Deloitte.

State of Minnesota Legislative Commission on Pensions and Retirement Consulting Actuarial Services

Proposal

June 13, 2014, 5:00 p.m. CT

Table of Contents

Page

Deloitte Consulting LLP
Suite 2800
50 South Sixth Street
Minneapolis, MN 55402
USA

Tel: +1 612 397 4000
Fax: +1 612 397 4450
www.deloitte.com

June 13, 2014

Lawrence A. Martin, Executive Director
Legislative Commission on Pensions and Retirement
55 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
St. Paul, Minnesota 55155

Dear Executive Director Martin and Evaluation Team:

Deloitte Consulting LLP ("Deloitte Consulting") is pleased to present the State of Minnesota Legislative Commission on Pensions and Retirement ("the Commission") with our response to the request for proposal to provide pension consulting actuarial services. Deloitte Consulting is committed to the public sector and to the State of Minnesota. We are excited to have the opportunity to present the Commission with our approach and qualifications to assist with this challenging engagement.

We are confident that our qualifications, proposed team, and approach will distinguish Deloitte Consulting from our competitors. We believe our offering creates value for the Commission in a number of ways:

- ***The right experience:*** The Commission needs a team that understands both the historical context of the pension issues as well as the Commission's future vision for the pension systems. Deloitte knows the local pension systems. Our relationship with the City of Minneapolis prior to the merger with PERA provided us exposure to many of the concerns of the Minnesota pension systems. We are also the actuary for the State of Minnesota retiree medical plan and regularly track the issues facing the State's retirement benefits. Our assigned team has worked with other government entities (State of Illinois, City of Minneapolis, Department of Energy, US Coast Guard) as a reviewing actuary in the same manner requested in the RFP. Additionally, the assigned team has considerable reviewing experience, due to our support role to the Deloitte & Touche Audit practice. In this capacity, our actuarial team reviews the actuarial reports of over 2,500 plans prepared by other actuaries each year, which provides our team with a unique view and broad perspective of the range of plan provisions and actuarial assumptions and methods currently in use for valuing pension plan obligations.
- ***The right team:*** The team proposed to serve the Commission is not only uniquely qualified to serve, they are local and have continuity. The team is led by Ms. Judy Stromback, Deloitte's Chief Pension Actuary, and Mr. Michael de Leon, the leader of Deloitte's Public Sector Retirement Actuarial Practice, both from our Minneapolis office. Our Human Capital practice has an enviably low turnover rate as we continue to attract and retain the best talent – talent that has and will continue to meet all of your demands. Leaders on the engagement team proposed for the Commission work together on a day-to-day basis and have worked together for over 17 years. This knowledge of each other and the public sector, combined with shared technology and processes, will bring you consistent service, as well as foster ongoing identification of value-driven ideas and program strategies. For the Commission, we have hand-picked a dedicated team from a Minneapolis staff that includes 13 Fellows of the Society of Actuaries (FSAs), and over 50 actuaries and consultants. The proposed engagement team will include four primary actuaries, each of whom has at least ten years of relevant

experience, is a credentialed actuary, and has the proven ability to think and respond quickly. Our team is cohesive, locally delivered, proactive, diligent, and ready to work for you.

- ***The highest value:*** Deloitte has provided services to state and local governments for more than a century. We are proud to have a relationship with Minnesota that includes continuous, uninterrupted service delivery for more than 25 years. Deloitte is a proven leader in providing innovative government reform and transformation ideas and solutions, managing risk and uncertainty, and leveraging technology to drive a path to the future.

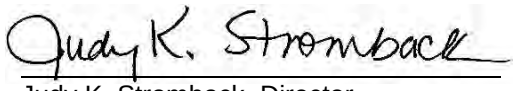
  In addition, our experience in health and human services is unmatched, with more than 40 years experience in Medicaid and state health care and solutions implemented in over 21 states. Minnesota is a recognized leader in implementing thoughtful, innovative programs that improve the business of government. For more than two decades, Deloitte has worked with the state to help drive efficient and effective government that makes a difference for citizens.

