Firemen's Pension Plan
City of Richmond Heights Policemen & Firemen Retirement Fund
Missouri Local Government Employees Retirement System
MoDOT & Patrol Employees' Retirement System
The Firemen's Retirement System of St. Louis
Montana
Belgrade Fire Department Relief Association Pension Fund
North Carolina
Office of the State Auditor of North Carolina
North Dakota
North Dakota Public Employees' Retirement System
North Dakota Teachers' Fund for Retirement
New Hampshire
City of Manchester Employees' Contributory Retirement System
New Hampshire Retirement System
New Mexico
Jicarilla Apache Nation
New Mexico Education Retirement Board
New Mexico Public Employees Retirement Association
Ohio
Ohio Public Employees Retirement System
Oklahoma
Metropolitan Tulsa Transit Authority Union Employees Pension Plan
Oklahoma City Employee Retirement System
Teachers' Retirement System of Oklahoma
Rhode Island
City of Warwick
Employees’ Retirement System of Rhode Island

Sample Public Pension Client List

South Carolina

Fairfield County Library
South Carolina Public Employee Benefit Authority

South Dakota

City of Sioux Falls Employee's Retirement System
City of Sioux Falls Firefighters' Pension Fund

Texas

Austin Police Retirement System
Beaumont Firemen's Relief and Retirement Fund
City of Austin Employees' Retirement System
City of Fort Worth
City of Irving
City of Plano
Dallas / Fort Worth International Airport Board
Dallas County Utility and Reclamation District
Employees' Retirement Fund of the City of Dallas
Employees Retirement System of Texas
Fort Worth Employees' Retirement Fund
Houston Municipal Employees Pension System
Houston Police Officers' Pension System
San Antonio VIA Metropolitan Transit
Teacher Retirement System of Texas
Texas Municipal Retirement System

Utah

Utah Retirement System

Virginia

City of Fairfax Retirement Plans
Virginia Retirement System

Washington

Port of Seattle

Wisconsin

Milwaukee Public Schools
Wisconsin Retirement System

West Virginia

Employees' Retirement and Benefit Fund of the City of Morgantown

Wyoming

Wyoming Retirement System

APPENDIX C

GRS SAMPLE CLIENT CONTRACT

CONSULTING SERVICES AGREEMENT
BETWEEN THE
[NAME OF CLIENT]
AND
[NAME OF GRS ENTITY]

Section I
General Information

A. Purpose

[Name of Client] (Client) hereby enters into a contractual agreement with [Name of GRS Entity] (GRS) for actuarial and consulting services. The client in this matter shall be Client as represented by the Board of Trustees of Client. This Contract does not create any relationship between Consultant and any other related private, not for profit, or governmental entity, including, but not limited to, Client Plan Sponsor itself or participants in Client. Such entities may rely upon GRS work products only with the permission of both GRS and Client. GRS shall have no obligation to work for such entities; however, GRS may freely elect to work for such an entity with consent of Client.

B. Entire Agreement and Order of Precedence

This Agreement, together with the Proposal issued by GRS to Client and dated [Month/Day/Year] collectively forms the complete and exclusive contract between the parties as it relates to this transaction. In the event of any conflict among these documents, the following order of precedence shall apply (in descending order of precedence):

1. This Agreement
2. GRS' Proposal for Actuarial and Consulting Services dated [Month/Day/Year]

The failure of a party to insist upon strict adherence to any term of the contract shall not be considered a waiver, or deprive the party of the right thereafter to insist upon strict adherence to that term, or any other term, of the contract. The contract may not be modified, amended, extended, or augmented, except by a writing executed by the parties, and any breach or default by a party shall not be waived or released other than in writing signed by the other party.

Each provision of the contract shall be deemed to be severable from all other provisions of the contract and, if one or more of the provisions of the contract shall be declared invalid, the remaining provisions of the contract shall remain in full force and effect. The contract shall in all respects be governed by, and construed in accordance with, the laws of the State of Michigan.

C. Term of Contract

The contract is for the 36-month period extending from January 1, 20XX, through December 31, 20XX. By mutual agreement of the parties, the contract may be renewed on a year-to-year basis, without re-bidding at the end of the contract term.

D. Contractor Responsibilities

GRS assumes responsibility for all contractual activities whether or not it performs them directly. GRS shall be the sole point of contact with regard to contractual matters, including payment of any and all charges resulting from the contract. Client reserves the right to interview the key personnel assigned by GRS to this project and to request reassignment of personnel deemed unsatisfactory by Client in its reasonable discretion.

If any part of the work is to be subcontracted, Client reserves the right to approve the subcontractors in advance, and to require that GRS replace any subcontractors found by Client to be unacceptable in its reasonable discretion. GRS shall be responsible for adherence by the subcontractor to all provisions of the contract.

E. Client Responsibilities

Client agrees to review information supplied by GRS for general reasonableness, and to ensure that GRS has properly understood the assignment. In the event that Client finds a GRS work product to be unreasonable or otherwise unsatisfactory, Client shall not distribute such work product or otherwise make use of it, or rely upon it, until a correction has been made, or GRS has explained matters to the satisfaction of Client. Client agrees that GRS is not responsible for the accuracy or completeness of any data provided to GRS by Client, and Client, to the extent permitted by state and federal law, will indemnify, defend and hold harmless GRS, its employees and agents from and against all losses, liabilities, penalties, fines, damages and claims, and all related costs and expenses (including reasonable attorneys' fees and disbursements and costs of investigation, litigation, settlement, judgments, interest and penalties) incurred by GRS in connection with any inaccuracy or incompleteness in such data. In the event of discovery of an error made by GRS in a calculation, Client agrees to take immediate and substantial steps to mitigate the effects of such error.

F. Accounting Records

GRS shall maintain all pertinent financial and accounting records and evidence pertaining to this contract in accordance with generally accepted accounting principles (GAAP).

G. Patent/Copyright Infringement and Employee Indemnification

GRS shall indemnify, defend and hold harmless Client and its employees and agents from and against all losses, liabilities, penalties, fines, damages and claims, and all related costs and expenses (including reasonable attorneys' fees and disbursements and costs of investigation, litigation, settlement, judgments, interest and penalties) incurred in connection with any action or proceeding threatened or brought against Client to the extent that such action or proceeding is based on a claim that any piece of equipment, software, commodity, or service supplied by GRS or its subcontractors, or the operation of such equipment, software, commodity, or service, or the use or reproduction of any documentation provided with such equipment, software, commodity, or service infringes any United States or foreign patent, copyright, trade secret or other proprietary right of any person or entity, which right is enforceable under the laws of the United States. In addition, should the equipment, software, commodity, or service, or the operation thereof, become, or in GRS' opinion be likely to become, the subject of a claim of infringement, GRS shall at its sole expense, (i) procure for Client the right to continue using the equipment, software, commodity, or service, or (ii) if such option is not reasonably available to GRS, replace or modify the same with equipment, software, commodity, or service of equivalent function and performance so that it becomes non-infringing, or (iii) if such options are not reasonably available to GRS, accept its return by Client with appropriate credits to Client against GRS' charges and reimburse Client for any losses or costs incurred as a consequence of Client ceasing to use and returning the equipment, software, commodity, or service. The foregoing indemnification is void to the extent that Client, its employees or agents modifies or misuses such equipment, software, commodity, or service.

GRS agrees to indemnify Client from claims made by GRS employees while working on Client premises on Client projects, provided that Client has complied with all relevant Federal and State Laws related to workplace safety, and human rights, including, but not limited to anti-discrimination and anti-harassment laws; however, GRS shall not be required to indemnify Client with respect to any claim that is based on Client's negligence or misconduct. In any and all claims against Client, or any of its agents or employees, by any employee of GRS or any of its subcontractors, the foregoing indemnification obligation shall not be limited in any way by the amount or type of damages, compensation, or benefits payable by or for GRS or any of its subcontractors under worker's disability compensation acts, disability benefit acts, or other employee benefit acts. This indemnification clause is intended to be comprehensive. Any overlap in subclauses, or the fact that greater specificity is provided as to some categories of risk, is not intended to limit the scope of indemnification under any other sub clauses.

The duty to indemnify will survive the expiration or early termination of the contract for a period of one year with respect to any claims based on facts or conditions which occurred prior to termination or expiration.

H. Liability Insurance and General Indemnity

GRS shall purchase and maintain such insurance as will protect it from claims which may arise out of or result from its performance under the contract, whether such performance be by GRS or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The insurance shall be written for not less than the greater of $1,000,000 and any limits required by law, and shall include contractual liability insurance as applicable to GRS' obligations under the indemnification clause of this contract.

GRS agrees to indemnify Client for the actual amount of all direct losses the client suffers due to gross negligence, error, or willful misconduct on the part of GRS in performing the services hereunder in an amount not to exceed five (5) times the fees paid under this contract during the year in which said gross negligence, error, or willful misconduct is alleged to have occurred, but in any event not to exceed (a) $250,000 in any consecutive 12-month period in which this Agreement is in effect, commencing as of the first day of the provision of services hereunder, or (b) $500,000 in the aggregate for all such damages. The indemnification provided by GRS for any single act of gross negligence, error, or willful misconduct shall not exceed $250,000. In the event of disputes, both parties to this contract agree to waive their right to a jury trial and that any claims or dispute arising out of this agreement, will be submitted to mandatory binding arbitration before an arbitrator in good standing with the American Arbitration Association. Client must notify GRS of any lawsuit, complaint, or other situation for which indemnification may be sought within six (6) months of the date Client is notified of the matter. Any and all claims related to this Agreement or the services rendered hereunder shall be made within six months of the later of (a) the date the act or omission giving rise to the claim occurred or (b) the earlier of the date that the alleged malfeasance or nonfeasance is discovered or, in the exercise of reasonable diligence, should have been discovered; provided, however, that no claim shall be valid unless also brought within the applicable statute of limitations imposed by law. Any claims not brought within such period shall be forever barred.

Client agrees to indemnify, defend and hold harmless GRS for third party claims to the extent that such third-party claims would cause the aggregate damages to exceed $500,000. Furthermore, Client shall indemnify GRS against third party derivative lawsuits, to the extent that such lawsuits result in a judgment payable to Client.

In no event will GRS be liable to Client for any indirect, incidental, special, consequential, exemplary or reliance damages (including, without limitation, lost business opportunities or lost sales or profits) arising out of GRS' services to Client, regardless of whether GRS is advised of the likelihood of such damages.

I. Board Minutes

The Client shall routinely provide GRS with copies of Board Minutes for GRS' reference in connection with work to be performed pursuant to this contract. GRS is not obligated to provide corrections to the minutes. Silence on the part of GRS does not constitute agreement with the minutes, even with respect to meetings that a GRS employee attended or at which GRS was directly or indirectly quoted.

J. Cancellation

Client, with 30 days written notice to GRS, may cancel the contract. GRS may also cancel the contract with 30 days written notice to Client for any of the following reasons: 1) Client, the Client Plan Sponsor, or one or more plan participants or beneficiaries, or the State has filed a lawsuit against GRS in a matter related to Client, its participants, or its beneficiaries, 2) a member of Client's Board or Staff has been found guilty of criminal or civil breach of fiduciary responsibility or other severe wrongdoing with respect to Client or GRS, or 3) a member of Client's Board or Staff demands that GRS take actions deemed by GRS Management to be unethical or illegal. GRS may otherwise cancel the contract upon giving 90 days written notice to Client. If Client cancels the contract for any reason other than the failure of GRS to fulfill the obligations of the quotation or contract, Client shall pay GRS' reasonable final invoice for work performed under the contract, such final invoice, at the option of GRS, to include a penalty of not more than the greater of $50,000 or 50% of the amount paid under the contract for the most recently completed fiscal year. If Client cancels the contract for failure of GRS to fulfill all obligations under the contract, Client shall pay GRS' reasonable final invoice for work performed under the contract. In the event of the failure of GRS to fill its obligations under the contract, or in the event that GRS cancels this contract without sufficient notice as described above, Client may procure the services of other sources, and hold GRS liable for any excess costs occasioned thereby, up to the greater of $50,000 or 50% of the amount paid under the contract for the most recently completed fiscal year. Excess costs for this purpose, do not include the costs of preparing and issuing an RFP.

K. Delegation/Assignment

GRS shall not delegate any duties under this contract to a subcontractor unless Client has given prior written consent to the delegation. GRS may not assign the right to receive money due under the contract without the prior written consent of Client. In addition, Client reserves the right to approve subcontractors for this project and to require GRS to replace subcontractors who in Client's judgment is unacceptable. Notwithstanding the foregoing, however, GRS shall have the right to assign its rights and duties under this contract in connection with a sale of its business, whether by merger, consolidation, sale of stock, sale of assets or otherwise.

L. Non-Discrimination Clause

In performing the contract, GRS agrees not to discriminate against any employee or applicant for employment, with respect to their hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, ancestry, age, sex, marital status, sexual orientation, physical or mental handicap or disability. GRS further agrees that every subcontract entered into for the performance of services hereunder will contain a provision requiring non-discrimination in employment, as herein specified, binding upon each subcontractor.

M. Fees

The fees set forth in this contract shall be firm for the duration of the contract. Other than routine fee updates for inflation, no fee changes will be permitted without prior written consent of Client. See Section III of this contract.

If GRS is required by governmental regulation, subpoena, or other legal process to produce records or any personnel as a witness with respect to the services provided to Client, Client will reimburse GRS for the costs of professional time and expenses, including, without limitation, reasonable attorneys' fees and expenses, incurred in responding to such requests, so long as GRS is not a party to the proceeding in which the information is sought.

N. Modification of Services

Client reserves the right to modify the service requirements during the course of the contract subject to GRS acceptance and potential changes in pricing. Modifications may include adding, deleting, or altering the work to be performed under the contract. Any changes in pricing (increases or decreases) proposed by GRS as a result of service modifications are subject to written acceptance by Client. In the event that price changes are not acceptable to Client, the contract may be canceled and subject to competitive bidding based upon the new specifications, in which case Client shall pay GRS' reasonable final invoice for work performed under the contract.

O. Confidentiality

GRS shall instruct its employees and the employees of any subcontractor to keep as confidential information concerning the business of Client, its financial affairs, its relations with its participating municipalities and courts, members, retirees and beneficiaries, and its employees, as well as any other information which may be specifically classified as confidential by Client. At Client' request, GRS or any subcontractor(s) and each of their employees may be required to sign confidentiality statements prior to beginning or continuing to work on the contract.

Client will supply participant data to GRS only using a unique employee identification number in place of participant name and social security number. If Client is unable to provide a unique employee identification number in place of participant name and social security number, Client will indemnify, defend and hold harmless GRS, its employees and agents from and against all losses, liabilities, penalties, fines, damages and claims, and all related costs and expenses (including reasonable attorneys' fees and disbursements and costs of investigation, litigation, settlement, judgments, interest and penalties), to the extent permitted by state or federal law for any actual or potential personal data "breach" or "breach of security system" (or similarly defined term under applicable law) associated with the participant information.

GRS reserves the right to destroy Client confidential information one year following receipt, unless it receives instructions to the contrary from Client, in which case GRS will deliver such confidential information to Client at Client's sole cost and expense, including, without limitation, GRS' internal costs to retrieve and collect such information. GRS will not reveal or disclose either information or findings concerning this contract with anyone who does not have a substantial need-to-know and who has not been expressly authorized in writing by Client to receive the information/findings. GRS shall ensure that commercially reasonable safeguards and procedures are implemented to protect confidential information.

P. Record Retention

GRS shall retain records of Client work appropriate to its business needs in accordance with its standard retention policy.

Q. Tax Advice, Legal Advice, and Investment Advice

Based upon its general background and research on Federal Income Tax, Legal Issues, and Investment Matters, GRS employees may from time to time provide general comments and information on same. However, no GRS work product shall be deemed to provide income tax advice, legal advice, or investment advice unless such work product contains one of the following phrases or substantially equivalent language.

- "This work product is intended to provide income tax advice."
- "This work product is intended to provide legal advice."
- "This work product is intended to provide investment advice."

No oral communication of any GRS employee shall be interpreted to provide income tax advice, legal advice, or investment advice. Further, no GRS work product shall be used for the purpose of (i) avoiding tax-related penalties under the Internal Revenue Code or (ii) marketing or recommending to another party any tax-related matter addressed within the work product.

R. Third Party Dealings

Except as may be required by law or legal process, GRS will not provide information related to Client to third parties except with the permission of, and under the specific direction of, Client. By giving such direction and permission, Client agrees to indemnify, defend, and hold harmless GRS, or to require such third party to indemnify GRS, with respect to any such third party's use of GRS work products. GRS shall not review any third-party work product except under the specific written direction of Client to do so, and only for reasonable compensation. Such review if undertaken shall be limited to those areas in which GRS has expertise, and shall specifically exclude conclusions related to income tax, investment matters, and legal matters.

S. Communications

Client shall appoint an individual to serve as GRS' main contact throughout the term of this agreement. GRS shall presume, with no duty of inquiry that all assignments given by such main contact are given with the permission of Client's Board. GRS shall presume, with no duty of inquiry, that all communications and materials provided to such main contact will be transmitted to Client's Board. GRS shall not take direction from any other individual without explicit consent of such main contact.

T. Limitations

GRS shall act with due diligence in all matters in which it provides services under this contract. GRS acts only as the independent actuary for the Client and makes recommendations based upon Client funding policies. GRS does not provide legal or investment advice to the Client. GRS is not a fiduciary, within the meaning of any applicable state or federal law, or member of the board of trustees for the Client, and therefore, GRS does not vote on matters of governance and does not make decisions of any kind on behalf of the Client. GRS relies, as it must, on audited financial statements, demographic data, and member benefit information provided by the Client and/or the employer, and is not engaged to audit this data. GRS shall not be responsible under any circumstance for making employee or employer contributions to Client.

No provision of this contract shall be interpreted to require GRS to provide income tax advice, investment advice, or legal advice to Client. GRS has no responsibility for the performance or non-performance of Client's assets, the structure of Client's portfolio, or the selection or termination of investment managers and consultants. GRS is not a registered municipal advisor with the SEC.

U. Warranty

GRS warrants that all work performed under the contract will be performed by individuals who are qualified under the requirements as are from time-to-time issued by various actuarial and other professional bodies. GRS warrants that the work product will be subject to an internal peer review procedure. Finally, GRS warrants that GRS has no direct or indirect financial relationship to Client, other than the relationship described in this contract. Other than as expressly set forth herein, GRS makes no other express or implied warranties of any kind, including without limitation, any implied warranty of merchantability or fitness for a particular use.

V. Ownership

GRS has created, acquired or otherwise has rights in, and may, in connection with the performance of services hereunder, employ, provide, modify, create, acquire or otherwise obtain rights in, various concepts, ideas, methods, methodologies, procedures, processes, know-how, techniques, templates, software systems, user interfaces and screen designs, general purpose consulting and software tools, benefit administration systems, data, documentation, and other proprietary information and processes ("GRS Technology").