The contents of the attached proposal include:

- Service requirements
- Experience & qualifications
- Approach and work plan
- Team biographies
- Fees
- Affirmative action
- Workers' compensation
- Sample work product (attachment)

We are committed to delivering the right experience, the right team and the highest value. We will use a proven approach and methodology that will provide the Commission with real "bottom-line" results. We trust that this proposal conveys the depth of our interest in serving the Commission, our commitment to delivering high-quality service, and the strength of our capability. If you have any questions, or if we can be of further assistance to you throughout the remainder of the selection process, please contact Michael de Leon at 612-397-4681 or me at 612-397-4024.

Sincerely,
Deloitte Consulting LLP

By: 
Judy K. Stromback, Director

cc: Michael de Leon - Deloitte Consulting LLP
Eric Roling - Deloitte Consulting LLP
Jeannie Chen - Deloitte Consulting LLP
Steve Dahl - Deloitte Consulting LLP

Service Requirements

Regarding RFP Section IV. Minimum Qualification Standards and Important Qualification Factors

Deloitte Consulting meets and exceeds the minimum requirements and important qualification factors identified within the RFP, including:

- Deloitte's Minneapolis staff includes 13 Fellows of the Society of Actuaries (FSA's), and over 50 actuaries and consultants.

✓ Deloitte Consulting meets the definition of an approved actuary, which require a Fellow of the Society of Actuaries, and have experience preparing actuarial valuations and experience study reports that meet the requirements in Minnesota Statutes, Section 356.215, and the current Commission Standards for Actuarial work.

✓ Sufficient Firm Size. Deloitte is one of the oldest and most respected professional service firms in the United States. Our parent company was founded in 1895 and has since undergone many changes. Today, we are the largest global consulting firm with over 100 offices across the nation; we provide a wide range of business and technology services to a variety of clients and industries. Within the U.S., Deloitte has more than 50,000 professionals across four functions (Consulting, Tax, Audit, and Financial Advisory Services). The consulting function has more than 19,000 professionals and we work with more than 1,700 individual contractors. Deloitte professionals are not organized around product offerings, but rather around service areas and industries. Our firm's professionals help clients—from new economy start-ups to Fortune 1000 global organizations—to create, reinvent, and defend their business models by guiding them through the complexities of the evolving economy.

The Human Capital Advisory Services practice of Deloitte Consulting delivers a unique 360 degree view of Human Resources to address all the people touch points within an organization—from leadership and employees to customers and vendors. Ultimately, it is our mission to enhance an organization's value through people. Deloitte Consulting's Human Capital practice specializes in providing broad-based business consulting services designed to help organizations in their efforts to integrate people issues with their business strategy. Human Capital services are designed to help organizations in their efforts to enhance their performance, productivity, and profitability through their workforce. Human Capital goes to market by sectors, relying on deep industry experience, knowledge and skills, and providing innovative and comprehensive services and solutions designed to help clients in their efforts to address their most complex issues. Our Human Capital practitioners have core capabilities in the following areas:

- Actuarial, Rewards, and Analytics
- HR Transformation
- Organization Transformation and Talent

Actuarial, Rewards, and Analytics is one of the Service Lines within Human Capital. Actuarial, Rewards, and Analytics provides world class actuarial/insurance services, rewards, risk, and retirement management, as well as advanced analytics services across Deloitte's sectors and offerings that uniquely addresses overall business strategy, culture, and alignment of employee programs. We provide design, delivery, and performance improvement solutions to purchasers, providers, and administrators of employee programs. Our integrated approach includes technical expertise in retirement and risk solutions (defined benefit and defined contribution), health care, compensation strategies, advanced analytics services and analytics tools and solutions.

Our Actuarial, Rewards, and Analytics practice employs over 600 professionals specializing in employee benefits, including approximately 200 qualified actuaries.

✓ Prior Public Pension Experience by Actuarial Firm. Deloitte has significant experience providing a range of consulting services to public pension systems. Our firm has provided consulting services to statewide pension systems in 34 states and one territory. We have also provided services to many other pension plans at the local level.

✓ Prior Public Pension Experience by Assigned Firm Personnel. The team that has been selected to serve the Commission has provided consulting services to governmental entities in the *same manner requested in the RFP*. In addition to our role as actuarial advisor to certain entities, areas of experience include actuarial valuations, actuarial reviews, GASB reporting requirements, funding policy, plan design, and collective bargaining support. Our team has performed actuarial consulting services for these public entities among others:

- State of Illinois*
- City of Minneapolis*
- Department of Energy*
- United States Coast Guard*
- City of Dallas*
- Dallas Fort Worth Airport*
- Los Angeles City Employees Retirement System*
- Government of Guam
- Alabama State Port Authority
- South Dakota Department of Labor
- City of Grand Forks, North Dakota
- State of Minnesota**
- State of Wisconsin**
- State of Iowa**
- University of California**
- Commonwealth of Pennsylvania**
- Metropolitan Council**

* *Actuarial consulting work for these government entities is in the same manner requested by the Commission.*

** *The team's retirement benefits experience with these entities is focused on retiree medical benefits.*

In addition, the assigned team performs limited scope actuarial reviews for numerous other public sector clients in support of our audit practice.

- ✓ Prior Reviewing / Auditing Actuary Experience. As noted above, the members of the team assigned to provide services to the Commission have performed services as reviewing actuaries to several governmental entities in the same manner as requested in the RFP. In addition, our team members have significant experience reviewing pension plans in support of the Deloitte & Touche audit practice. In this role, we are uniquely exposed to a considerable number of pension plans in the public and private sectors. Members of the team perform limited scope reviews of approximately 400 pension plans every year. These audits include reviewing assumptions and methodologies, reconciling results, general reasonableness checks, and communicating the results of our review to the audit team and the client.

- ✓ Accessibility. Ms. Judy Stromback and Mr. Michael de Leon will be designated as the Commission's primary actuarial consultants from Deloitte. Ms. Stromback and Mr. de Leon are committed to providing the Commission with flexibility, availability, and outstanding consultative skills partnered with deep, local actuarial experience. In addition to scheduled work requests, Ms. Stromback, Mr. de Leon, and the Minneapolis team are prepared to meet with the Commission on short notice during the legislative session between January and May (and beyond if necessary due to special legislative sessions).

- ✓ Absence of Contractual Liability Limits and Contractual Third-Party Reliance Disclaimers. We are prepared to negotiate in good faith with the Commission to achieve reasonable performance guarantees that address your service concerns. Although we will require some limitations on liabilities, Deloitte Consulting has successfully negotiated a series of contracts with several state agencies (Minnesota Management and Budget, Department of Administration, Office of Enterprise Technology, Department of Commerce, Department of Corrections, Department of Health, and Department of Human Services) and feel confident we can reach agreement that is acceptable to both parties.

Experience & Qualifications

Regarding RFP Section V. Firm Information

Firm's Structure, Operational Model, and Communication Capability

1. Describe the structure of the actuarial firm and its operational method. Include in the description an indication of how the actuarial firm communicates pension fundamentals in an understandable manner to audiences of diverse and non-technical backgrounds.

Deloitte Consulting LLP is a limited liability partnership. Deloitte Consulting is committed to quality, a shared value fundamental to achieving our mission: To help our clients and people excel. To that end, we have established client service standards and quality control policies and procedures designed and implemented to ensure that we meet and exceed our own performance standards and those of our profession. Our actuaries are consultants and the assigned team is focused on the public sector. They are committed to delivering pension fundamentals in a clear, concise manner that is well received and respected by audiences of diverse and non-technical backgrounds. Furthermore, Mr. Michael de Leon, the managing actuary proposed for the Commission, has outstanding presentation and consulting skills with proven ability to think on his feet. Mr. de Leon has testified to governmental bodies and provided expert witness testimony on a range of retirement benefit topics. He has also delivered trainings on GASB 67 and 68 at auditor conferences and to individual systems and employers.

In addition to the reviews provided by each member of the engagement team, Ms. Judy Stromback, Deloitte's Chief Pension Actuary, has been assigned the leadership review role and will have the responsibility of overall quality assurance on this engagement. More information about Ms. Stromback's qualifications can be found later in this proposal. Leadership review, during a client project and before any report, letter, or document containing recommendations or financial data is delivered, is a professional mandate and an integral part of our approach to consulting.

Firm's Prior Public Pension Experience

2. Provide a description of any major public employee pension plan actuarial valuation and related experience by the actuarial firm rendered during the last five years and the degree of any consulting or other involvement by the actuarial firm with other elected public bodies.

Below are four examples of public sector employers for which members of the assigned team have provided actuarial reviews similar to those requested by the Commission and a description of the services provided.