All GRS Technology is and will remain the sole property of GRS, and Client shall acquire no right or interest in such property. Client will honor GRS' copyrights, patents, trademarks and other intellectual property rights relating to the services provided hereunder and the GRS Technology and will not use GRS' name, copyrights, patents, trademarks or other intellectual property without GRS' prior written consent.

Nothing contained in this contract will prohibit GRS from using any of the GRS Technology, its general knowledge or knowledge acquired under this Agreement (excluding confidential information of Client to the extent protected by Section I, Item O) to perform services for others.

W. Force Majeure

GRS shall not be liable for any delays or non-performance hereunder resulting from circumstances or causes beyond its reasonable control, including, without limitation, acts or omissions of or the failure to cooperate by the Client (including, without limitation, entities or individuals under Client's control, or any of their respective officers, directors, employees, or other personnel or agents), acts or omissions of or the failure to cooperate by any third party, fire or other casualty, act of God, strike or labor dispute, war, terrorism or other violence, or any law, order or other requirement of any governmental agency or authority.

X. Independent Contractor

Client and GRS are independent entities, and neither Client nor GRS is, nor shall be considered to be, an agent, distributor, joint venturer, partner, fiduciary or representative of the other. Neither Client nor GRS shall act or represent itself, directly or by implication, in any such capacity in respect of the other or in any manner assume or create any obligation on behalf of, or in the name of, the other.

Section II
Work Statement

A. Duties

The regular and special services duties to be performed by GRS are set forth on pages X to Y of GRS' proposal for Actuarial and Consulting Services dated [Month/Day/Year]. GRS is not constrained from supplementing this list with additional items or elements deemed necessary to permit the development of alternative approaches or the application of proprietary analytical techniques, within the price schedule set forth in the proposal, unless agreed otherwise by the parties in writing.

B. Other Services

From time-to-time, Client may require services other than those described. GRS may be asked to provide communication services, applied technology services, defined contribution plan services, or other supplemental consulting services not described above. Fees for such services shall be based on the hourly rates as described in a separate Letter of Engagement.

If GRS is required by government regulation, subpoena, or other legal process to produce documents or any personnel as a witness with respect to the Services provided to Client, Client will reimburse GRS for the costs of professional time and expenses, including without limitation reasonable attorney's fees, incurred in responding to such requests, so long as GRS is not a party to the proceeding in which the information is sought.

C. Transition

If another vendor succeeds GRS as Client's actuary; GRS shall cooperate in the transition of responsibilities by providing the successor firm the most recent year's actuarial valuation data in the format provided by the Client, and without improvement, and a full set of actuarial assumptions. GRS is not required to provide anything else to such successor actuary. Items that GRS will not provide include, without limitation:

- Internal work papers, including financing spreadsheets.
- Historical reports, correspondence, prior benefit calculations, or any other items that have already been delivered to [client/plan name] or that came from [client/plan name].
- Valuation program output of any type. In particular, we will not supply test life information from our valuation system.
- Source code for or changes to any software, including spreadsheets.
- Any type of certification that the replacement actuary's work is correct.
- Access to GRS offices or computers.
- Any type of actuarial consulting work following [the end date of the contract], including PA728 work, special studies, EDROs, and any other work that the new actuary committed to providing in conjunction with the RFP process, etc.

Such transition cooperation is contingent upon Client's agreement to pay GRS' reasonable final invoice for work performed under this contract. GRS may, at its option and with agreement of Client, provide additional transition assistance to such other vendor. GRS shall charge fees for the first five (5) hours of such additional transition assistance in accordance with the standard rates described herein. For hours in excess of five (5), the fees shall be based upon 150% of the otherwise applicable rates. GRS' obligation to assist the replacement vendor in the transition shall cease upon the 6-month anniversary of the contract termination.

D. Audit

In the event that an Audit of GRS' work for Client is performed during the term of this contract, GRS shall cooperate with the audit to the extent required by actuarial standards and within the limits of GRS corporate policies provided that Client agrees to pay GRS' reasonable fees associated with such cooperation. GRS internal work papers, proprietary information, source code and software are property of GRS and considered confidential and will not be made available to the auditing firm. In the event of an audit subsequent to the termination of this contract, client agrees that GRS shall have no specific duty of cooperation.

Section III
Price and Payment Schedule

A. Price for Actuarial Consulting Services

GRS' fees for Actuarial Consulting Services are set forth on Pages X and Y of the Proposal for Actuarial Consulting Services dated [Month/Day/Year]. Prices specified on Page X are for the first-year services outlined in this proposal. Prices for future contract years are updated for inflation, and changes, if any, in the scope of services requested.

B. Fees for Additional Meetings and Other Services

Hourly rates applicable to these items are set forth on Page X of the Proposal for Actuarial and Consulting Services. These fees are adjusted annually, and do not include direct expenses, such as travel and lodging.

C. Fees and Payment of Invoices

Properly submitted invoices upon which payment is not received within thirty (30) days of the invoice date shall accrue a late charge of 1.5%. Without limiting its right to remedies, GRS shall have the right to halt or terminate the Actuarial Consulting Services entirely if payment is not received within thirty (30) days of the invoice date. Client shall indemnify GRS for the costs of collection of overdue payments.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed effective the 1st day of January, 20XX.

For GRS:	For Client:
________________________________	________________________________
Authorized Signer per policy [Name of GRS Entity]	Client Authorized Representative Client
_________________________, 20XX	_________________________, 20XX

APPENDIX D

SAMPLE ACTUARIAL VALUATION REPORTS

Sample Employees' Retirement System

Annual Actuarial Valuation Report

September 30, 2022

800.521.0498 | P: 248.799.9000 | www.grsconsulting.com

Date

Mr. Sample
Sample Employees' Retirement System
City, State Zip Code

Re: Sample Employees' Retirement System - Actuarial Valuation as of September 30, 2022

Dear Mr. Sample:

The results of the September 30, 2022 actuarial valuation of the Sample Employees' Retirement System (SERS) pension benefits are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine the employer contribution for the 2024-2025 fiscal year and to provide actuarial information for the System's financial report. The report should not be relied upon for any other purpose. This report may be provided to parties other than the Retirement System Services (RSS) only in its entirety and only with the permission of the Retirement System Services. GRS is not responsible for unauthorized use of this report.

The valuation was based upon information, furnished by the Retirement System Services, concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not audited by us. As a result, we are unable to assume responsibility for the accuracy or completeness of the data provided. Year 2005 and prior years' valuation results back to 1993 were not prepared by GRS and are presented for comparison with the current year's results.

The valuation summarized in this report involves actuarial calculations that require making assumptions about future events. We believe that the assumptions and methods used in this report are reasonable and appropriate. However, other assumptions and methods could also be reasonable and could result in materially different results. Some of the numbers in this report are rounded. The use of the rounded numbers for plan liabilities should not imply a lack of precision. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications or calculations to facilitate the modeling of future events. We may also exclude factors or data that we deem to be immaterial.

One Towne Square | Suite 800 | Southfield, Michigan 48076-3723

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (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. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. This valuation was based on the assumption that the plan sponsor will continue to be able to make any contributions necessary to fund the plan in the future. A determination of the plan sponsor's ability to make the necessary contributions in the future is beyond the scope of our expertise and was not performed by us.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

To the best of our knowledge, this report is accurate and fairly presents the actuarial position of the Retirement System. The valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable State statutes. Consultant 1 and Consultant 2 are independent of the plan sponsor and are Members of the American Academy of Actuaries (MAAA) who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Sincerely,
Gabriel, Roeder, Smith & Company

Consultant 1, ASA, FCA, MAAA

Consultant 2, ASA, FCA, MAAA

Table of Contents

Executive Summary/Board Summary

1. Required Employer Contributions to Support Retirement Benefits

The computed employer contribution for fiscal year 2025 is shown below. Computed contributions are displayed as annual dollar amounts. The Retirement System is closed to new members and as a result, contributions expressed as percentages of active member payroll are not useful. We understand that the current policy is to contribute on the basis of the dollar amount shown below plus any reconciliation payments established by subsection 38(5) of the SERS statute.

Contribution $
$665,838,532

2. Contribution Comparison

The chart below compares the results of this valuation of the Retirement System with the results of the prior year's valuation.

Valuation Date	9/30/2021	9/30/2022
Contribution $	$645,166,174	$665,838,532

3. Dedicated Gains Policy

In 2017, the Board adopted a Dedicated Gains Policy. The purpose of the Policy is to reduce the investment return assumption for actuarial valuation purposes if the fiscal year's net market value rate of return exceeds a certain amount. The immediate recognition of the market value return is expected to offset the increase in the computed employer contribution from where it otherwise would have been.

For SERS, the following is applicable:

- For normal cost purposes, the amount of excess investment return is sufficient to cover the increase in the employer normal cost for the first year only.

For the September 30, 2022 valuation, the actual return on the market value of assets was not high enough to trigger the provisions of the Dedicated Gains Policy. Therefore, for the September 30, 2022 valuation, the investment return assumption remained at 6.00%. Please see page C-3 for additional detail.

4. Reasons for Change

There are three general reasons why contributions change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the plan. The second is a change in the valuation assumptions used to predict future occurrences and valuation methods. The third is the difference during the year between the plan's actual experience and what the assumptions predicted.

No benefit changes were reported to the actuary in connection with this valuation of the System and no assumption changes were made. Finally, System experience for the year ending September 30, 2022 was overall unfavorable and is described in more detail in Section B of this report.

SECTION A

INTRODUCTION

Contribution Requirements

Development of Employer Contributions for the Indicated Valuation Date

		September 30	
	Contributions for	**2021**	**2022**
(1)	Fiscal Year Ending September 30,	2024	2025
(2)	Total Normal Cost of Benefits (as a % of member pay)	11.00%	10.90%
(3)	Member Contribution %	4.00%	4.00%
(4)	Employer Normal Cost % = (2) - (3)	7.00%	6.90%
(5)	Projected Tier 1 Active Member Payroll for Applicable Fiscal Year	$ 341,068,513	$ 294,688,540
(6)	Employer Normal Cost $ = (4) x (5)	23,874,796	20,333,509
	a. Tier 2 Employer Normal Cost $	12,216,561	16,980,007
	b. Administrative Expenses	6,500,000	6,500,000
	c. Total Employer Normal Cost $ = (6) + (6a) + (6b)	$ 42,591,357	$ 43,813,516
(7)	Total Accrued Liability	19,799,364,356	19,569,665,483
(8)	Funding Value of Assets	13,690,059,002	13,616,905,793
(9)	Unfunded Actuarial Accrued Liabilities (UAAL) = (7) - (8)	$ 6,109,305,354	$ 5,952,759,690
	a. Present Value of Future Reconciliation Payments	2,106,411	579,852
	b. Net UAAL to be Amortized = (9) - (9a)	$ 6,107,198,943	$ 5,952,179,838
(10)	Amortization Period (years)	13	12
(11)	Amortization Factor (level dollar payments)	9.11568442	8.63291681
(12)	Amortization Payment $ (not less than $0)	$ 602,574,817	$ 622,025,016
(13)	Total Computed Employer Contribution = (6c) + (12)	**$ 645,166,174**	**$ 665,838,532**

Computed Employer Contributions

Based on the assumptions in Section E, the employer normal cost rate for Tier 1 members of the Sample Employees' Retirement System is expected to be 6.90% of payroll. However, there is also an employer normal cost contribution needed to fund the disability and death-in-service benefits for the Tier 2 member population. An amortization payment is also required to finance the UAAL. The sum of these contributions is the computed employer contribution.

The employer contribution determined in this valuation of the System is the computed employer contribution for the fiscal year ending September 30, 2025.

Contribution Requirements

Determining Employer Dollar Contributions

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollars, then promptly contributed to the Retirement System. The employer normal cost rate (expressed as a % of active member payroll) is 6.90%. Applying the employer normal cost contribution rate of 6.90% to the projected payroll for the 2025 fiscal year produces annual employer normal cost contributions of $20,333,509. The Tier 2 annual employer normal cost contributions are $16,980,007. The normal cost contribution for administrative expenses is $6,500,000. The amortization payment for funding the UAAL, $622,025,016, when added together produces a total employer contribution of $665,838,532. This contribution requirement is needed in addition to the reconciliation payment required by subsection 38(5) of the SERS statute.

Disability and Death-In-Service Benefits for Tier 2 Participants

Section 67a of the SERS statute provides that if a Tier 2 participant (defined contribution plan) becomes disabled or dies in State employment, there may be a disability pension or survivor pension payable from the defined benefit plan. The pension amount would be based on the regular disability and death-in-service provisions of the defined benefit plan (Tier 1), but would be reduced to reflect the value of the distribution from the employer portion of the participant's defined contribution account. Beginning with the September 30, 2010 annual actuarial valuation, this Tier 2 benefit provision is included in the calculation of liabilities and the employer contribution requirement. In prior years, there was no advance funding for this benefit provision. When a Tier 2 participant became disabled or died in employment and a defined benefit pension was payable, an actuarial loss occurred and future employer contribution requirements were increased.

Discussion of Changes

Revisions in Benefits

There have been no benefit revisions reported to GRS in connection with this valuation of the Retirement System.

Revisions in Actuarial Assumptions or Methods

There have been no revisions in assumptions or methods since the last valuation of the System.

Actuarial Experience

Actuarial experience during the year ended September 30, 2022 was overall, less favorable than anticipated by the actuarial assumptions. The net actuarial loss was approximately $106 million. The loss was due primarily to unfavorable investment experience. Pages B-2 and C-3 include additional information.

Comment on the Investment Markets

Investment markets continue to be volatile. The actuarial value of assets (funding value), used to determine both the funded status and the required employer contribution, is based on a 5-year smoothed value of assets. This helps to reduce the volatility of the valuation results.

As of September 30, 2022, the actuarial value of assets was approximately 104.2% of the market value of assets. If the September 30, 2022 results were based on the market value of assets instead of the actuarial value of assets, the funded percent of the plan would be 66.8% (instead of 69.6%).

Measures of Financial Soundness

The purpose of this section of the report is to provide certain measures which indicate the financial soundness of the program. These measures relate to long term solvency and level funding.

The various percentages listed in this section as of a single valuation date are not overly significant standing alone. What is more significant is the trend of the rates over a period of years. It is also important to keep in mind that each time benefits or assumptions are revised actuarial liabilities are created or diminished. Any newly created liabilities are financed systematically over a period of future years. All actuarially computed values in this analysis are based on the actuarial assumptions utilized in the respective years' actuarial valuations.

Long Term Funding Progress

Over the longer term, the funding Progress of an ongoing plan can be measured by comparing the actuarial value of assets to an amount known as the actuarial accrued liability (AAL) under the Entry Age actuarial cost method. This item has often been called the "past service liability." The AAL may be affected immediately by any revisions in benefits or assumptions. The accumulation of assets to equal the AAL can be considered a long range funding goal. Largely because of periodic benefit increases and poor investment experience since the early 2000's very few retirement programs have attained this goal.

Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	% of AAL Covered by Assets
9/30/2022	$ 13,616,905,793	$19,569,665,483	69.6%
9/30/2021[1]	13,690,059,002	19,799,364,356	69.1
9/30/2021	12,764,838,680	18,492,140,644	69.0

[1] *Revised actuarial assumptions and/or methods.*

The chart above illustrates that the funded percent has increased since the prior year. Page B-7 of this report shows the funded percent for a longer period and in greater detail. In particular, the funded percent for current benefit recipients is now 79.2% (compared to 79.6% last year).

Measures of Financial Soundness

Level Contributions

The actuarial assumptions and cost methods have been chosen with the intent of producing required employer contributions which remain fairly level. In a closed plan, the normal cost dollar amount will eventually decline as active members retire and terminate employment.

Valuation Date	Employer Normal Cost	Amortization Payment	Total Contribution
9/30/2022	$ 43,813,516	$622,025,016	$665,838,532
9/30/2021[1]	42,591,357	602,574,817	645,166,174
9/30/2021	33,039,260	582,554,093	615,593,353

[1] *Revised actuarial assumptions and/or methods.*

A major factor affecting the stability of the contribution requirements shown above is how well the actual plan experience compares to the actuarial assumptions. The value of the difference between what actually occurred and what was assumed to occur is called the actuarial gain or loss. Gains tend to lower the subsequent cost of the program while losses tend to cause subsequent costs to rise.

Year Ending	Actuarial Gain/(Loss)
9/30/2022	($143,987,390)
9/30/2021	1,427,343,354

The experience loss for the year ending September 30, 2022 was (0.5)% of the beginning of year actuarial accrued liability.

Analysis of all the benchmarks listed above, over a period of years, will provide an indication of whether the program is becoming financially stronger or weaker.

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.00% on the actuarial value of assets), it is expected that:

(1) employer normal cost dollar amounts will eventually decrease as active payroll declines due to the closed nature of the plan,
(2) amortization payment dollar amounts will remain level from fiscal year 2025 through fiscal year 2036,
(3) the unfunded actuarial accrued liability will be fully amortized by September 30, 2036, and
(4) the funded status of the plan will gradually trend towards a 100% funded ratio.

When selecting a contribution allocation procedure, the following three items should be considered, including the balance amongst the three items:

(1) Benefit security,
(2) Intergenerational equity, and
(3) Contribution stability and predictability.

Generally, given the nature of public employee retirement systems (e.g., level contribution financing objective and perceived ongoing nature of the plan or plan sponsor), intergenerational equity and contribution stability and predictability have received more consideration than benefit security when contribution allocation procedures are selected. However, given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regards to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
(2) The measurement is inappropriate for assessing the need for or the amount of future employer contributions.
(3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

Risks Associated with Measuring the Actuarial Accrued Liability and the Total Computed Employer Contribution

The determination of the actuarial accrued liability and the total computed employer contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the actuarial accrued liability and the total computed employer contribution that result from the differences between actual experience and the actuarial assumptions. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. **Investment risk** – actual investment returns may differ from the expected returns;
2. **Asset/Liability mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. **Contribution risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. **Salary and Payroll risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **Other demographic risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant amount of assets held in trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	September 30,				
	2022	2021	2020	2019	2018
Ratio of actives to retirees and beneficiaries	0.1	0.1	0.1	0.1	0.2
Ratio of net cash flow to market value of assets	(6.0)%	(5.4)%	(6.6)%	(5.5)%	(5.5)%
Duration of the actuarial accrued liability	9.78	9.44	9.58	9.76	9.76

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

Duration of the Actuarial Accrued Liability

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, a duration of 10 indicates that the actuarial accrued liability would increase approximately 10% if the assumed rate of return were lowered 1%.