Government Client	Consulting Services Provided
State of Illinois	Deloitte Consulting currently serves as the State's pension and OPEB consultant. Deloitte was initially retained in early 2004 to perform a comprehensive actuarial audit of the State of Illinois Retirement System, consisting of five separate pension systems. Our audit encompassed an evaluation of the overall retirement systems over the prior ten years considering such items as pension assets, accrued and projected actuarial liabilities, plan design considerations, contribution structure and requirements, funding alternatives, actuarial assumptions and methods, Constitutional guarantees, union considerations, Pensions Obligation Bonds, current and projected Illinois economy, Illinois budget realities, the 1995 Funding Plan (Public Act 88-593), and numerous other related factors.

Government Client	Consulting Services Provided
	Our initial analysis of the retirement systems concluded that current annual State pension contribution requirements, determined in accord with the State's 1995 Funding Plan, are prohibitively high and are expected to increase significantly in future years. These high and increasing annual State pension contributions are affecting fiscal state policy priorities and the capacity of the State to deal with other problems and to exploit available opportunities. Next, we worked with the Governor's Pension Commission and the Governor's Office of Management and Budget on developing cost effective solutions that included plan design and funding policy changes. We assisted the State with the drafting of the actual pension bill proposed by the Governor and passed by the legislature. Finally we participated with the Governor's Office of Management and Budget on a communication campaign designed to educate the State Legislature, the public, the unions, the press, and members of the State pension systems on the need for change and the merits of the Governor's proposal. In addition, Deloitte Consulting provided extensive assistance to the State with regard to collective bargaining support related to proposed changes in active and retiree health benefits, as well as pension benefits for members of the union. In this regard we determined the magnitude of the changes needed in order to get the projected benefits to equal the projected assets including the exact same set of changes to those contemplated by the RHCT (i.e., changes in benefit levels, employee contributions, and retiree contributions.) We are continuing to work with the Governor's Office of Management and Budget on developing additional long term cost effective solutions to the State's pension and OPEB funding problems.
City of Minneapolis	The City is required to make contributions to three closed retirement plans – Minneapolis Employee Retirement Fund (MERF), Minneapolis Police Relief Association (MPRA), and the Minneapolis Fire Fighters Relief Association (MFRA). The contribution requirements to these three plans increased considerably, requiring the City to issue bonds to satisfy these obligations. The City hired Deloitte in 2004 to review the escalating contribution requirements and other concerns regarding the pension plans and to work with the City to devise and analyze solutions to these issues. Through this analysis, Deloitte was able to provide the City with a better understanding of their expected contribution requirements to the plans over the next 20 years. Additionally, we helped the City create proposals for reducing the contribution requirements to the plans in the immediate future. We continued to monitor the status of each of the plans along with the projected required City contributions on an annual basis. This included an annual actuarial review of the three valuation reports and updated contribution projections. We also provided support as requested to assist with understanding legislative changes, provided recommendations for assumptions, and analyze various proposals by the City and the plans. Finally, we provided expert witness testimony to support the City in its lawsuit against two of the retirement plans. The lawsuit was ruled in favor of the City paving the way for the eventual merger with PERA. The last work performed for the City of Minneapolis was in 2012.
Department of Energy	We were engaged by the Department of Energy to assist them with the governance of their contractor pension obligations. We performed an independent measurement of the liability for contractor retirement plans and developed strategies to enable the Department of Energy to manage the level and volatility of the funding of the associated obligations. We prepared projections of program costs, performed deterministic and stochastic modeling of funding levels and projected funding obligations, performed benchmarking of plan designs and features, and analyzed alternative plan design options and the impact of proposed legislation. We also conducted a comprehensive survey of all contractor benefits and performed a benchmarking analysis of the results. Our work helped the Department of Energy monitor and manage its obligations, identify opportunities for cost savings and manage the risk associated with the plans.
US Coast Guard	The Coast Guard sponsors a pension plan and a retiree medical plan. As of September 30, 2012, the pension and retiree medical plans covered approximately 50,000 active members and 50,000 retirees. The Coast Guard's pension plan liability is approximately $40B and the retiree medical plan liability is approximately $5B. From 2010 – 2012, Deloitte was hired to support Coast Guard's audit remediation efforts by performing verification & validations over actuarial estimates produced by the Coast Guard's external actuary. We performed a review of each plan's actuarial report to assess the completeness, reasonableness and appropriateness of the actuarial cost method, actuarial asset valuation method, actuarial assumptions and methodology used in the actuarial valuation reports. We interviewed key Coast Guard stakeholders regarding potential changes to demographics, salary structure and investment objectives and reviewed the methods used in the most current experience study to select actuarial assumptions. We also assessed the reasonableness and appropriateness of the external actuary's actuarial valuation system by performing an independent calculation on a sampling of test cases. Currently, we are assisting the Coast Guard with reviews of quarterly actuarial estimates while the in-house actuary role is being filled.

Function of Assigned Firm Personnel and Prior Experience

3. For each non-clerical employee of the actuarial firm proposed to be assigned to Commission work, identify the Minnesota public employee pension plans or functions with which the person will be involved and indicate the person's prior public employee pension plan experience.

The project team that will provide the majority of the actuarial consulting services for the Commission will include:

Michael de Leon, ASA, FCA, EA, MAAA, Specialist Leader: (612) 397-4681. Michael will serve as the Engagement Manager and Lead Actuary. Michael leads the public sector retirement actuarial practice for Deloitte. He has spent the past 17 years focused on consulting with governmental entities on pension, retiree health, duty disability, retiree life insurance, and other benefits. He has performed pension and retiree medical valuations for many public sector plans, and has consulted with these clients on topics including GASB requirements, plan design, funding options, and collective bargaining support. His actuarial review experience with public sector clients ranges from limited scope reviews for several clients each year to comprehensive reviews of large pension plans that have included full replication of the plan actuary's work. Michael is an active member of the Public Plans Committee of the Conference of Consulting Actuaries and is Deloitte Consulting's Associate to the National Association of State Retirement Administrators (NASRA). Michael will be your primary contact and will lead any projects requested by the Commission.

Judy Stromback, FSA, FCA, EA, MAAA, Director: (612) 397-4024. Judy will serve as Engagement Director and Supervising Actuary. Judy is Deloitte's Chief Pension Actuary and has over 30 years of experience as an actuarial consultant to private and public sector entities. She has worked extensively with the valuation of defined benefit pension and post-retirement medical plans, implementation of pension and post-retirement benefit financial and government accounting standards, defined benefit and defined contribution plan design, and nonqualified deferred compensation arrangements. Judy has led Deloitte Consulting's Minneapolis Retirement Actuarial Consulting Practice for the past 17 years. Judy also serves on the Actuarial Standards Board Pension Committee, which is responsible for drafting and updating actuarial standards of practice for pension actuaries in the United States. Judy will have overall responsibility for the quality of the services provided.

Jeannie Chen, ASA, EA, MAAA, Manager: (214) 840-1584. Jeannie will serve as the Lead Consultant and Valuation Process Actuary. Jeannie focuses on pension and post-retirement health and welfare plan consulting primarily for governmental entities. She has over ten years of experience with actuarial review services, data validations, actuarial valuation and benefit administration, evaluating pension and retiree health plan designs, cost associated with plan design changes and financial and compliance audits. Jeannie has delivered trainings on GASB 67 and 68 to public sector clients and at auditor conferences. Jeannie will lead and, along with other staff members, perform most of the day-to-day activities of the actuarial consulting work.

Kent Schrad, ASA, MAAA, Senior Consultant: (612) 397-4217. Kent will serve as the Primary Staffed Actuary. Kent focuses on pension and post-retirement health and welfare consulting for both private sector and public sector entities. He has over six years of experience with actuarial valuations, data validations, actuarial review services, evaluating pension and retiree health plan designs and cost associated with plan design changes. He also has experience performing actuarial reviews, financial

and compliance audits for state and local government entities. Kent will support Jeannie in performing the day-to-day activities of the actuarial consulting work.

Eric J. Roling, ASA, EA, MAAA, Specialist Leader: (612) 397-4032. Eric will serve as the Peer Advisor and Supporting Actuary. Eric has over 20 years of experience consulting to private and public organizations regarding the design, funding and administration of employee benefits, with particular expertise working with sponsors of defined benefit retirement plans. He has experience working with plan terminations, mergers and acquisitions, spin-offs, and plan redesigns. Eric will provide quality assurance oversight as a peer reviewer.

The above members of the client service team are all Members of the American Academy of Actuaries and are each required to meet the annual continuing education requirements of that organization.

Detailed résumés for the individuals mentioned above are also provided later in this proposal. Other staff will be assigned as needed to bring the most appropriate skills and professional levels to the project.