SECTION B

FUNDING RESULTS

Present Value of Future Benefits and Accrued Liability

Determination of Unfunded Accrued Liability
as of September 30, 2022

	All Divisions
A. Accrued Liability	
1. For retirees and beneficiaries	$ 16,975,317,860
2. For vested and other terminated members[1]	292,190,530
3. For other inactive members[2]	48,144,101
4. For present active members	
a. Value of expected future benefit payments	2,626,610,213
b. Value of future normal costs	372,597,221
c. Active member accrued liability: (a) - (b)	2,254,012,992
5. Total accrued liability	19,569,665,483
B. Present Valuation Assets (Funding Value)	13,616,905,793
C. Unfunded Accrued Liability: (A.5) - (B)	$ 5,952,759,690
D. Funding Ratio: (B) / (A.5)	69.6%

[1] *Includes pending refunds.*
[2] *Liability for employees who transferred to the DC pension plan in connection with PA 264 of 2011.*

Experience Gain/(Loss)

A. Derivation of Actuarial Gain/(Loss):

1.	Unfunded Actuarial Accrued Liability (UAAL) - Previous Valuation	$	6,109,305,354
2.	Total Normal Cost (employer plus member) for Year Ending 9/30/2022		59,391,037
3.	Total Contributions (employer plus member) for Year Ending 9/30/2022		707,052,566
4.	Interest at 6.0% on:		
	a. UAAL: .060 x (1)		366,558,321
	b. Normal Cost and Contributions: .030 x [(2) - (3)]		(19,429,846)
	c. Net Total: (a) + (b)		347,128,475
5.	Change in UAAL due to Benefit Changes		0
6.	Change in UAAL due to Assumption/Method Changes		0
7.	Expected UAAL Current Year:		
	(1) + (2) - (3) + (4c) + (5) + (6)		5,808,772,300
8.	Actual UAAL Current Year		5,952,759,690
9.	Experience Gain/(Loss): (7) - (8)	$	(143,987,390)

B. Approximate Portion of Gain/(Loss) due to Investments	$	(88,583,207)
C. Approximate Portion of Gain/(Loss) due to Liabilities: (A.9) - (B)	$	(55,404,183)

The schedule above shows the net aggregate experience for the System. The next page shows this experience in detail.

Detailed Experience Gain/(Loss)

Gains/(Losses) during the Year Ended September 30, 2022
Resulting from Differences between Assumed and Actual Experience

TYPE OF ACTIVITY

	Gain/(Loss)
1. **Retirements** (including disability retirement). If members retire at older ages or with lower final average pay than assumed, there is a gain. If younger ages or higher average pays, a loss.	$ (8,729,463)
2. **Withdrawal from Employment** (including death-in-service). If more liabilities are released by withdrawals and deaths than assumed, there is a gain. If smaller releases, a loss.	12,958,481
3. **Pay Increases.** If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(87,203,575)
4. **Investment Income.** If there is greater investment income than assumed, there is a gain. If less income, a loss.	(88,583,207)
5. **Death After Retirement.** If retirants and inactive vested members live longer than assumed, there is a loss. If not as long, a gain.	47,236,059
6. **Rehires.** Rehires into the System will generally result in an actuarial loss.	-
7. **Other.** Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	(19,665,685)
8. **Composite Gain/(Loss) During Year.**	**$ (143,987,390)**

Experience Gain/(Loss)

Five-Year History
(Amounts Shown in Thousands)

Plan Year Ending September 30	Experience Gain/(Loss)	Gain/(Loss) Due to Investments	Actuarial Value of Investments	Investment Gain/(Loss) as % of Assets
2022	$ (143,987)	$ (88,583)	$ 13,616,906	(0.65)%
2021	1,427,343	1,330,686	13,690,059	9.72
2020	(55,732)	(80,212)	12,296,458	(0.65)
2019	(187,079)	(149,973)	12,374,071	(1.21)
2018	448,265	478,520	12,494,361	3.83

Plan Year Ending September 30	Gain/(Loss) Due to Liabilities	Actuarial Accrued Liability	Liability Gain/(Loss) as % of Accrued Liability
2022	$ (55,404)	$ 19,569,665	(0.28)%
2021	96,657	19,799,364	0.49
2020	24,480	18,742,755	0.13
2019	(37,106)	18,921,131	(0.20)
2018	(30,255)	18,995,244	(0.16)

Historical Funding Levels for Actuarial Accrued Liabilities

(Dollar Amounts Shown in Thousands)

Valuation Date September 30	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio	Unfunded/ (Overfunded) Accrued Liability	Active Member Reported Payroll	Unfunded/(Overfunded) As % of Active Payroll
2009	$14,233,710	$ 11,106,969	78.0%	$ 3,126,741	$ 1,734,325	180.3 %
2010	14,527,692	10,782,287	74.2	3,745,405	1,621,709	231.0
2010 [1]	14,860,375	10,782,287	72.6	4,078,088	1,621,709	251.5
2011	15,596,984	10,212,036	65.5	5,384,948	1,276,058	422.0
2012	15,654,138	9,447,057	60.3	6,207,081	1,155,591	537.1
2013	15,647,718	9,437,627	60.3	6,210,091	1,081,729	574.1
2014	15,770,544	9,961,903	63.2	5,808,641	1,010,987	574.6
2014 [1]	16,172,938	9,961,903	61.6	6,211,035	1,010,987	614.4
2015	16,237,490	10,416,577	64.2	5,820,913	922,093	631.3
2016	16,290,506	10,937,446	67.1	5,353,060	850,584	629.3
2016 [1]	17,015,799	10,937,446	64.3	6,078,353	850,584	714.6
2017	17,107,524	11,407,393	66.7	5,700,131	780,135	730.7
2017 [1]	17,880,549	11,883,784	66.5	5,996,765	780,135	768.7
2018	17,836,468	12,149,374	68.1	5,687,094	702,141	810.0
2018 [1]	18,995,244	12,494,361	65.8	6,500,883	702,141	925.9
2019	18,921,131	12,374,071	65.4	6,547,060	617,584	1060.1
2020	18,742,755	12,296,458	65.6	6,446,297	537,027	1,200.4
2021	18,492,141	12,764,839	69.0	5,727,302	459,576	1,246.2
2021 [1]	19,799,364	13,690,059	69.1	6,109,305	459,576	1,329.3
2022	19,569,665	13,616,906	69.6	5,952,759	403,056	1,476.9

[1] *Revised actuarial assumptions and/or methods.*

Note that in a closed retirement system the unfunded actuarial accrued liability expressed as a percentage of payroll is expected to increase over time due to the reduction in payroll.

Computed and Actual State Contributions
Historical Comparison

Fiscal Year Ending September 30	Valuation Date September 30	Contribution Rates As Percents of Valuation Payroll	Actual Payroll	Employer Contribution for Fiscal Year Computed [4]	Employer Contribution for Fiscal Year Actual
2011	2010 [2]	N/A	$ 1,321,472,297	$ 447,924,105	$ 424,546,805
2012	2011	N/A	1,155,756,859	512,615,918	419,926,997
2013	2012 [3]	N/A	1,104,669,153	611,132,218	604,845,495
2014	2013	N/A	1,006,632,785	624,467,122	705,100,454
2015	2014	N/A	946,976,960	614,805,786	-
2015	2014 [2]	N/A	946,976,960	654,515,057	749,332,013
2016	2015	N/A	872,358,155	645,508,641	716,464,627
2017	2015	N/A	792,083,793	645,508,641	703,130,797
2018	2016	N/A	712,450,393	602,196,668	650,739,520
2019	2016	N/A	637,131,823	537,402,616	-
2019	2016 [2]	N/A	637,131,823	602,196,668	600,083,089
2020	2017	N/A	567,970,914	581,246,070	-
2020	2017 [2]	N/A	567,970,914	600,597,510	613,728,653
2021	2018	N/A	480,782,135	583,470,138	-
2021	2018 [2]	N/A	480,782,135	665,141,237	659,639,389
2022	2019	N/A	419,503,917	685,627,678	688,301,031
2023 [1]	2020	N/A		684,709,853	
2024 [1]	2021	N/A		615,593,353	
2024 [1]	2021 [2]	N/A		645,166,174	
2025 [1]	2022	N/A		665,838,532	

[1] *For the years ending September 30, 2023, September 30, 2024, and September 30, 2025 the actual payroll and actual contributions are not yet known.*

[2] *Revised actuarial assumptions and/or methods.*

[3] *Revised benefit provisions.*

[4] *Computed amounts do not include reconciliation payments required by subsection 38(5) of the SERS statute.*

Historical Funding Levels for Prioritized Actuarial Accrued Liability

Valuation Date September 30	Actuarial Accrued Liability ($ in Millions) (1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active and Inactive Members (Employer Financed Portion)	Valuation Assets ($ in Millions)	Portion of Actuarial Accrued Liability Covered by Assets (1)	(2)	(3)	(4) [1]
2009	$ 127	$ 8,681	$ 5,426	$ 11,107	100%	100.0%	42.4%	78.0%
2010	138	9,151	5,239	10,782	100	100.0	28.5	74.2
2010 [2]	138	9,265	5,457	10,782	100	100.0	25.3	72.6
2011	93	11,197	4,307	10,212	100	90.4	0.0	65.5
2012	121	11,392	4,141	9,447	100	81.9	0.0	60.3
2013	162	11,612	3,874	9,438	100	79.9	0.0	60.3
2014	195	11,869	3,707	9,962	100	82.3	0.0	63.2
2014 [2]	195	12,149	3,829	9,962	100	80.4	0.0	61.6
2015	220	12,483	3,534	10,417	100	81.7	0.0	64.2
2016	239	12,732	3,320	10,937	100	84.0	0.0	67.1
2016 [2]	239	13,240	3,537	10,937	100	80.8	0.0	64.3
2017	246	13,549	3,313	11,407	100	82.4	0.0	66.7
2017 [2]	246	14,104	3,531	11,884	100	82.5	0.0	66.5
2018	250	14,337	3,249	12,149	100	83.0	0.0	68.1
2018 [2]	250	15,259	3,486	12,494	100	80.2	0.0	65.8
2019	242	15,564	3,115	12,374	100	77.9	0.0	65.4
2020	232	15,783	2,728	12,296	100	76.4	0.0	65.6
2021	215	15,926	2,351	12,765	100	78.8	0.0	69.0
2021 [2]	215	16,921	2,663	13,690	100	79.6	0.0	69.1
2022	200	16,975	2,395	13,617	100	79.0	0.0	69.6

[1] *Percent funded on a total valuation asset and total actuarial accrued liability basis.*

[2] *Revised actuarial assumptions and/or methods.*

Financial Objective Achievement Indicators
Historical Comparison
(Dollar Amounts in Thousands)

Valuation September 30	Valuation Assets	Termination Indicator [1] Actuarial Present Value of Vested Benefits	Termination Indicator [1] Funded Ratio	Experience Indicator Actuarial Gain/(Loss)
2009	$ 11,106,969	$ 13,638,715	81.4 %	$ (787,953)
2010	10,782,287	13,976,277	77.1	(631,285)
2010 [2]	10,782,287	14,361,594	75.1	(631,285)
2011	10,212,036	15,193,088	67.2	(1,004,765)
2012	9,447,057	15,318,309	61.7	(807,610)
2013	9,437,627	15,338,434	61.5	(96,787)
2014	9,961,903	15,487,041	64.3	202,925
2014 [2]	9,961,903	15,880,526	62.7	202,925
2015	10,416,577	15,971,116	65.2	142,773
2016	10,937,446	16,051,342	68.1	216,873
2016 [2]	10,937,446	16,781,070	65.2	216,873
2017	11,407,393	16,897,115	67.5	618,769
2017 [2]	11,883,784	17,678,267	67.2	618,769
2018	12,149,374	17,659,402	68.8	448,265
2018 [2]	12,494,361	18,792,368	66.5	448,265
2019	12,374,071	18,746,396	66.0	(187,079)
2020	12,296,458	18,601,515	66.1	(55,732)
2021	12,764,839	18,390,228	69.4	1,427,343
2021 [2]	13,690,059	19,676,953	69.6	1,427,343
2022	13,616,906	19,450,117	70.0	(143,987)

[1] *Based upon the actuarial assumptions used for funding purposes, including the assumed rate of interest.*
[2] *Revised actuarial assumptions and/or methods.*

SECTION C

FUND ASSETS

Statement of Plan Net Assets
(Assets at Market or Fair Value)

	As of September 30th	
	2021	**2022**
Equity in Common Cash	$ 26,346,432	$ 46,963,950
Total Receivables	71,667,866	80,062,672
Short Term Investment Pools	355,973,365	115,374,469
Fixed Income Pools	1,459,732,745	1,216,456,455
Domestic Equity Pools	3,319,221,258	2,356,171,330
Real Estate & Infrastructure Pools	1,014,801,704	1,427,073,936
Alternative Investment Pools	3,359,780,188	3,325,274,834
International Equity Pools	2,349,341,081	1,608,715,102
Absolute Return Pools	773,452,070	1,333,569,653
Real Return and Opportunistic Pools	1,753,371,563	1,557,309,892
Securities Lending Collateral less Obligations	0	0
Total Assets	14,483,688,272	13,066,972,293
Other Liabilities	(2,100,605)	(2,281,495)
Net Assets Held in Trust for Pension Benefits	**$14,481,587,667**	**$13,064,690,798**

Note: Asset amounts exclude assets held for health benefits.

Reconciliation of Plan Net Assets

	Fiscal Year Ending	
	September 30, 2021	September 30, 2022
Market Value, Beginning of Year	$12,027,536,294	$14,481,587,667
Additions		
Member Contributions	23,881,406	18,751,535
Employer Contributions	659,639,389	688,301,031
Net Investment Income	3,191,783,551	(634,398,284)
Audit Adjustment	44,744,821	0
Other Additions	64,058	3,996
Total Additions	$3,920,113,225	$72,658,278
Deductions		
Benefit Payments	1,459,748,602	1,483,367,682
Contribution Refunds/Transfers	388,667	184,506
Administrative Expenses	5,924,583	6,002,959
Total Deductions	1,466,061,852	1,489,555,147
Market Value, End of Year	**$14,481,587,667**	**$13,064,690,798**

Development of Valuation Assets

Year Ended September 30	2022	2023	2024	2025	2026
A. Funding Value Beginning of Year	$ 13,690,059,002				
B. Market Value					
B1. Market Value End of Year	13,064,690,798				
B2. Market Value Beginning of Year	14,481,587,667				
B3. Audit Adjustment	-				
C. Non-Investment Net Cash Flow					
C1. Member Contributions	18,751,535				
C2. Employer Contributions	688,301,031				
C3. Benefit Payments	(1,483,367,682)				
C4. Contribution Refunds / Transfers	(184,506)				
C5. Administrative Expenses	(6,002,959)				
C6. Other	3,996				
C7. Total Net Cash Flow: C1 + C2 + C3 + C4 + C5 + C6	(782,498,585)				
D. Investment Return					
D1. Market Return Total: B1 - B2 - B3 - C7	(634,398,284)				
D2. Assumed Rate of Return	6.00%	6.00%			
D3. Market Rate of Return	-4.50%				
D4. Dedicated Gains Policy Trigger (Excess Return %)	0.00%				
D5. Market Return for Immediate Recognition: D4 x (B2 + B3 + C6/2)	-				
D6. Assumed Amount of Return: D2 x (A + B3 + C6/2)	797,928,583				
D7. Amount Subject to Phase-In: D1 - D5 - D6	(1,432,326,867)				
E. Phased-In Recognition of Investment Return					
E1. Current Year: 0.20 x D7	(286,465,373)				
E2. First Prior Year	197,882,166	$ (286,465,373)			
E3. Second Prior Year	0	197,882,166	$ (286,465,373)		
E4. Third Prior Year	0	0	197,882,166	$ (286,465,373)	
E5. Fourth Prior Year	0	0	0	197,882,167	$ (286,465,375)
E6. Total Phase-Ins	(88,583,207)	(88,583,207)	(88,583,207)	(88,583,206)	(286,465,375)
F. Funding Value End of Year					
F1. Preliminary Funding Value End of Year: A + B3 + C6 + D5 + D6 + E6	$ 13,616,905,793				
F2. Corridor Percent	30%				
F3. Upper Corridor Limit: (100% + F2) x B1	16,984,098,037				
F4. Lower Corridor Limit: (100% - F2) x B1	9,145,283,559				
F5. Funding Value End of Year	$ 13,616,905,793				
G. Difference Between Market and Funding Value	(552,214,995)				
H. Recognized Rate of Return	5.33 %				
I. Market Rate of Return	(4.50)%				
J. Ratio of Funding Value to Market Value	1.0423				

Development of Valuation Assets

Year Ended September 30	2017	2018	2019	2020	2021
A. Funding Value Beginning of Year	$ 10,937,446,017	$ 11,883,784,188	$ 12,494,360,972	$ 12,374,070,881	$ 12,296,457,948
B. Market Value					
B1. Market Value End of Year	11,807,059,132	12,398,001,517	12,227,892,179	12,027,536,294	14,481,587,667
B2. Market Value Beginning of Year	10,980,342,752	11,807,059,132	12,398,001,517	12,227,892,179	12,027,536,294
B3. Audit Adjustment	-	-	532	-	44,744,821
C. Non-Investment Net Cash Flow					
C1. Member Contributions	40,838,900	35,598,366	28,442,002	25,264,952	23,881,406
C2. Employer Contributions	703,130,797	650,739,520	600,083,089	613,728,653	659,639,389
C3. Benefit Payments	(1,322,339,410)	(1,362,275,563)	(1,398,264,962)	(1,432,400,830)	(1,459,748,602)
C4. Contribution Refunds / Transfers	(298,192)	(205,121)	(4,539,677)	(311,218)	(388,667)
C5. Administrative Expenses	Included in D1	Included in D1	(6,987,894)	(5,955,829)	(5,924,583)
C6. Other	Included in D1	Included in D1	Included in D1	Included in D1	64,058
C7. Total Net Cash Flow: C1 + C2 + C3 + C4 + C5 + C6	(578,667,905)	(676,142,798)	(781,267,442)	(799,674,272)	(782,476,999)
D. Investment Return					
D1. Market Return Total: B1 - B2 - B3 - C7	1,405,384,285	1,267,085,183	611,157,572	599,318,387	3,191,783,551
D2. Assumed Rate of Return	7.50%	7.00%	6.70%	6.70%	6.70%
D3. Market Rate of Return	13.15%	11.05%	5.09%	5.07%	27.32%
D4. Dedicated Gains Policy Trigger (Excess Return %)	5.57%	3.76%	0.00%	0.00%	12.00%
D5. Market Return for Immediate Recognition: D4 x (B2 + B3 + C6/2)	595,489,190	431,233,939	-	-	1,401,725,114
D6. Assumed Amount of Return: D2 x (A + B3 + C6/2)	798,608,405	808,199,895	810,949,761	802,273,661	800,647,606
D7. Amount Subject to Phase-In: D1 - D5 - D6	11,286,690	27,651,349	(199,792,189)	(202,955,274)	989,410,831
E. Phased-In Recognition of Investment Return					
E1. Current Year: 0.20 x D7	2,257,338	5,530,270	(39,958,438)	(40,591,055)	197,882,166
E2. First Prior Year	(7,450,439)	2,257,338	5,530,270	(39,958,438)	(162,364,219)
E3. Second Prior Year	(110,351,671)	(7,450,439)	2,257,338	5,530,270	(119,875,312)
E4. Third Prior Year	157,300,250	(110,351,671)	(7,450,439)	2,257,338	11,060,539
E5. Fourth Prior Year	89,153,003	157,300,250	(110,351,673)	(7,450,437)	2,257,338
E6. Total Phase-Ins	130,908,481	47,285,748	(149,972,942)	(80,212,322)	(71,039,488)
F. Funding Value End of Year					
F1. Preliminary Funding Value End of Year: A + B3 + C6 + D5 + D6 + E6	$ 11,883,784,188	$ 12,494,360,972	$ 12,374,070,881	$ 12,296,457,948	$ 13,690,059,002
F2. Corridor Percent	30%	30%	30%	30%	30%
F3. Upper Corridor Limit: (100% + F2) x B1	15,349,176,872	16,117,401,972	15,896,259,833	15,635,797,182	18,826,063,967
F4. Lower Corridor Limit: (100% - F2) x B1	8,264,941,392	8,678,601,062	8,559,524,525	8,419,275,406	10,137,111,367
F5. Funding Value End of Year	$ 11,883,784,188	$ 12,494,360,972	$ 12,374,070,881	$ 12,296,457,948	$ 13,690,059,002
G. Difference Between Market and Funding Value	(76,725,056)	(96,359,455)	(146,178,702)	(268,921,654)	791,528,665
H. Recognized Rate of Return	14.32 %	11.14 %	5.46 %	6.03 %	17.84 %
I. Market Rate of Return	13.15 %	11.05 %	5.09 %	5.07 %	27.32 %
J. Ratio of Funding Value to Market Value	1.0065	1.0078	1.0120	1.0224	0.9453

History of Approximate Investment Return Rates

Plan Year Ending September 30	Approximate Rate of Return [1] Market	Actuarial
2013	13.10 %	5.67 %
2014	15.72	10.81
2015	2.11	9.50
2016	7.40	10.31
2017	13.15	14.32
2018	11.05	11.14
2019	5.09	5.46
2020	5.07	6.03
2021	27.32	17.84
2022	(4.50)	5.33
Average Returns:		
Last five years:	8.32 %	9.06 %
Last ten years:	9.25 %	9.57 %

[1] *Approximate return based on ratio of total investment return to average asset value, using an assumed beginning-of-year timing of audit adjustments (if any) and an assumed mid-year timing of other asset flows (see previous two pages).*

Historical Growth of Assets at Market Value

Ended September 30	Revenues by Source			Expenses by Type			
	Member Contributions	Employer Contributions	Net Investment Income[1]	Retirement Benefits	Return of Contributions and Transfers	Administrative Expenses	Market Value of Assets
2003	$ 80,185,475	$ 79,291,845	$ 1,215,018,189	$ 701,664,432	$ 17,484,652 [2]	$ 5,192,039	$ 8,924,266,601
2004	37,682,883	103,873,294	1,073,759,972	731,009,109	(24,206,316) [2]	4,316,433	9,428,463,524
2005	30,395,040	256,433,052	1,168,692,344	746,673,263	187,049	4,297,985	10,132,825,663
2006	9,434,310	270,705,017	1,248,722,460	767,000,706	133,474	4,628,043	10,889,925,227
2007	19,696,132	150,858,506	1,802,354,022	795,842,013	(41,180,003) [2]	5,115,226	12,103,056,651
2008	5,643,805	355,732,115	(1,840,403,196)	832,553,176	183,559	5,048,737	9,786,243,903
2009	6,994,975	343,787,486	(678,455,022)	870,278,863	272,631	4,865,232	8,583,154,616
2010	26,055,668	369,952,868	883,646,242	917,328,820	265,155	5,073,446	8,940,141,973
2011	25,830,556	424,546,805	360,430,046	1,089,822,880	472,818	6,079,017	8,654,574,665
2012	33,290,784	419,926,997	1,330,021,741	1,156,035,451	188,926	9,253,880	9,272,335,930
2013	53,035,321	604,845,495	1,185,982,164	1,187,911,357	113,038	5,658,318	9,922,516,197
2014	47,527,233	705,100,454	1,529,625,883	1,222,881,091	151,929	6,930,656	10,974,806,091
2015	46,688,372	749,332,013	232,643,264	1,265,335,477	144,115	6,227,748	10,731,762,400
2016	46,665,882	716,464,627	781,806,695	1,289,597,875	130,258	6,628,719	10,980,342,752
2017	40,838,900	703,130,797	1,411,669,258	1,322,339,410	298,192	6,284,973	11,807,059,132
2018	35,598,366	650,739,520	1,273,573,537	1,362,275,563	205,121	6,488,354	12,398,001,517
2019	28,442,002	600,083,089	611,158,104	1,398,264,962	4,539,677	6,987,894	12,227,892,179
2020	25,264,952	613,728,653	599,318,387	1,432,400,830	311,218	5,955,829	12,027,536,294
2021	23,881,406	659,639,389	3,236,592,430	1,459,748,602	388,667	5,924,583	14,481,587,667
2022	18,751,535	688,301,031	(634,394,288)	1,483,367,682	184,506	6,002,959	13,064,690,798

[1] *Includes miscellaneous income and is net of investment expenses.*

[2] *Includes transfers to/from the Health Advance Funding Subaccount.*

Note: Data for the year 2005 and prior years was provided by the State of Sample Department of Technology, Management and Budget - Financial Services.

SECTION D

CENSUS DATA

Summary of Participant Data by Category

	As of September 30	
	2021	**2022**
Retirees and beneficiaries currently receiving benefits:		
Regular benefits	49,761	49,403
Survivor benefits	7,658	7,775
Disability benefits	3,081	2,996
Total	60,500	60,174
Current Employees:		
Vested	5,381	4,501
Non-vested	21	8
Total	5,402	4,509
Inactive participants entitled to benefits and not yet receiving them*:	2,518	2,153
Total Participants	68,420	66,836

* *Includes members who have chosen to participate in Group 3 (DB/DC Blend) and have not yet commenced their pension benefits.*

Retirees and Beneficiaries – Historical Comparison

Year Ended September 30	Number Added	Number Removed	Rolls End of Year Number	Rolls End of Year Annual Benefit [1]	% Increase in Annual Benefits	Average Annual Benefit
2003 [2]	6,448	623	45,491	$ 708,607	29.6 %	$ 15,577
2004	1,561	1,433	45,619	729,087	2.9	15,982
2005	1,542	1,360	45,801	747,428	2.5	16,319
2006	1,728	1,549	45,980	769,096	2.9	16,727
2007	2,206	1,300	46,886	802,018	4.3	17,106
2008	2,653	1,461	48,078	842,612	5.1	17,526
2009	2,423	1,472	49,029	880,763	4.5	17,964
2010	2,937	1,504	50,462	934,092	6.1	18,511
2011 [2]	6,656	1,470	55,648	1,113,963	19.3	20,018
2012	2,186	1,546	56,288	1,143,400	2.6	20,313
2013	2,181	1,615	56,854	1,175,329	2.8	20,673
2014	2,421	1,660	57,615	1,212,333	3.1	21,042
2015	2,490	1,652	58,453	1,254,602	3.5	21,463
2016	2,306	1,721	59,038	1,290,760	2.9	21,863
2017	2,452	1,806	59,684	1,331,385	3.1	22,307
2018	2,224	1,898	60,010	1,366,045	2.6	22,764
2019	2,394	1,903	60,501	1,403,492	2.7	23,198
2020	2,089	1,957	60,633	1,434,395	2.2	23,657
2021	2,035	2,168	60,500	1,459,922	1.8	24,131
2022	1,763	2,089	60,174	1,480,185	1.4	24,598

[1] *Amounts shown in thousands of dollars (excludes temporary Corrections Officers' benefits)*
[2] *Early Retirement Incentive (ERI) program*

Retirees and Beneficiaries
as of September 30, 2022
By Type of Retirement and Selected Option

Amount of Monthly Benefit	Number of Retirees	Type of Retirement*							
		1	2	3	4	5	6	7	8
$ 1 - 400	1,726	1,285	202	9	140	6	53	12	19
401 - 800	6,157	3,978	765	63	834	11	274	32	200
801 - 1,200	7,322	4,350	1,161	18	938	1	338	145	371
1,201 - 1,600	7,671	4,653	859	23	934	2	335	488	377
1,601 - 2,000	8,308	5,247	855	14	586	2	253	1,164	187
2,001 - 2,400	8,520	5,986	671	11	216	0	155	1,402	79
2,401 - 2,800	7,060	5,239	376	1	61	0	73	1,281	29
2,801 - 3,200	4,963	3,690	199	1	17	0	36	1,012	8
3,201 - 3,600	3,243	2,437	95	0	9	0	23	673	6
3,601 - 4,000	1,999	1,521	53	0	3	0	7	413	2
Over 4,000	3,205	2,700	70	0	3	0	15	416	1
Totals	**60,174**	**41,086**	**5,306**	**140**	**3,741**	**22**	**1,562**	**7,038**	**1,279**

Amount of Monthly Benefit	Number of Retirees	Selected Option**							
		Reg.	Opt. A	Opt. B	Opt. C	Opt. E	Opt. E1	Opt. E2	Opt. E3
$ 1 - 400	1,726	758	510	313	44	61	20	17	3
401 - 800	6,157	2,718	1,836	956	198	234	70	129	16
801 - 1,200	7,322	2,673	1,846	1,257	255	692	186	360	53
1,201 - 1,600	7,671	2,998	2,115	981	343	714	169	284	67
1,601 - 2,000	8,308	3,446	2,635	1,156	477	349	117	95	33
2,001 - 2,400	8,520	3,644	2,650	1,301	593	141	108	55	28
2,401 - 2,800	7,060	3,140	2,096	1,136	499	88	53	36	12
2,801 - 3,200	4,963	2,177	1,455	802	386	81	31	18	13
3,201 - 3,600	3,243	1,442	917	538	269	34	14	21	8
3,601 - 4,000	1,999	869	570	355	164	18	10	8	5
Over 4,000	3,205	1,424	841	581	291	26	20	15	7
Totals	**60,174**	**25,289**	**17,471**	**9,376**	**3,519**	**2,438**	**798**	**1,038**	**245**

*** Type of Retirement**

1 – Normal retirement for age & service
2 – Survivor payment – normal or early retirement
3 – Duty disability retirement (incl. survivors)
4 – Non-duty disability retirement (incl. survivors)
5 – Survivor payment – duty death in service
6 – Survivor payment – non-duty death in service
7 – Retirees with supplemental benefits for early retirement incentive factors
8 – Retirees with reduced benefits for early retirement reduction factors

**** Selected Option**

Reg. – Straight life allowance
Opt. A – 100% survivor option
Opt. B – 50% survivor option
Opt. C – 75% survivor option
Opt. E – Social Security equated
Opt. E1 – Social Security equated w/100% survivor option
Opt. E2 – Social Security equated w/50% survivor option
Opt. E3 – Social Security equated w/75% survivor option

Active Members by Classification

	September 30, 2021	September 30, 2022
Conservation Officers		
Number	18	13
Average Age	50.9	51.0
Average Service	25.6	26.1
Reported Payroll	$ 1,790,573	$ 1,298,425
Average Annual Payroll	99,476	99,879
Corrections Officers		
Number	806	542
Average Age	52.8	53.1
Average Service	27.8	28.5
Reported Payroll	$ 69,165,030	$ 49,756,804
Average Annual Payroll	85,813	91,802
All Other		
Number	4,578	3,954
Average Age	57.9	58.4
Average Service	30.9	31.4
Reported Payroll	$ 388,620,815	$ 352,000,669
Average Annual Payroll	84,889	89,024
Total		
Number	5,402	4,509
Average Age	57.1	57.8
Average Service	30.4	31.0
Reported Payroll	$ 459,576,418	$ 403,055,898
Average Annual Payroll	85,075	89,389

Active Members

Members in Active Service as of September 30, 2022
by Age and Years of Service

Age	Years of Service 0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 & up	Total Count	Total Payroll[1]	Average Pay
Less than 30	-	-	-	-	-	-	-	-	$ -	$ -
30 - 34	-	-	-	-	-	-	-	-	-	-
35 - 39	-	-	-	-	-	-	-	-	-	-
40 - 44	-	1	2	2	5	3	-	13	1,048,129	80,625
45 - 49	-	3	21	28	81	157	46	336	30,001,973	89,292
50 - 54	1	1	33	35	116	619	320	1,125	102,302,544	90,936
55 - 59	-	-	26	26	76	425	769	1,322	119,704,498	90,548
60 - 64	-	1	8	18	54	237	773	1,091	95,029,972	87,104
65 - 69	-	-	4	10	11	73	350	448	39,011,265	87,079
70 & up	-	1	1	4	4	16	148	174	15,957,517	91,710
Total	**1**	**7**	**95**	**123**	**347**	**1,530**	**2,406**	**4,509**	**$ 403,055,898**	**$89,389**

[1] *Total payroll for Group 1 active members is $397,591,040 and total payroll for Group 2 active members is $5,464,858.*

Active and Inactive Members Reported for Valuation
Historical Comparison

Valuation Date September 30	Number of Inactive Vested Members[2]	Active Members					
				Average			
		Number	Reported Payroll [1]	Annual Pay	% Increase	Age	Years of Service
2003	7,528	36,536	$ 1,859,555	$ 50,897	2.7 %	47.7	17.9
2004	7,397	34,749	1,889,410	54,373	6.8	48.4	19.0
2005	7,200	33,770	1,880,179	55,676	2.4	49.3	20.0
2006	7,217	32,575	1,847,653	56,720	1.9	50.1	21.0
2007	6,663	30,864	1,825,889	59,159	4.3	50.8	21.8
2008	6,912	28,568	1,763,672	61,736	4.4	51.4	22.7
2009	6,613	27,455	1,734,325	63,170	2.3	52.1	23.5
2010	6,243	25,478	1,621,709	63,651	0.8	52.6	24.1
2011	6,094	19,650	1,276,058	64,939	2.0	51.9	23.3
2012	6,271	17,860	1,155,591	64,703	(0.4)	52.5	24.2
2013	5,343	16,466	1,081,729	65,695	1.5	53.2	25.0
2014	5,007	14,985	1,010,987	67,467	2.7	53.7	25.8
2015	4,606	13,404	922,093	68,792	2.0	54.2	26.5
2016	4,295	11,965	850,584	71,089	3.3	54.7	27.2
2017	3,986	10,459	780,135	74,590	4.9	55.1	27.8
2018	3,817	9,128	702,141	76,922	3.1	55.6	28.5
2019	3,248	7,788	617,584	79,299	3.1	56.0	29.0
2020	2,782	6,515	537,027	82,429	3.9	56.5	29.7
2021	2,518	5,402	459,576	85,075	3.2	57.1	30.4
2022	2,153	4,509	403,056	89,389	5.1	57.8	31.0

[1] *Amounts shown in thousands of dollars.*
[2] *Includes Group 3 members.*

SECTION E

METHODS AND ASSUMPTIONS

Valuation Methods

Actuarial Cost Method - Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using an Individual Entry-Age Actuarial Cost Method having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains (losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

Financing of Unfunded Actuarial Accrued Liabilities - Unfunded actuarial accrued liabilities were amortized by level (principal and interest combined) dollar contributions over a reasonable period of future years.

Present Value of Future Reconciliation Payments – Subsection 38(5) of the SERS statute provides for a process to reconcile actual employer contributions to the required employer contribution requirements. In order to avoid duplication of the employer contributions, the present value of future reconciliation payments is subtracted from the unfunded actuarial accrued liability. The net unfunded actuarial accrued liability is then amortized, resulting in the required amortization payment. Please refer to page A-1 and page E-8 for additional information.

Actuarial Value of System Assets - The actuarial value of assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased in over a closed five-year period. During periods when investment performance exceeds the assumed rate, actuarial value of assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, actuarial value of assets will tend to be greater than market value. The actuarial value of assets is not permitted to deviate from the market value of assets by more than 30%.

Valuation Assumptions

In accordance with Section 38(1) of the SERS statute (Act 240 of the Public Acts of 1943, as amended), the actuarial assumptions are adopted by the Retirement Board and the Department of Management and Budget after consultation with the actuary and investment counsel. The actuarial assumptions were based upon the results of an Experience Study for SERS covering the period October 1, 2012 through September 30, 2017. A report dated June 29, 2018 presented the results of the Experience Study. The investment return assumption was updated beginning with the September 30, 2018 valuation in accordance with the Dedicated Gains Policy adopted by the Board of Trustees. The investment return assumption was further updated beginning with the September 30, 2021 funding valuation in accordance with the Dedicated Gains Policy. The actuarial assumptions represent estimates of future experience.

The rate of investment return was 6.00% a year, compounded annually net of investment expenses. The 6.00% assumption was first used for the September 30, 2021 valuation of the System. The assumed real rate of investment return is the rate of investment return in excess of either wage inflation or price inflation. Considering a wage inflation assumption of 2.75% and a price inflation assumption of 2.25%, the 6.00% nominal rate of investment return translates into a real rate of investment return of 3.25% over wage inflation and 3.75% over price inflation.

The rates of salary increase used for individual members are in accordance with the table below. This assumption is used to project a member's current pay to the pay upon which System benefits will be based. These rates were first used for the September 30, 2018 valuation of the System.

	Salary Increase Assumptions For an Individual Member		
Sample Ages	Merit & Seniority	Base (Economy)	Increase Next Year
20	9.00%	2.75%	11.75%
25	6.00	2.75	8.75
30	2.60	2.75	5.35
35	1.20	2.75	3.95
40	0.80	2.75	3.55
45	0.50	2.75	3.25
50	0.40	2.75	3.15
55	0.40	2.75	3.15
60	0.00	2.75	2.75
65	0.00	2.75	2.75
Ref	326		

The charts shown in this section of the report may include a reference number (for example, 326 is used above). These reference numbers are used by GRS to track and identify assumption tables.

Valuation Assumptions

The mortality tables: The mortality tables used in this valuation of the System are described below:

Healthy Male Retirees:	RP-2014 Male Healthy Annuitant Mortality Table scaled by 93% and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Healthy Female Retirees:	RP-2014 Female Healthy Annuitant Mortality Table scaled by 98% and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Disabled Male Retirees:	RP-2014 Male Disabled Annuitant Mortality Table scaled by 100% and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Disabled Female Retirees:	RP-2014 Female Disabled Annuitant Mortality Table scaled by 100% and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Male Active Members:	RP-2014 Male Employee Mortality Table scaled by 100% and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Female Active Members:	RP-2014 Female Employee Mortality Table scaled by 100% and adjusted for mortality improvements using projection scale MP-2017 from 2006.

Sample Attained Ages	Future Life Expectancy (years)*					
	Healthy Pre-Retirement		Healthy Post-Retirement		Disabled Retirement	
	Men	Women	Men	Women	Men	Women
45	41.74	45.97	40.37	42.46	27.94	33.16
50	36.53	40.76	35.43	37.45	24.73	29.14
55	31.43	35.63	30.65	32.51	21.58	25.31
60	26.49	30.61	26.03	27.72	18.50	21.72
65	21.83	25.71	21.63	23.15	15.59	18.27
70	17.51	20.93	17.49	18.80	12.81	14.89
75	13.54	16.35	13.64	14.74	10.17	11.71
80	9.96	12.03	10.20	11.08	7.77	8.94

* *Life expectancy in future years is determined by the fully generational MP-2017 projection scale. The sample values shown are for individuals with the indicated attained ages in 2022. For Conservation Officers, 80% of active member deaths are assumed to be non-duty related. For Correction Officers, 70% of active member deaths are assumed to be non-duty related. For all others, 90% of active member deaths are assumed to be non-duty related.*

Valuation Assumptions

The rates of regular retirement used to measure the probability of eligible members retiring with an unreduced benefit during the next year are shown below. The Corrections Officers' assumption was first used for the September 30, 2018 valuation of the System.

Retirement Ages	Percent of Eligible Members Retiring: Conservation Officers	Corrections Officers	Others
45	28%		
46	28		
47	28		
48	28		
49	28		
50	28		
51	28	35%	
52	28	30	
53	28	20	
54	28	20	
55	28	23	15%
56	28	25	14
57	28	25	10
58	28	18	10
59	28	18	11
60	28	18	14
61	28	18	13
62	50	32	22
63	40	24	19
64	40	22	16
65	60	25	25
66	50	50	22
67	50	50	21
68	50	50	20
69	50	50	22
70	100	100	50
71	100	100	60
72	100	100	70
73	100	100	80
74	100	100	90
75	100	100	100
Ref	1603	2840	1605

Note: For Conservation Officers, 40% are assumed to retire in their first year of eligibility for unreduced benefits (completion of 25 years of service).

Valuation Assumptions

The rates of early retirement used to measure the probability of eligible members retiring with reduced retirement benefits during the next year are shown below. These rates were first used for the September 30, 2018 valuation of the System.

Retirement Ages	Percent of Eligible Members Retiring
55	3.0%
56	3.0
57	3.0
58	3.5
59	3.5
Ref	2839

The rates of separation from active membership used in the valuation are shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment, and was first used for the September 30, 2018 actuarial valuation of the System.

Sample Ages	Years of Service	Percent Separating Within Next Year
All	0	17.00 %
	1	12.00
	2	8.00
	3	5.50
	4	4.50
20	5 & Over	4.00
25		3.50
30		2.82
35		2.38
40		2.06
45		1.84
50		1.68
55		1.60
60		1.60
Ref	1138	1291

Valuation Assumptions

Rates of disability among active members used in the valuation are shown below, and were first used for the September 30, 2010 valuation of the System.

Sample Ages	Percent Becoming Disabled Within Next Year	
	Non-Duty Disability	Duty Disability
25	0.03%	0.00%
30	0.05	0.01
35	0.10	0.01
40	0.20	0.02
45	0.34	0.04
50	0.47	0.06
55	0.92	0.08
60	2.10	0.11
65	2.30	0.16
Ref.	571	14 x .20

Unknown Data:

- Retired members with unknown gender were assumed to be female.
- Active members with unknown dates of birth were assumed to have an entry-age equal to 27.
- Active members with non-zero service who were reported without any annual pay were assumed to have pay equal to the average pay of the remaining active group.
- Frozen defined benefit amounts were estimated for active members who elected to participate in the DC Plan prospectively as a result of PA 264, when not supplied.
- Accrued benefits were estimated for inactive participants based upon the service and final average compensation provided in the data. If final average compensation was not supplied, the member was assumed to have a final average compensation equal to that of the average of the remaining group.
- Service amounts for inactive members reported with zero service were assumed to have 10 years of service, the minimum requirement to vest.
- For purposes of determining accrued service for active defined contribution members, elapsed time from provided date of hire was used.

Miscellaneous and Technical Assumptions

Administrative Expenses	Administrative expenses are funded through an addition to the normal cost (approximately $6.5 million).
Benefit Service	Exact fractional service is used to determine the amount of benefit.
Decrement Operation	Disability and withdrawal decrements do not operate during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Defined Contribution (DC) Member Account Balance	For purposes of determining the Tier 2 death and disability benefit contribution for the DC member account balance of Tier 2 members, a total contribution rate (employer only) of 6.70% per year was used. In addition, for valuation purposes, the interest rate credited on the DC member account balance is set equal to the valuation interest rate assumption.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Employee Contributions	Employee contributions were credited with interest at 3.5% per year.
Forfeitures	For vested separations from service, it is assumed that 0% of members separating will withdraw their contributions and forfeit an employer financed benefit. It was further assumed that the liability at termination is the greater of the vested deferred benefit (if any) or the member's accumulated contributions.
Incidence of Contributions	Contributions are assumed to be received continuously throughout the year.
Liability Adjustments	Retirement liabilities were increased by 1% to account for unused vacation time. Inactive vested member liabilities were increased by 2% to reflect the value of the death benefit provision.
Marriage Assumption	75% of males and 60% of females were assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	A straight life benefit is the normal form of benefit.
Pay Increase Timing	Pay increases were assumed to be at the beginning of the fiscal year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

Miscellaneous and Technical Assumptions

Reconciliation Payments

RSS provided the following schedule of reconciliation payments. For purposes of determining the present value of the reconciliation payments, it was assumed that payments occur in the middle of the fiscal year.

Fiscal Year	Reconciliation Payment/(Credit)
2023	$ 0
2024	0
2025	0
2026	0
2027	0
2028	798,913

Service Credit Accruals

Members were assumed to accrue 1 year of service credit per year.

Service Purchase Load

Per RSS, $1,843,076 has been reported for purchased service that has not been paid for yet by the members. This amount was included in the accrued liability, to account for the amounts included in the plan's reported assets for purchased service.

SECTION F

PLAN PROVISIONS

Plan Provisions as of September 30, 2022

Plan Provisions as of September 30, 2022

Plan Provisions as of September 30, 2022

Plan Provisions as of September 30, 2022

SECTION G

GLOSSARY

Glossary

Actuarial Accrued Liability	The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”
Accrued Service	The service credited under the plan which was rendered before the date of the actuarial valuation.
Actuarial Assumptions	Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”
Actuarial Equivalent	A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.
Actuarial Present Value	The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.
Amortization	Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.
Experience Gain/(Loss)	A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Glossary

Normal Cost	The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.
Reserve Account	An account used to indicate that funds have been set aside for a specific purpose and is not generally available for other uses.
Unfunded Actuarial Accrued Liability	The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."
Valuation Assets	The value of current plan assets recognized for valuation purposes. Generally based on market value plus a portion of unrealized appreciation or depreciation.

City of Sample Employees' Retirement System

GASB Statement Nos. 67 and 68 Accounting and Financial Reporting for Pensions

December 31, 2021

800.521.0498 | P: 248.799.9000 | www.grsconsulting.com

Date

Board of Trustees
City of Sample Employees'
Retirement System
City, State

Dear Board Members:

The purpose of this report is to provide the accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 for the City of Sample Employees' Retirement System (SERS). These calculations have been made on a basis that is consistent with our understanding of these accounting standards. This report should not be relied upon for any other purpose than described herein.

GASB Statement Nos. 67 and 68 are the accounting standards that apply to the stand-alone financial reports issued by retirement systems. This information is presented in draft form for review by the City's auditor. Please let us know if there are items that the auditor changes so that we may maintain consistency with the City's financial statements.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of assisting in the reporting and disclosure information that satisfies certain requirements of GASB Statement Nos. 67 and 68. The Net Pension Liability is not an appropriate measure for determining the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the City's liability for this report may not be applicable for funding purposes of the Retirement System. A calculation of the City's liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. GASB Statement Nos. 67 and 68 cover pension benefits provided by the Retirement System. The Retirement System also provides post-retirement health benefits through a Section 401(h) sub-trust. The assets and liabilities of the sub-trust have not been included in this report. Please refer to the actuarial valuation for information concerning the liabilities and assets of the sub-trust.

This report may be provided to parties other than the City of Sample Employees' Retirement System and the Board of Trustees only in its entirety and only with the permission of the Board. Authorized or unauthorized use of this report does not create a liability between GRS and the other party. GRS is not responsible for unauthorized use of this report.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report is based upon information, furnished to us by the Retirement System, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but was not audited. We are not responsible for the accuracy or completeness of such information.

This report complements the actuarial valuation report provided to the City of Sample Employees' Retirement System and should be considered collectively as a combined report for the plan year ending December 31, 2021. Please refer to the December 31, 2021 actuarial valuation report for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the City of Sample Employees' Retirement System for the purposes of GASB Statements Nos. 67 and 68 reporting. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

Consultant 1 and Consultant 2 are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsors.

This communication shall not be construed to provide tax advice, legal advice, accounting advice, or investment advice.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Consultant 1, FSA, EA, FCA, MAAA

Consultant 2, FSA, EA, FCA, MAAA

Table of Contents

SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of December 31, 2021

Actuarial Valuation Date		December 31, 2021
Measurement Date of the Net Pension Liability		December 31, 2021
Employer's Fiscal Year Ending Date (Reporting Date)		June 30, 2022
Membership		
Number of		
- Retirees and Beneficiaries		1,041
- Inactive, Nonretired Members		122
- Active Members		1,070
- Total		2,233
Covered Payroll #	$	55,323,580
Net Pension Liability		
Total Pension Liability	$	426,344,434
Plan Fiduciary Net Position		287,263,228
Net Pension Liability	$	139,081,206
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		67.38%
Net Pension Liability as a Percentage of Covered Payroll		251.40%
Development of the Single Discount Rate		
Single Discount Rate		6.75%
Long-Term Expected Rate of Investment Return		6.75%
Long-Term Municipal Bond Rate*		1.84%
Last year ending December 31 in the 2022 to 2121 projection period for which projected benefit payments are fully funded		2121
Total Pension Expense	$	16,283,903

Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

		Deferred Outflows of Resources		Deferred Inflows of Resources
Difference between expected and actual experience	$	3,866,097	$	44,510
Changes in assumptions		18,248,317		-
Net difference between projected and actual earnings on pension plan investments		5,389,435		26,999,488
Total	$	27,503,849	$	27,043,998

 # Based on valuation payroll as of December 31, 2021.

** Source: Fixed-Income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of December 31, 2021, the most recent date available on or before the measurement date. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the Net Pension Liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires State or local governments to recognize the Net Pension Liability and the pension expense on their financial statements. The Net Pension Liability is the difference between the Total Pension Liability and the Plan's Fiduciary Net Position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 States, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to SERS subsequent to the measurement date of December 31, 2021.

The pension expense recognized each fiscal year is equal to the change in the Net Pension Liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The statement of fiduciary net position presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The statement of changes in fiduciary net position presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Discussion

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension Plan's Fiduciary Net Position, Net Pension Liability, and the pension plan's fiduciary net position as a percentage of the Total Pension Liability;
- The Net Pension Liability using a discount rate that is 1% higher and 1% lower than used to calculate the Total Pension Liability and Net Pension Liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the Total Pension Liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the Net Pension Liability;
- Information about the components of the Net Pension Liability and related ratios, including the pension plan's Fiduciary Net Position as a percentage of the Total Pension Liability, and the Net Pension Liability as a percent of covered-employee payroll; and
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Discussion

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.75% on the actuarial value of assets), then the following outcomes are expected:

1. The employer normal cost as a percentage of pay is expected to remain level as a percentage of payroll.
2. The unfunded liability is expected to be paid off in approximately 18 years, which is the number of years remaining in the closed amortization schedule of the unfunded liability.
3. The funded status of the plan is expected to reach a 100% funded ratio in approximately 18 years, which is the number of years remaining in the closed amortization schedule of the unfunded liability.

This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2121. The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The Total Pension Liability shown in this report is based on an actuarial valuation performed as of December 31, 2021 and a measurement date of December 31, 2021.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects: (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits); and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.75%; the municipal bond rate is 1.84% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting Single Discount Rate is 6.75%.

Discussion

Assumption Changes

There were no assumption changes during the year.

Benefit Changes

There were no benefit changes during the year.

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Plan Year Ended December 31, 2021

A. Total Pension Liability	
1. Service cost	6,793,736
2. Interest on the Total Pension Liability	27,407,254
3. Changes of benefit terms	-
4. Difference between expected and actual experience of the Total Pension Liability	781,152
5. Changes of assumptions	-
6. Benefit payments, including refunds of employee contributions	(22,548,469)
7. Net change in Total Pension Liability	12,433,673
8. Total Pension Liability – Beginning	413,910,761
9. Total Pension Liability – Ending	426,344,434
B. Plan Fiduciary Net Position	
1. Contributions – Employer	17,333,301
2. Contributions – Employee	2,478,106
3. Net investment income	30,846,413
4. Benefit payments, including refunds of employee contributions	(22,548,469)
5. Pension plan administrative expense	(775,483)
6. Other	-
7. Net change in Plan Fiduciary Net Position	27,333,868
8. Plan Fiduciary Net Position – Beginning	259,929,360
9. Plan Fiduciary Net Position – Ending	287,263,228
C. Net Pension Liability	139,081,206
D. Plan Fiduciary Net Position as a percentage of the Total Pension Liability	1
E. Covered-Employee Payroll	55,323,580
F. Net Pension Liability as a percentage of Covered-Employee Payroll	3

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios (Multiyear)

(Ultimately 10 Years Will Be Displayed)

Plan Year Ending December 31,	2021	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability								
Service Cost	$ 6,793,736	$ 6,467,132	$ 6,188,578	$ 6,361,053	$ 6,341,280	$ 6,327,991	$ 6,468,648	$ 6,589,804
Interest on the Total Pension Liability	27,407,254	25,471,822	24,447,847	23,689,732	22,956,480	22,438,990	21,231,157	20,108,289
Benefit Changes: Buybacks and COLA	-	-	-	-	-	-	-	-
Experience	781,152	2,625,836	3,974,876	(172,714)	201,281	(5,201,876)	4,528,433	2,716,119
Assumption Changes	-	29,031,182	-	-	9,866,319	-	-	-
Benefit Payments	(21,857,612)	(20,446,872)	(19,272,847)	(17,781,112)	(16,605,774)	(15,812,395)	(14,516,835)	(12,335,397)
Refunds	(690,857)	(222,774)	(302,235)	(567,039)	(229,271)	(220,469)	(446,590)	(207,947)
Net Change in Total Pension Liability	$ 12,433,673	$ 42,926,326	$ 15,036,219	$ 11,529,920	$ 22,530,315	$ 7,532,241	$ 17,264,813	$ 16,870,868
Total Pension Liability - Beginning	$ 413,910,761	$ 370,984,435	$ 355,948,216	$ 344,418,296	$ 321,887,981	$ 314,355,740	$ 297,090,927	$ 280,332,479
Prior Year Adjustment	-	-	-	-	-	-	-	(112,420)
Total Pension Liability - Ending (a)	$ 426,344,434	$ 413,910,761	$ 370,984,435	$ 355,948,216	$ 344,418,296	$ 321,887,981	$ 314,355,740	$ 297,090,927
Plan Fiduciary Net Position								
Employer and Other Contributions	$ 17,333,301	$ 15,442,093	$ 14,205,016	$ 13,113,367	$ 12,221,415	$ 8,391,456	$ 11,613,137	$ 10,959,998
Employee and Add'l Contributions	2,478,106	2,374,547	2,440,534	2,387,580	2,342,148	2,389,882	2,744,956	2,254,021
Pension Plan Net Investment Income	30,846,413	30,899,858	32,777,140	(11,682,616)	30,429,722	11,543,017	(4,783,148)	6,754,397
Benefit Payments	(21,857,612)	(20,446,872)	(19,272,847)	(17,781,112)	(16,605,774)	(15,812,395)	(14,516,835)	(12,335,397)
Refunds	(690,857)	(222,774)	(302,235)	(567,039)	(229,271)	(220,469)	(446,590)	(207,947)
Pension Plan Administrative Expense	(775,483)	(910,717)	(876,660)	(702,533)	(759,927)	(791,762)	(693,329)	(679,116)
Other	-	(1,982)	(36,626)	(59,532)	(50,612)	(61,856)	(65,963)	(50,008)
Net Change in Plan Fiduciary Net Position	$ 27,333,868	$ 27,134,153	$ 28,934,322	$ (15,291,885)	$ 27,347,701	$ 5,437,873	$ (6,147,772)	$ 6,695,948
Plan Fiduciary Net Position - Beginning	$ 259,929,360	$ 232,789,386	$ 203,944,655	$ 219,277,973	$ 191,930,272	$ 186,492,399	$ 192,562,665	$ 185,979,137
Adjustment	-	5,821	(89,591)	(41,433)	-	-	77,506	(112,420)
Plan Fiduciary Net Position - Ending (b)	$ 287,263,228	$ 259,929,360	$ 232,789,386	$ 203,944,655	$ 219,277,973	$ 191,930,272	$ 186,492,399	$ 192,562,665
Net Pension Liability - Ending (a) - (b)	$ 139,081,206	$ 153,981,401	$ 138,195,049	$ 152,003,561	$ 125,140,323	$ 129,957,709	$ 127,863,341	$ 104,528,262
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	67.38 %	62.80 %	62.75 %	57.30 %	63.67 %	59.63 %	59.33 %	64.82 %
Covered-Employee Payroll	$ 55,323,580	$ 54,254,463	$ 52,895,992	$ 51,787,265	$ 53,364,536	$ 52,888,074	$ 52,953,903	$ 54,267,183
Net Pension Liability as a Percentage of Covered-Employee Payroll	251.40 %	283.81 %	261.26 %	293.52 %	234.50 %	245.72 %	241.46 %	192.62 %
Notes to Schedule:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability

(Ultimately 10 Years Will Be Displayed)

December 31,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll*	Net Pension Liability as a % of Covered Payroll
2014	$ 297,090,927	$ 192,562,665	$ 104,528,262	64.82%	$ 54,267,183	192.62%
2015	314,355,740	186,492,399	127,863,341	59.33%	52,953,903	241.46%
2016	321,887,981	191,930,272	129,957,709	59.63%	52,888,074	245.72%
2017	344,418,296	219,277,973	125,140,323	63.67%	53,364,536	234.50%
2018	355,948,216	203,944,655	152,003,561	57.30%	51,787,265	293.52%
2019	370,984,435	232,789,386	138,195,049	62.75%	52,895,992	261.26%
2020	413,910,761	259,929,360	153,981,401	62.80%	54,254,463	283.81%
2021	426,344,434	287,263,228	139,081,206	67.38%	55,323,580	251.40%

** Based on valuation payroll as of plan year ending December 31.*

Schedule of Contributions

(Ultimately 10 Years Will Be Displayed)

Plan Year Ending December 31,	Actuarially Determined Contribution (ADC) #	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll*	Actual Contribution as a % of Covered Payroll
2014	$ 10,959,998	$ 10,959,998	$ -	$ 54,267,183	20.20%
2015	11,613,137	11,613,137	-	52,953,903	21.93%
2016	8,391,456	8,391,456	-	52,888,074	15.87%
2017	12,221,415	12,221,415	-	53,364,536	22.90%
2018	13,113,367	13,113,367	-	51,787,265	25.32%
2019	14,205,016	14,205,016	-	52,895,992	26.85%
2020	15,442,093	15,442,093	-	54,254,463	28.46%
2021	17,333,301	17,333,301	-	55,323,580	31.33%

** Based on valuation payroll as of plan year ending December 31.*

 # Employer contributes based on percent of payroll. Employer pays the ADC percentage.

Notes to Schedule of Contributions

Valuation Date:	December 31, 2019 and December 31, 2020
Notes	Actuarially determined contribution rates are calculated as of December 31 for the contribution period starting 6 months later. Actual contributions reported during the plan year are therefore based on two consecutive ADCs.

Methods and Assumptions Used to Determine Fiscal Year 2021 Contribution Rate:

Actuarial Cost Method	Entry-Age Normal
Amortization Method	Level Percent-of-Payroll, Closed
Remaining Amortization Period	20 years
Asset Valuation Method	5-year smoothed market; 20% corridor
Wage Inflation	2.75%
Salary Increases	3.75% to 7.43% including inflation
Investment Rate of Return	7.00% (net of investment expenses)
Retirement Age	Age and Experience-based table of rates that are specific to the type of eligibility condition.
Mortality	RP-2014 Mortality Table projected to 2026 for males and females using projection scale MP-2017.
Expense Load	1.00% of payroll.
COLA Assumption	1.00% compounded annually.

Other Information:

Notes	There were no changes to benefit provision or actuarial assumptions or methods.

Methods and Assumptions Used to Determine Fiscal Year 2022 Contribution Rate:

Actuarial Cost Method	Entry-Age Normal
Amortization Method	Level Percent-of-Payroll, Closed
Remaining Amortization Period	19 years
Asset Valuation Method	5-year smoothed market; 20% corridor
Wage Inflation	2.50%
Salary Increases	3.25% to 5.96% including inflation
Investment Rate of Return	6.75% (net of investment expenses)
Retirement Age	Age and Experience-based table of rates that are specific to the type of eligibility condition.
Mortality	Pub-2010 Mortality Table projected to 2039 for males and females using projection scale MP-2019.
Expense Load	1.25% of payroll.
COLA Assumption	1.00% compounded annually.

Other Information:

Notes	There were changes to assumptions including many demographic assumptions, assumed rates of investment return, wage inflation, and price inflation, and administrative expenses following the 3-year experience study for period ending December 31, 2019. There were no changes to benefit provisions.

SECTION E

SUMMARY OF BENEFITS

Summary of Benefit Provisions as of December 31, 2021

To Be Provided by the System

Summary of Benefit Provisions as of December 31, 2021

To Be Provided by the System

Summary of Benefit Provisions
as of December 31, 2021

To Be Provided by the System

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the *individual entry-age actuarial cost method.* GASB Statement Nos. 67 and 68 require the use of this method having the following characteristics:

- The annual normal cost for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement;
- Each annual normal cost is a constant percentage of the member's year-by-year projected covered pay; and
- The use of Market Value of Assets for the Net Position Restricted for Pensions.

Actuarial Assumptions Used for the Valuation

The contribution requirements and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and member information furnished, using the actuarial cost method described on the previous page.

The principal areas of financial risk which require assumptions about future experience are:

- Long-term rates of investment return to be generated by the assets of the System;
- Patterns of pay increases to members;
- Rates of mortality among members, retirees and beneficiaries;
- Rates of withdrawal of active members;
- Rates of disability among members; and
- The age patterns of actual retirement.

In a valuation, the monetary effect of each assumption is calculated for as long as a present covered person survives - - - a period of time which can be as long as a century.

Actual experience of the System will not coincide exactly with assumed experience, regardless of the accuracy of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time-to-time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations). The Board has established a policy of performing an Experience Study every three to five years to evaluate/modify valuation assumptions. Assumptions used in this report are based on the January 1, 2017 – December 31, 2019 experience study of the SERS and were adopted by the Board. These assumptions were first used in the December 31, 2020 preliminary actuarial valuation. We believe the assumptions are reasonable individually and in the aggregate.

Valuation Assumptions

The rate of investment return was 6.75% per year, compounded annually (net of investment expenses). This assumption is used to make money payable at one point in time equal in value to a different amount of money payable at another point in time. The assumed real rate of return (the net return in excess of the wage inflation rate) is 4.25%. Experience over the last five years has been as follows:

	Year Ended December 31					5-Year
	2021	**2020**	**2019**	**2018**	**2017**	**Average**
1) Nominal rate of return#	9.7 %	8.6 %	5.6 %	3.4 %	7.4 %	6.9 %
2) Increase in CPI	7.0 %	1.4 %	2.3 %	1.9 %	2.1 %	2.9 %
3) Average Salary Increase (ASI)	3.7 %	5.5 %	4.2 %	(0.1)%	1.2 %	2.9 %
4) Real Return						
- Total: CPI (1) - (2)						4.0 %
- Total: ASI (1) - (3)						4.0 %
- Assumption	4.25 %	4.25 %	4.25 %	4.25 %	4.25 %	4.3 %

 # The nominal rate of return was computed using the approximate formula: i = I divided by ½(A+B-I), where I is realized investment income net of expenses, A is the beginning of year asset funding value and B is the end of year funding asset value.

The rate of assumed price inflation was 2.00% per year. This results in a real rate of return over price inflation of 4.75%.

These economic assumptions were updated for the December 31, 2020 valuation.

Valuation Assumptions (Continued)

The rates of salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Years of Service	Salary Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
1	3.46%	2.50%	5.96%
2	4.43%	2.50%	6.93%
3	4.22%	2.50%	6.72%
4	3.70%	2.50%	6.20%
5	3.38%	2.50%	5.88%
6	2.93%	2.50%	5.43%
7	2.55%	2.50%	5.05%
8	2.26%	2.50%	4.76%
9	2.06%	2.50%	4.56%
10	1.85%	2.50%	4.35%
15	1.08%	2.50%	3.58%
20	0.77%	2.50%	3.27%
25	0.75%	2.50%	3.25%
30	0.75%	2.50%	3.25%
35	0.75%	2.50%	3.25%
40	0.75%	2.50%	3.25%

If the number of active members remains constant, then the total active member payroll will increase 2.50% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

Rates of salary increase were updated for the December 31, 2020 valuation.

Valuation Assumptions (Continued)

The rates of retirement used to measure the probability of eligible members retiring during the next year were updated for the December 31, 2020 valuation and are as follows:

Active Members Retiring Next Year Under Normal Retirement			Active Members Retiring Next Year Under Early Retirement			
	% Retiring			% Retiring		
				Age and Service		
Ages	Male	Female	Ages	Male	Female	Rule of 80
60	12%	8%	50			10%
61	11%	15%	51			4%
62	22%	19%	52			7%
63	18%	10%	53			5%
64	18%	10%	54			5%
65	24%	19%	55	5%	10%	5%
66	38%	27%	56	5%	15%	4%
67	15%	19%	57	5%	8%	8%
68	39%	15%	58	5%	7%	8%
69	15%	22%	59	5%	7%	10%
70	27%	25%				
71	50%	19%				
72	42%	19%				
73	50%	19%				
74	50%	19%				
75	100%	19%				
76	100%	19%				
77	100%	19%				
78	100%	19%				
79	100%	19%				
80	100%	100%				

A member was assumed to be eligible for normal retirement after attaining age 60 regardless of service. A member was assumed to be eligible for early retirement after attaining age 55 with at least 20 years of service or if the sum of age and service is at least 80.

Valuation Assumptions (Continued)

The post-retirement healthy mortality table was the Pub-2010 General Healthy Mortality Table projected to 2039 using projection scale MP-2019.

Sample Attained Ages	Single Life Retirement Values					
	Present Value of $1 Monthly for Life		Percent Dying Next Year		Future Life Expectancy (Years)	
	Male	Female	Male	Female	Male	Female
50	$158.10	$162.48	0.2552%	0.1899%	34.83	37.64
55	150.84	156.27	0.3655%	0.2572%	30.30	33.01
60	141.83	148.25	0.5441%	0.3494%	25.91	28.46
65	130.71	137.94	0.7880%	0.5138%	21.66	23.99
70	117.05	125.04	1.2298%	0.8314%	17.58	19.67
75	101.05	109.55	2.0765%	1.4535%	13.77	15.59
80	83.40	91.89	3.6906%	2.6437%	10.36	11.86

This assumption is used to measure the probabilities of members dying after retirement. The projection to 2039 is the margin for mortality improvement.

Post-retirement disabled mortality table is the Pub-2010 General Disabled Retiree Mortality Tables projected to 2039 using projection scale MP-2019.

Pre-retirement mortality is modeled using the Pub-2010 General Employee Mortality Tables projected to 2039 using projection scale MP-2019.

These tables were updated for the December 31, 2020 valuation in accordance with an experience study for the System of the three-year period ended December 31, 2019.

Valuation Assumptions (Concluded)

Rates of separation from active membership are shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment. These rates were updated for the December 31, 2020 valuation.

Sample Ages	Years of Service	% of Active Members Separating within Next Year	
		Male	Female
	0-1	24.00%	36.00%
	1-2	18.00%	26.00%
	2-3	13.00%	22.00%
	3-4	7.00%	14.00%
	4-5	7.00%	14.00%
	5-6	n/a	11.00%
30	5 & Up (Men) 6 & Up (Women)	4.00%	6.89%
35		2.96%	5.79%
40		2.33%	5.01%
45		2.00%	4.42%
50		1.87%	3.84%

Rates of disability are divided two-thirds toward duty and one-third toward non-duty disability and are as follows:

Sample Ages	% of Active Members Becoming Disabled within Next Year	
	Male	Female
20	0.003%	0.003%
25	0.003%	0.003%
30	0.003%	0.003%
35	0.013%	0.013%
40	0.051%	0.051%
45	0.105%	0.105%
50	0.173%	0.173%
55	0.256%	0.256%
60	0.382%	0.382%

Miscellaneous and Technical Assumptions
December 31, 2021

Marriage Assumption:	50% of males and 50% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Beginning of the year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service on the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and withdrawal decrements do not operate after member reaches retirement eligibility.
Administrative Expense Load:	1.25% of payroll.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.
Benefit Service:	Exact fractional service as of the valuation date is used to determine the amount of benefit payable.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the actual payroll payable at the time contributions are made.
COLA Assumption:	1.00% compounded annually.
Adjustments:	Normal and Early retirement costs were increased by 12% to reflect lump sums that are payable at retirement but not available in the active data. Retiree liabilities were increased 1% to account for pop-up retiree benefits.
Data Processing:	The Retirement System provides data in excel format. GRS reviews the data for reasonableness and completeness. Questions are sent to the System. Data is then modified based on the answers provided. For new members with less than one year of earnings, reported pay is annualized based on reported service.
Data Adjustments:	For one member who had no salary provided, their prior year's salary was used.

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a “risk-free” rate is required, as described in the following paragraph.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits); and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.75%; the municipal bond rate is 1.84%; and the resulting SDR is 6.75%.

The tables in this section provide background for the development of the SDR.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities). Administrative expenses were projected at the current level of 1.4% of payroll.

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the SDR. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development
Projection of Contributions
Ending December 31, 2121

Year	Payroll for Current Employees	Contributions from Current Employees	Service Cost Contributions	Administrative Expense Contributions	UAL Contributions	Total Contributions
0	$ 55,323,580					
1	57,793,659	$ 2,167,262	$ 5,162,571	$ 810,107	$ 12,457,800	$ 20,597,740
2	53,499,080	2,006,216	4,758,748	749,909	11,951,587	19,466,459
3	50,155,530	1,880,832	4,436,027	703,041	11,676,300	18,696,200
4	47,433,745	1,778,765	4,166,348	664,889	11,653,259	18,263,261
5	44,988,977	1,687,087	3,923,501	630,621	11,944,590	18,185,798
6	42,552,760	1,595,728	3,675,111	596,472	12,243,205	18,110,516
7	40,341,259	1,512,797	3,451,968	565,472	12,549,285	18,079,522
8	38,193,518	1,432,257	3,240,237	535,367	12,863,017	18,070,878
9	36,112,514	1,354,219	3,033,689	506,197	13,184,593	18,078,699
10	34,080,231	1,278,009	2,836,506	477,710	13,514,208	18,106,432
11	32,227,281	1,208,523	2,658,028	451,737	13,852,062	18,170,350
12	30,424,020	1,140,901	2,485,616	426,460	14,198,364	18,251,341
13	28,765,426	1,078,703	2,328,757	403,211	14,553,323	18,363,994
14	27,150,015	1,018,126	2,176,955	380,568	14,917,156	18,492,804
15	25,574,216	959,033	2,027,840	358,480	15,290,085	18,635,438
16	24,108,864	904,082	1,893,032	337,939	15,672,337	18,807,391
17	22,693,361	851,001	1,762,443	318,098	16,064,146	18,995,687
18	21,385,603	801,960	1,644,843	299,767	16,465,750	19,212,320
19	20,067,364	752,526	1,523,524	281,289	-	2,557,340
20	18,852,737	706,978	1,416,711	264,263	-	2,387,951
21	17,658,846	662,207	1,311,137	247,528	-	2,220,871
22	16,561,515	621,057	1,218,053	232,146	-	2,071,256
23	15,463,023	579,863	1,124,569	216,749	-	1,921,182
24	14,378,102	539,179	1,035,213	201,541	-	1,775,932
25	13,371,524	501,432	952,810	187,432	-	1,641,674
26	12,334,233	462,534	870,081	172,892	-	1,505,507
27	11,364,902	426,184	794,254	159,304	-	1,379,742
28	10,343,901	387,896	714,825	144,993	-	1,247,714
29	9,399,235	352,471	640,938	131,751	-	1,125,160
30	8,423,616	315,886	567,223	118,076	-	1,001,184
31	7,559,931	283,497	503,720	105,969	-	893,187
32	6,682,672	250,600	439,288	93,673	-	783,561
33	5,859,581	219,734	379,945	82,135	-	681,815
34	5,094,946	191,060	325,974	71,417	-	588,451
35	4,363,959	163,648	275,315	61,171	-	500,134
36	3,694,212	138,533	229,801	51,783	-	420,116
37	3,090,799	115,905	189,720	43,324	-	348,949
38	2,551,837	95,694	154,097	35,770	-	285,561
39	2,039,861	76,495	121,241	28,593	-	226,329
40	1,616,128	60,605	94,365	22,654	-	177,623
41	1,271,782	47,692	73,203	17,827	-	138,721
42	968,642	36,324	54,639	13,578	-	104,541
43	748,812	28,080	41,356	10,496	-	79,933
44	559,353	20,976	30,289	7,841	-	59,106
45	414,832	15,556	22,163	5,815	-	43,534
46	296,340	11,113	15,232	4,154	-	30,499
47	220,034	8,251	11,103	3,084	-	22,438
48	151,201	5,670	7,293	2,119	-	15,082
49	106,264	3,985	4,933	1,490	-	10,407
50	75,492	2,831	3,243	1,058	-	7,131

Single Discount Rate Development
Projection of Contributions
Ending December 31, 2121 (Concluded)

Year	Payroll for Current Employees	Contributions from Current Employees	Service Cost Contributions	Administrative Expense Contributions	UAL Contributions	Total Contributions
51	$ 51,853	$ 1,944	$ 2,190	$ 727	$ -	$ 4,862
52	37,425	1,403	1,441	525	-	3,369
53	24,860	932	950	348	-	2,231
54	18,016	676	679	253	-	1,608
55	11,778	442	374	165	-	981
56	8,719	327	272	122	-	721
57	5,757	216	183	81	-	480
58	3,316	124	104	46	-	274
59	1,635	61	42	23	-	126
60	939	35	31	13	-	79
61	408	15	11	6	-	32
62	101	4	3	1	-	8
63	-	-	-	-	-	-
64	-	-	-	-	-	-
65	-	-	-	-	-	-
66	-	-	-	-	-	-
67	-	-	-	-	-	-
68	-	-	-	-	-	-
69	-	-	-	-	-	-
70	-	-	-	-	-	-
71	-	-	-	-	-	-
72	-	-	-	-	-	-
73	-	-	-	-	-	-
74	-	-	-	-	-	-
75	-	-	-	-	-	-
76	-	-	-	-	-	-
77	-	-	-	-	-	-
78	-	-	-	-	-	-
79	-	-	-	-	-	-
80	-	-	-	-	-	-
81	-	-	-	-	-	-
82	-	-	-	-	-	-
83	-	-	-	-	-	-
84	-	-	-	-	-	-
85	-	-	-	-	-	-
86	-	-	-	-	-	-
87	-	-	-	-	-	-
88	-	-	-	-	-	-
89	-	-	-	-	-	-
90	-	-	-	-	-	-
91	-	-	-	-	-	-
92	-	-	-	-	-	-
93	-	-	-	-	-	-
94	-	-	-	-	-	-
95	-	-	-	-	-	-
96	-	-	-	-	-	-
97	-	-	-	-	-	-
98	-	-	-	-	-	-
99	-	-	-	-	-	-
100	-	-	-	-	-	-

Single Discount Rate Development
Projection of Plan Fiduciary Net Position
Ending December 31, 2121

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.75%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 287,263,228	$ 20,597,740	$ 24,690,886	$ 810,107	$ 19,227,485	$ 301,587,461
2	301,587,461	19,466,459	25,896,018	749,909	20,118,803	314,526,796
3	314,526,796	18,696,200	27,027,583	703,041	20,930,626	326,422,998
4	326,422,998	18,263,261	28,211,669	664,889	21,681,202	337,490,902
5	337,490,902	18,185,798	29,403,147	630,621	22,387,296	348,030,230
6	348,030,230	18,110,516	30,633,188	596,472	23,056,499	357,967,585
7	357,967,585	18,079,522	31,805,863	565,472	23,688,339	367,364,111
8	367,364,111	18,070,878	32,956,652	535,367	24,285,112	376,228,081
9	376,228,081	18,078,699	34,025,398	506,197	24,849,177	384,624,362
10	384,624,362	18,106,432	35,042,542	477,710	25,384,024	392,594,566
11	392,594,566	18,170,350	35,941,956	451,737	25,895,138	400,266,361
12	400,266,361	18,251,341	36,768,710	426,460	26,389,065	407,711,596
13	407,711,596	18,363,994	37,484,222	403,211	26,872,376	415,060,533
14	415,060,533	18,492,804	38,094,956	380,568	27,353,181	422,430,995
15	422,430,995	18,635,438	38,597,558	358,480	27,839,470	429,949,866
16	429,949,866	18,807,391	38,997,074	337,939	28,340,121	437,762,364
17	437,762,364	18,995,687	39,295,038	318,098	28,864,483	446,009,398
18	446,009,398	19,212,320	39,447,887	299,767	29,423,884	454,897,948
19	454,897,948	2,557,340	39,485,681	281,289	29,470,292	447,158,609
20	447,158,609	2,387,951	39,451,114	264,263	28,943,976	438,775,160
21	438,775,160	2,220,871	39,329,954	247,528	28,377,124	429,795,673
22	429,795,673	2,071,256	39,095,117	232,146	27,774,349	420,314,014
23	420,314,014	1,921,182	38,776,219	216,749	27,140,453	410,382,681
24	410,382,681	1,775,932	38,381,801	201,541	26,478,865	400,054,136
25	400,054,136	1,641,674	37,932,839	187,432	25,792,604	389,368,143
26	389,368,143	1,505,507	37,435,463	172,892	25,083,774	378,349,069
27	378,349,069	1,379,742	36,901,128	159,304	24,354,002	367,022,381
28	367,022,381	1,247,714	36,316,788	144,993	23,604,942	355,413,256
29	355,413,256	1,125,160	35,660,809	131,751	22,839,475	343,585,330
30	343,585,330	1,001,184	34,961,351	118,076	22,060,649	331,567,737
31	331,567,737	893,187	34,194,574	105,969	21,271,734	319,432,115
32	319,432,115	783,561	33,433,366	93,673	20,474,620	307,163,257
33	307,163,257	681,815	32,689,444	82,135	19,668,174	294,741,667
34	294,741,667	588,451	31,891,175	71,417	18,853,475	282,221,002
35	282,221,002	500,134	31,039,798	61,171	18,034,003	269,654,170
36	269,654,170	420,116	30,145,370	51,783	17,213,091	257,090,225
37	257,090,225	348,949	29,227,127	43,324	16,393,428	244,562,150
38	244,562,150	285,561	28,287,076	35,770	15,577,138	232,102,003
39	232,102,003	226,329	27,321,345	28,593	14,766,411	219,744,804
40	219,744,804	177,623	26,315,171	22,654	13,964,284	207,548,887
41	207,548,887	138,721	25,281,309	17,827	13,174,251	195,562,724
42	195,562,724	104,541	24,233,166	13,578	12,398,989	183,819,510
43	183,819,510	79,933	23,173,099	10,496	11,640,800	172,356,649
44	172,356,649	59,106	22,120,276	7,841	10,901,407	161,189,044
45	161,189,044	43,534	21,075,313	5,815	10,181,835	150,333,285
46	150,333,285	30,499	20,036,179	4,154	9,483,192	139,806,643
47	139,806,643	22,438	19,008,981	3,084	8,806,513	129,623,529
48	129,623,529	15,082	17,999,051	2,119	8,152,470	119,789,911
49	119,789,911	10,407	17,000,248	1,490	7,521,725	110,320,305
50	110,320,305	7,131	16,017,879	1,058	6,915,046	101,223,546

Single Discount Rate Development
Projection of Plan Fiduciary Net Position
Ending December 31, 2121 (Concluded)

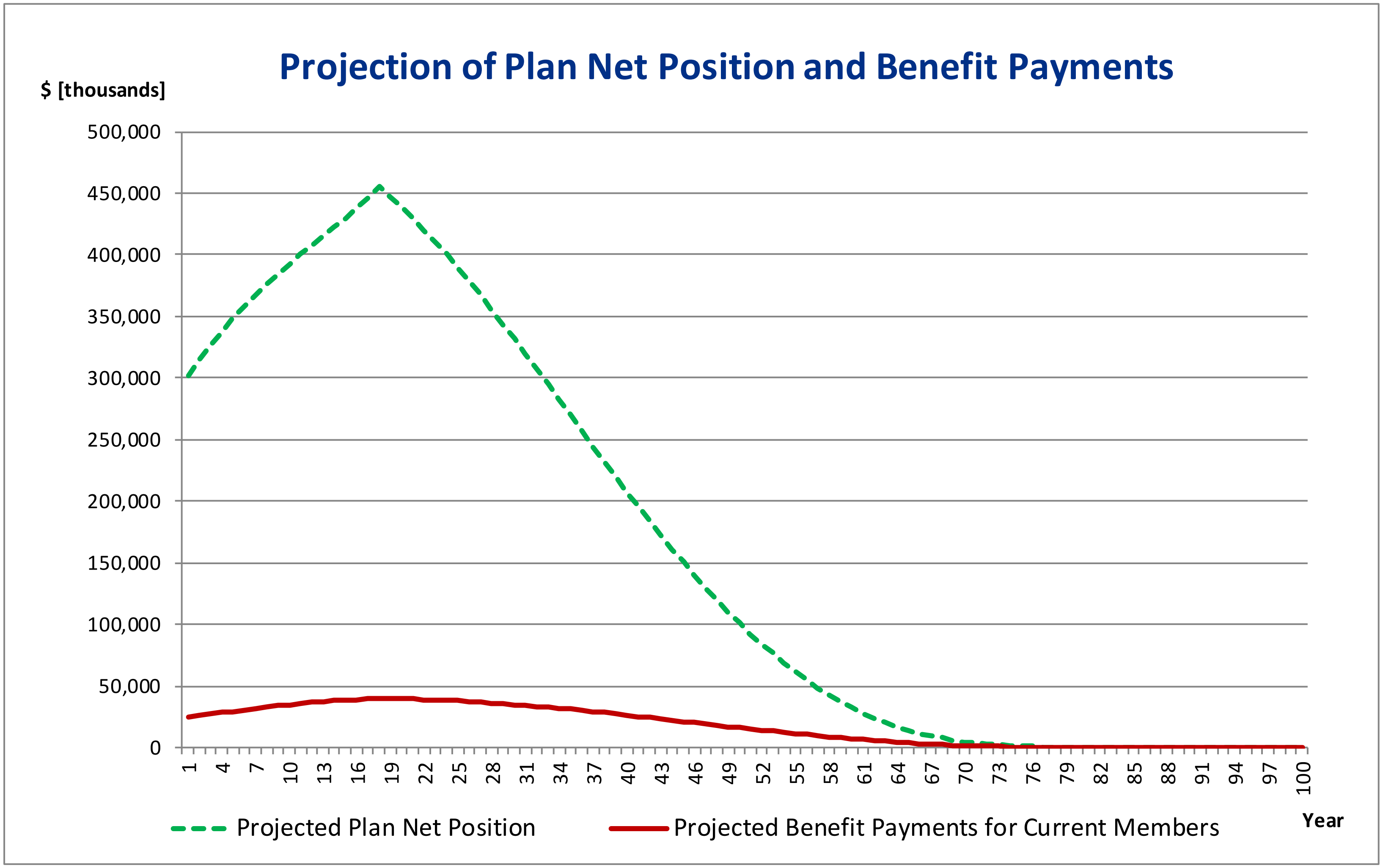
Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.75%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	$ 101,223,546	$ 4,862	$ 15,051,990	$ 727	$ 6,333,017	$ 92,508,708
52	92,508,708	3,369	14,103,355	525	5,776,216	84,184,413
53	84,184,413	2,231	13,172,345	348	5,245,203	76,259,154
54	76,259,154	1,608	12,258,838	253	4,740,558	68,742,228
55	68,742,228	981	11,364,335	165	4,262,844	61,641,553
56	61,641,553	721	10,489,663	122	3,812,579	54,965,069
57	54,965,069	480	9,637,449	81	3,390,202	48,718,221
58	48,718,221	274	8,808,966	46	2,996,039	42,905,522
59	42,905,522	126	8,006,135	23	2,630,331	37,529,821
60	37,529,821	79	7,231,853	13	2,293,175	32,591,210
61	32,591,210	32	6,489,359	6	1,984,468	28,086,345
62	28,086,345	8	5,781,486	1	1,703,889	24,008,755
63	24,008,755	-	5,111,123	-	1,450,907	20,348,540
64	20,348,540	-	4,481,149	-	1,224,757	17,092,147
65	17,092,147	-	3,894,214	-	1,024,436	14,222,369
66	14,222,369	-	3,352,505	-	848,710	11,718,575
67	11,718,575	-	2,857,633	-	696,134	9,557,076
68	9,557,076	-	2,410,482	-	565,077	7,711,671
69	7,711,671	-	2,011,033	-	453,774	6,154,412
70	6,154,412	-	1,658,434	-	360,365	4,856,342
71	4,856,342	-	1,351,146	-	282,947	3,788,143
72	3,788,143	-	1,086,970	-	219,613	2,920,786
73	2,920,786	-	863,095	-	168,499	2,226,190
74	2,226,190	-	676,215	-	127,818	1,677,793
75	1,677,793	-	522,656	-	95,899	1,251,037
76	1,251,037	-	398,516	-	71,215	923,736
77	923,736	-	299,844	-	52,398	676,289
78	676,289	-	222,769	-	38,254	491,774
79	491,774	-	163,605	-	27,763	355,933
80	355,933	-	118,974	-	20,076	257,035
81	257,035	-	85,868	-	14,499	185,666
82	185,666	-	61,692	-	10,484	134,458
83	134,458	-	44,275	-	7,606	97,789
84	97,789	-	31,859	-	5,543	71,473
85	71,473	-	23,063	-	4,059	52,469
86	52,469	-	16,836	-	2,983	38,616
87	38,616	-	12,405	-	2,195	28,405
88	28,405	-	9,215	-	1,611	20,802
89	20,802	-	6,878	-	1,176	15,100
90	15,100	-	5,129	-	849	10,820
91	10,820	-	3,802	-	604	7,621
92	7,621	-	2,786	-	422	5,257
93	5,257	-	2,008	-	288	3,538
94	3,538	-	1,418	-	192	2,312
95	2,312	-	977	-	124	1,458
96	1,458	-	656	-	77	879
97	879	-	428	-	45	496
98	496	-	271	-	25	250
99	250	-	166	-	11	96
100	96	-	99	-	3	0

Single Discount Rate Development
Present Values of Projected Benefits
Ending December 31, 2121

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
1	$ 287,263,228	$ 24,690,886	$ 24,690,886	$ -	$ 23,897,514	$ -	$ 23,897,514
2	301,587,461	25,896,018	25,896,018	-	23,479,084	-	23,479,084
3	314,526,796	27,027,583	27,027,583	-	22,955,540	-	22,955,540
4	326,422,998	28,211,669	28,211,669	-	22,446,116	-	22,446,116
5	337,490,902	29,403,147	29,403,147	-	21,914,841	-	21,914,841
6	348,030,230	30,633,188	30,633,188	-	21,387,934	-	21,387,934
7	357,967,585	31,805,863	31,805,863	-	20,802,520	-	20,802,520
8	367,364,111	32,956,652	32,956,652	-	20,192,215	-	20,192,215
9	376,228,081	34,025,398	34,025,398	-	19,528,829	-	19,528,829
10	384,624,362	35,042,542	35,042,542	-	18,840,860	-	18,840,860
11	392,594,566	35,941,956	35,941,956	-	18,102,516	-	18,102,516
12	400,266,361	36,768,710	36,768,710	-	17,347,933	-	17,347,933
13	407,711,596	37,484,222	37,484,222	-	16,567,232	-	16,567,232
14	415,060,533	38,094,956	38,094,956	-	15,772,518	-	15,772,518
15	422,430,995	38,597,558	38,597,558	-	14,970,128	-	14,970,128
16	429,949,866	38,997,074	38,997,074	-	14,168,694	-	14,168,694
17	437,762,364	39,295,038	39,295,038	-	13,374,194	-	13,374,194
18	446,009,398	39,447,887	39,447,887	-	12,577,253	-	12,577,253
19	454,897,948	39,485,681	39,485,681	-	11,793,258	-	11,793,258
20	447,158,609	39,451,114	39,451,114	-	11,037,877	-	11,037,877
21	438,775,160	39,329,954	39,329,954	-	10,308,176	-	10,308,176
22	429,795,673	39,095,117	39,095,117	-	9,598,713	-	9,598,713
23	420,314,014	38,776,219	38,776,219	-	8,918,423	-	8,918,423
24	410,382,681	38,381,801	38,381,801	-	8,269,516	-	8,269,516
25	400,054,136	37,932,839	37,932,839	-	7,656,005	-	7,656,005
26	389,368,143	37,435,463	37,435,463	-	7,077,863	-	7,077,863
27	378,349,069	36,901,128	36,901,128	-	6,535,679	-	6,535,679
28	367,022,381	36,316,788	36,316,788	-	6,025,466	-	6,025,466
29	355,413,256	35,660,809	35,660,809	-	5,542,510	-	5,542,510
30	343,585,330	34,961,351	34,961,351	-	5,090,209	-	5,090,209
31	331,567,737	34,194,574	34,194,574	-	4,663,766	-	4,663,766
32	319,432,115	33,433,366	33,433,366	-	4,271,612	-	4,271,612
33	307,163,257	32,689,444	32,689,444	-	3,912,473	-	3,912,473
34	294,741,667	31,891,175	31,891,175	-	3,575,579	-	3,575,579
35	282,221,002	31,039,798	31,039,798	-	3,260,070	-	3,260,070
36	269,654,170	30,145,370	30,145,370	-	2,965,929	-	2,965,929
37	257,090,225	29,227,127	29,227,127	-	2,693,757	-	2,693,757
38	244,562,150	28,287,076	28,287,076	-	2,442,263	-	2,442,263
39	232,102,003	27,321,345	27,321,345	-	2,209,727	-	2,209,727
40	219,744,804	26,315,171	26,315,171	-	1,993,769	-	1,993,769
41	207,548,887	25,281,309	25,281,309	-	1,794,322	-	1,794,322
42	195,562,724	24,233,166	24,233,166	-	1,611,176	-	1,611,176
43	183,819,510	23,173,099	23,173,099	-	1,443,275	-	1,443,275
44	172,356,649	22,120,276	22,120,276	-	1,290,588	-	1,290,588
45	161,189,044	21,075,313	21,075,313	-	1,151,869	-	1,151,869
46	150,333,285	20,036,179	20,036,179	-	1,025,832	-	1,025,832
47	139,806,643	19,008,981	19,008,981	-	911,701	-	911,701
48	129,623,529	17,999,051	17,999,051	-	808,677	-	808,677
49	119,789,911	17,000,248	17,000,248	-	715,505	-	715,505
50	110,320,305	16,017,879	16,017,879	-	631,531	-	631,531

Single Discount Rate Development
Present Values of Projected Benefits
Ending December 31, 2121 (Concluded)

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
51	$ 101,223,546	$ 15,051,990	$ 15,051,990	$ -	$ 555,924	$ -	$ 555,924
52	92,508,708	14,103,355	14,103,355	-	487,951	-	487,951
53	84,184,413	13,172,345	13,172,345	-	426,923	-	426,923
54	76,259,154	12,258,838	12,258,838	-	372,192	-	372,192
55	68,742,228	11,364,335	11,364,335	-	323,217	-	323,217
56	61,641,553	10,489,663	10,489,663	-	279,476	-	279,476
57	54,965,069	9,637,449	9,637,449	-	240,534	-	240,534
58	48,718,221	8,808,966	8,808,966	-	205,955	-	205,955
59	42,905,522	8,006,135	8,006,135	-	175,348	-	175,348
60	37,529,821	7,231,853	7,231,853	-	148,375	-	148,375
61	32,591,210	6,489,359	6,489,359	-	124,723	-	124,723
62	28,086,345	5,781,486	5,781,486	-	104,091	-	104,091
63	24,008,755	5,111,123	5,111,123	-	86,203	-	86,203
64	20,348,540	4,481,149	4,481,149	-	70,799	-	70,799
65	17,092,147	3,894,214	3,894,214	-	57,636	-	57,636
66	14,222,369	3,352,505	3,352,505	-	46,481	-	46,481
67	11,718,575	2,857,633	2,857,633	-	37,114	-	37,114
68	9,557,076	2,410,482	2,410,482	-	29,327	-	29,327
69	7,711,671	2,011,033	2,011,033	-	22,920	-	22,920
70	6,154,412	1,658,434	1,658,434	-	17,706	-	17,706
71	4,856,342	1,351,146	1,351,146	-	13,513	-	13,513
72	3,788,143	1,086,970	1,086,970	-	10,184	-	10,184
73	2,920,786	863,095	863,095	-	7,575	-	7,575
74	2,226,190	676,215	676,215	-	5,560	-	5,560
75	1,677,793	522,656	522,656	-	4,025	-	4,025
76	1,251,037	398,516	398,516	-	2,875	-	2,875
77	923,736	299,844	299,844	-	2,027	-	2,027
78	676,289	222,769	222,769	-	1,410	-	1,410
79	491,774	163,605	163,605	-	970	-	970
80	355,933	118,974	118,974	-	661	-	661
81	257,035	85,868	85,868	-	447	-	447
82	185,666	61,692	61,692	-	301	-	301
83	134,458	44,275	44,275	-	202	-	202
84	97,789	31,859	31,859	-	136	-	136
85	71,473	23,063	23,063	-	92	-	92
86	52,469	16,836	16,836	-	63	-	63
87	38,616	12,405	12,405	-	44	-	44
88	28,405	9,215	9,215	-	30	-	30
89	20,802	6,878	6,878	-	21	-	21
90	15,100	5,129	5,129	-	15	-	15
91	10,820	3,802	3,802	-	10	-	10
92	7,621	2,786	2,786	-	7	-	7
93	5,257	2,008	2,008	-	5	-	5
94	3,538	1,418	1,418	-	3	-	3
95	2,312	977	977	-	2	-	2
96	1,458	656	656	-	1	-	1
97	879	428	428	-	1	-	1
98	496	271	271	-	0	-	0
99	250	166	166	-	-	-	-
100	96	99	99	-	-	-	-
				Totals	$ 483,416,115	$ -	$ 483,416,115


Projection of Plan Net Position and Benefit Payments
$ [thousands]
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 82 85 88 91 94 97 100
Year
Projected Plan Net Position
Projected Benefit Payments for Current Members

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred Inflows and Outflows	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Deferred Retirement Option Program (DROP)	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
Fiduciary Net Position	The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method. The Normal Cost may also be referred to as "Service Cost."

Glossary of Terms

Other Postemployment Benefits (OPEB) All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment health care benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.

Real Rate of Return The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.

Service Cost The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year. The Service Cost may also be referred to as the "Normal Cost."

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Benefit Changes
4. Employee Contributions (made negative for addition here)
5. Projected Earnings on Plan Investments (made negative for addition here)
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to Liabilities
9. Recognition of Outflow (Inflow) of Resources due to Assets

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.

APPENDIX E

STATEMENT OF PROFESSIONAL LIABILITY INSURANCE

GABRROE-01 CBUEHLER

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 6/27/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Assured Partners- Southfield, MI
423 N Main St, Suite 100
Royal Oak, MI 48067

CONTACT NAME:
PHONE (A/C, No, Ext): (248) 827-5600 FAX (A/C, No):
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Continental Insurance Company	35289
INSURER B : National Fire Insurance Co of Hartford	20478
INSURER C : Travelers Indemnity Company	25658
INSURER D : Hudson Excess Insurance Company	14484
INSURER E : Travelers Excess & Surplus Lines	29696
INSURER F :	

INSURED
Gabriel, Roeder, Smith & Co. Holdings, Inc.
One Towne Square, Suite 800
Southfield, MI 48076

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY; CLAIMS-MADE; X OCCUR; GEN'L AGGREGATE LIMIT APPLIES PER: POLICY; PRO-JECT; X LOC; OTHER:	X	X	6017079918	6/30/2024	6/30/2025	EACH OCCURRENCE	$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 15,000
							PERSONAL & ADV INJURY	$ 1,000,000
							GENERAL AGGREGATE	$ 2,000,000
							PRODUCTS - COMP/OP AGG	$ 2,000,000
							EBL AGGREGATE	$ 1,000,000
B	AUTOMOBILE LIABILITY; ANY AUTO; OWNED AUTOS ONLY; SCHEDULED AUTOS; X HIRED AUTOS ONLY; X NON-OWNED AUTOS ONLY			6017079904	6/30/2024	6/30/2025	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
A	UMBRELLA LIAB; X OCCUR; X EXCESS LIAB; CLAIMS-MADE; DED; X RETENTION $ 10,000			6017079899	6/30/2024	6/30/2025	EACH OCCURRENCE	$ 5,000,000
							AGGREGATE	$ 5,000,000
								$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY; ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N; If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	X	UB-9H841052-24-42-G	6/30/2024	6/30/2025	PER STATUTE; OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
D	Professional Liabili			EEB 11989 13	6/30/2024	6/30/2025	Each Claim/Aggregate	2,000,000
E	Cyber Risk/Internet			CYB-108071064-00	6/30/2024	6/30/2025	Primary Limit	5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Additional Named Insured's:
Gabriel, Roeder, Smith & Co.
Gabriel, Roeder, Smith & Company Health & Welfare Consulting, LLC
Gabriel Roeder Smith & Company Benefits Consulting, LLC
Kruse O'Connor & Ling, Inc.

A $250,000 per claim retention applies on the Professional Liability.
SEE ATTACHED ACORD 101

CERTIFICATE HOLDER

FOR INFORMATIONAL PURPOSES ONLY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Maureen Gallagher

AGENCY CUSTOMER ID: GABRROE-01 CBUEHLER

LOC #: 1

ADDITIONAL REMARKS SCHEDULE

AGENCY	NAMED INSURED
Assured Partners- Southfield, MI	Gabriel, Roeder, Smith & Co. Holdings, Inc. One Towne Square, Suite 800 Southfield, MI 48076
POLICY NUMBER: SEE PAGE 1	
CARRIER: SEE PAGE 1 / NAIC CODE: SEE P 1	EFFECTIVE DATE: SEE PAGE 1

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: ACORD 25 FORM TITLE: Certificate of Liability Insurance

Description of Operations/Locations/Vehicles:
(30) days in Advance Notice of Cancellation to Certificate holder as required by written contract is included on the General Liability per Policy Holder Notice - Countrywide Endorsement CNA75014XX (1-15)

(60) days in Advance Notice of Cancellation to Certificate holder is included on the Professional Liability policy per Additional You Endorsement EUC0913B407

Crime Policy term: 6/30/2024 - 6/30/2025
Carrier: Twin City Fire Insurance Company
Policy #: 83 KB 0387873-24

1. Employee Theft	$5,000,000	$25,000
2. Forgery or Alteration Including Credit Cards	$500,000	$5,000
3. Inside The Premises - Money, Securities and Other Property	$500,000	$5,000
4. Outside The Premises - Money, Securities and Other Property	$500,000	$5,000
5. Computer and Funds Transfer Fraud	$500,000	$5,000
6. Money Orders and Counterfeit Currency	$500,000	$5,000
7. Computer Systems Restoration Expenses	$25,000	$1,000
8. Identity Recovery Expenses Reimbursement	$25,000	$250
9. Deception Fraud	$250,000	$25,000
10. Theft Of Clients' Property Off Premises	$500,000	$5,000
11. Investigative Expense Sublimit	$100,000	$0

Employee Theft of Client Property:
$500,000 Limit of Liability
$5,000 Retention

Employee Theft of Client Property includes Money, Securities, and Other Property sustained by the Insured's Client, directly caused by Theft or Forgery committed by an identified Employee

$5M Primary Cyber Liability Coverage:
A. Network Security and Privacy Liability - $5,000,000 each claim/aggregate - $50,000 each claim
B. Regulatory Investigations, Fines and Penalties - $5,000,000 each claim/aggregate - $50,000 each claim
C. Media Liability - $5,000,000 each claim/aggregate - $50,000 each claim
D. PCI DSS Assessment Expenses - $5,000,000 each claim/aggregate - $50,000 each claim
E. Breach Management Expenses - $5,000,000 each claim/aggregate - $50,000 each claim

First Party Insuring Agreements
A. Business Interruption - $5,000,000 Each Loss/Aggregate - Waiting period 8 hours, Period of Indemnity - 365 Days
B. Contingent Business Interruption - $5,000,000 Each Loss/Aggregate - Waiting period 8 hours, Period of Indemnity - 365 Days
C. Digital Asset Destruction, Data Retrieval and System Restoration - $5,000,000 Each Loss/Aggregate - $50,000 Each Loss
D. System Failure Coverage - $5,000,000 Each Loss/Aggregate - Waiting period 8 hours, Period of Indemnity - 365 Days
E. Social Engineering & Cyber Crime - $250,000 Each Loss/Aggregate with loss of funds carve back
F. Reputational Loss Coverage - $5,000,000 Each Loss/Aggregate - Waiting period 2 weeks, Period of Indemnity - 180 Days
G. Cyber Extortion and Ransomware - $5,000,000 Each Loss/Aggregate - $50,000 each loss
H. Breach Response and Remediation Expenses - $5,000,000 Each Loss/Aggregate - $50,000 each loss
I. Court Attendence Costs - $250,000 Each Loss/Aggregate - $50,000 each loss

Excess Cyber
Carrier: At-Bay Specialty Insurance Company
Policy # AB-6774569-02

ACORD

ADDITIONAL REMARKS SCHEDULE

AGENCY	NAMED INSURED
Assured Partners- Southfield, MI	Gabriel, Roeder, Smith & Co. Holdings, Inc. One Towne Square, Suite 800 Southfield, MI 48076
POLICY NUMBER SEE PAGE 1	
CARRIER: SEE PAGE 1 — NAIC CODE: SEE P 1	EFFECTIVE DATE: SEE PAGE 1

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: ACORD 25 FORM TITLE: Certificate of Liability Insurance

Term: 6/30/24 - 6/30/25
Aggregate: $5,000,000 Excess of $5,000,000 Primary

Carrier: Ascot Specialty Insurance Company
Policy #EOXS2310000062-05
Term: 6/30/24 - 6/30/25
Aggregate: $5,000,000 Excess of $10,000,000

Directors & Officers Liability Policy term: 6/30/2024 - 6/30/2025
Carrier: Twin City Fire Insurance Company
Policy #83 KB 0387873-24
Side A - Insured Person Liability: $5,000,000 per Occurrence & Aggregate
Retention: $0
Side A Additional Limit for claims against Directors & Officers: $1,000,000
Retention: $0

Blanket Additional Insured and Waiver of Subrogation included on the General Liability per written contract or agreement.

Blanket Waiver of Subrogation by written contract included on the Workers' Compensation policy.

60 day written notice of cancellation - 10 days for non-payment of premium.

Cancellation Notice (Other than Named Insured) as required by contract - General Liability, Auto Liability & Workers Compensation policies can be endorsed to provide 30 days written notice of cancellation- 10 days for non-payment of premium.

Primary and Non-contributory status as required by written contract

Contractual Liability:
An insured contract is that part of any contract or agreement pertaining to GRS under which GRS assumes the tort liability of another party to pay for “BI or “PD to a 3rd person / org, provided the “BI or “PD is caused, in whole or in part, by GRS or by those acting on the behalf of GRS. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement. For further clarification of the contractual liability coverage, a copy of the policy form is available upon request.

APPENDIX F

GRS TECHNOLOGY TOOLS

GRS Technology Tools

GRS Valuation Software

GRS develops and maintains its own valuation system. Our experience has taught us that valuation software is more than number-crunching. It is an important consulting and advisory tool that must be flexible and comprehensive. GRS' valuation software is specifically designed to manage the unique provisions and benefit design variations found in public sectors plans, e.g. multiple tiers, hybrids, DROPs, PLOPs, COLAs, etc.

Our software delivers:

- Up-to-date compliance with actuarial standards of practice and regulatory requirements
- Integration of nearly every benefit design found in the public sector today
- Timely integration of new benefit designs as they emerge
- Confidence that quality of valuation reports and studies will result in appropriate funding and benefit policy decisions

A key strength of GRS' software development process is the input of our actuaries. We have 66 credentialed actuaries providing services to public plans. Our actuaries are a continual source of suggestions and updates for our software. When our programmers are informed of a client specific need, we are able to modify the software quickly—often in a matter of hours. This agility is particularly critical for legislative proposals and bargaining group negotiations, both of which are nearly always time sensitive situations.

GRS Foresight® Software

GRS Foresight® software is a comprehensive stress testing and solution-driven modeling tool for public sector retirement programs. This industry-leading tool, created from our consultants' vast experience, provides data and analysis you can rely on for decision making.

This solution considers how future stakeholders could be impacted by decisions made today. GRS Foresight® software helps you determine a sustainable path for your retirement program by developing unbiased starting points and dependable forecasts.

Vastly different from the private sector, public sector retirement programs are unique, with great variety in benefit provisions and funding sources. The software is adaptable to meet specific needs, even down to terminology and output. We work closely with you to ensure GRS Foresight® software meets all of your needs. By running experience scenarios and utilizing stress test modules, you can use GRS Foresight™ software to efficiently test various funding policies or strategies and different actuarial assumptions to predict their impact under the stressed scenarios.

Benefits and Features of GRS Foresight® Software

- Evaluates the sustainability of the retirement programs
- Accounts for alternative future realities
- Assesses various funding strategies
- Prepares budget forecasts
- Analyzes risk management strategies
- Provides insight into the impact of future realized rates of return and inflation
- Offers turnkey stochastic modeling
- Considers sensitivities of liabilities to future economic outcomes
- Uniquely designed for public sector systems
- Adaptable to individual client requirements, even down to terminology and output.

GRS Technology Tools

How It Works

GRS Foresight® software is accessed through GRS Advantage™. By using up-to-date valuation data and current economic conditions and assumptions, you are able to look in-depth at the valuation results and model various scenarios for future outcomes. Knowing the risks facing a plan helps guide the long-term management of those risks and gives you confidence in the conclusions drawn from the data. Meeting-ready output is available, and GRS Foresight® software creates the necessary documentation to support policy decisions affecting your plan.

The program can evaluate a wide range of variables impacting public sector plans, including:

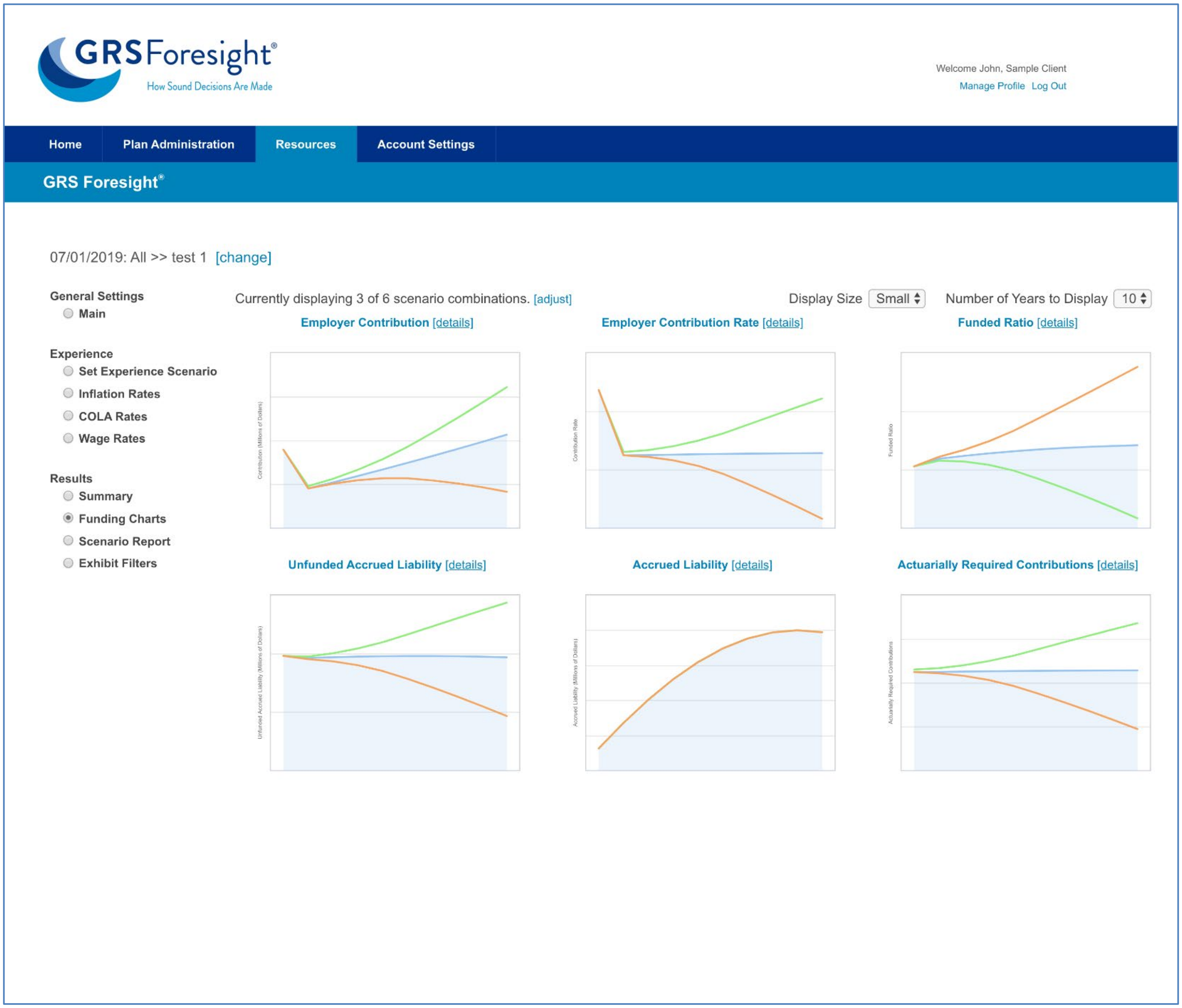
- Fixed-rate plans
- Corridors
- Direct rate smoothing
- Layered amortizations
- DB/DC hybrid protocols
- Population growth
- Ad hoc COLAs and supplemental payments, including funding strategies and the ability to model multiple ad hoc decisions in the future
- Investment returns, including a unique approach of using historical patterns with modified outcomes and volatility

In addition, if you have other programs that can create return scenarios, GRS Foresight® software can be integrated with those outcomes to produce stochastic results for analysis.

The following pages demonstrate the comprehensive and solution-driven benefits of GRS Foresight® software. We welcome an opportunity to provide a complete demo to the NPERS.

GRS Technology Tools

GRS Foresight® software helps determine a sustainable path for retirement programs by developing unbiased starting points and providing reliable forecasts (at least, as reliable as possible). GRS Foresight® software will also efficiently test various policies or strategies with different assumptions to illustrate their impact.



GRS Technology Tools

By using up-to-date valuation data and current economic conditions and assumptions, GRS Foresight® software can look in-depth at the valuation results and model various scenarios for future outcomes.

GRS Technology Tools

GRS Foresight® software is adaptable to individual client requirements, even down to terminology and output. The underlying model is identical to the model used internally by GRS actuaries for funding policy and scenario testing.

Capital Market Assumption Modeler (CMAM)

The investment return assumption is the most important and perhaps most debated assumption used in the actuarial valuation process. It is critical for GRS consulting teams to present clients with information in a complete and unbiased manner so that policymakers can make fully informed decisions. GRS' CMAM tool helps our clients accomplish this goal.

Below are tables, illustrating the output of the model, that are useful in discussing the results with our clients.

In this example, GRS is using the capital market assumptions from eight different investment consulting firms to identify the expected one-year return as well as the volatility (i.e., standard deviation) associated with the return expectation.

Investment Consultant	Investment Consultant Expected Nominal Return	Investment Consultant Inflation Assumption	Expected Real Return (2)–(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Plan Incurred Administrative Expenses	Expected Nominal Return Net of Expenses (6)-(7)	Standard Deviation of Expected Return (1-Year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	7.02%	2.50%	4.52%	2.50%	7.02%	0.20%	6.82%	13.71%
2	7.18%	2.25%	4.93%	2.50%	7.43%	0.20%	7.23%	12.95%
3	7.27%	2.25%	5.02%	2.50%	7.52%	0.20%	7.32%	13.61%
4	6.71%	1.56%	5.15%	2.50%	7.65%	0.20%	7.45%	11.87%
5	7.39%	2.20%	5.19%	2.50%	7.69%	0.20%	7.49%	12.50%
6	7.49%	2.00%	5.49%	2.50%	7.99%	0.20%	7.79%	14.10%
7	7.94%	2.26%	5.68%	2.50%	8.18%	0.20%	7.98%	12.91%
8	8.09%	2.20%	5.89%	2.50%	8.39%	0.20%	8.19%	14.23%
Average	**7.39%**	**2.15%**	**5.23%**	**2.50%**	**7.73%**	**0.20%**	**7.53%**	**13.24%**

The second table provides the expected average return the plan will earn over the next 20 years as well as the probability that the plan will exceed its current investment return assumption.

Clients find this process invaluable when discussing and identifying an appropriate valuation interest rate assumption, as well as being a methodology that is able to withstand rigorous scrutiny from outside constituents.

Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return 40th	50th	60th	Probability of Exceeding 7.50%	Probability of Exceeding 7.25%	Probability of Exceeding 7.00%	Probability of Exceeding 6.75%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	5.18%	5.95%	6.72%	30.56%	33.47%	36.49%	39.61%
2	5.73%	6.46%	7.19%	35.86%	39.14%	42.51%	45.94%
3	5.70%	6.46%	7.23%	36.57%	39.71%	42.93%	46.20%
4	6.13%	6.80%	7.47%	39.52%	43.20%	46.95%	50.73%
5	6.07%	6.77%	7.47%	39.60%	43.10%	46.66%	50.26%
6	6.09%	6.88%	7.67%	42.12%	45.27%	48.45%	51.66%
7	6.49%	7.21%	7.94%	46.00%	49.48%	52.97%	56.45%
8	6.47%	7.26%	8.06%	47.00%	50.17%	53.34%	56.50%
Average	**5.99%**	**6.72%**	**7.47%**	**39.65%**	**42.94%**	**46.29%**	**49.67%**