Steve Dahl, Director: (612) 397-4267. Steve is the Lead Client Service Partner for the State of Minnesota. In his role, Steve is responsible for the overall satisfaction of the State with all services Deloitte Consulting provides. Steve will provide the project team with his experience working with the legislature and his knowledge of the State's programs.

References

4. List five major retirement systems or businesses with defined benefit pension plans by which the actuarial firm previously has been retained, complete with the name and telephone number of a contact person, as references who can be contacted about the prior performance of the actuarial firm in providing actuarial services.

We are providing the following references to demonstrate Deloitte's experience and commitment to providing actuarial consulting services for large public and private pension funds. These projects were performed by Deloitte and demonstrate our ability to deliver actuarial services in the manner requested by the Commission.

Reference	Deloitte Consulting Service Summary
City of Minneapolis Mr. Patrick Born, Regional Administrator at Metropolitan Council* 390 Robert St. N., St. Paul, MN 55101 +1 651 602 1723 *Mr. Born was the Finance Director for the City of Minneapolis and will have insight into the work performed at the City of Minneapolis	Actuarial consulting provided in the same manner as requested by the Commission and led by **Michael de Leon** of Deloitte Consulting LLP
State of Illinois Ms. Sheila Henretta, Director 100 W. Randolph Street, Suite 15-100, Chicago, Illinois 60601 +1 312 814 5679	Actuarial consulting provided in the same manner as requested by the Commission led by Howard Freidin and supported by **Michael de Leon** of Deloitte Consulting LLP
Department of Energy Tom Griffin, Assistant Director, Financial Policy Office of the Chief Financial Officer 1000 Independence Ave., SW Washington, DC 20585 +1 202 586 4171	Actuarial consulting provided in the same manner as requested by the Commission led by Michael Niciforo and supported by **Eric Roling** of Deloitte Consulting LLP
US Coast Guard CWO David Casteel USCG Headquarters Office of Director of Financial Operations/Comptroller (CG-8C)	Actuarial consulting provided in the same manner as requested by the Commission led by Gregory Drennan and supported by **Jeannie Chen** of Deloitte Consulting LLP

Reference	Deloitte Consulting Service Summary
2703 Martin Luther King Jr. Ave SE Stop 7618, Washington, DC 20593-7618 +1 202 372 3540	
Metropolitan Government of Nashville and Davidson County Tennessee Ms. Ginger Hall, Human Resources 404 James Robertson Pkway, Suite 1000, Nashville, TN 37219 Nashville, TN 37201 +1 615 862 6640	Actuarial and benefits consulting with pension services led by **Michael de Leon** of Deloitte Consulting LLP

Client Additions and Subtractions

5. Provide a list of all new clients added by the actuarial firm and all former clients lost by the actuarial firm during the most recent five-year period.

Deloitte policy precludes us from disclosing the names of clients and the nature of our relationship without prior approval. In the past five years, we gained two states, three large cities, and one regional governmental entity public sector retirement actuarial clients. The clients lost included one city, one county, and one school district.

Firm's Valuation System

6. Describe the valuation system of the actuarial firm, indicate whether the software proposed to be used has been obtained from an outside vendor or is proprietary software developed by the actuarial firm, and indicate the capabilities and procedures of the actuarial firm to retain prior actuarial valuation and related data.

Deloitte's valuation system is licensed from Winklevoss Technologies. ProVal is an industry-leading actuarial valuation system for performing valuations and projections for public and private pension and postretirement medical benefits. It supports both deterministic and stochastic forecasting of contributions and expense as well as the impact of various asset allocation strategies. It explicitly supports U.S. public, private and nonqualified pension and postretirement benefit plans rules and regulations, as well as Canadian, German, U.K. and Universal pension arrangements for over 25 other nations. It also has modules to facilitate the performance of gain/loss analysis, experience studies, plan administration, nondiscrimination testing, and Social Security benefits. It has an integrated Report Writer feature, and a Plan Sponsor toolkit that enables plan sponsors to independently analyze the impact of assumption changes, hypothetical asset experience and proposed benefit and legislative changes.

We also have a suite of systems that is referred to as our Employee Benefit Tools (EBT). Beginning in 1987, the systems in this suite have been developed, maintained, and enhanced by an internal Deloitte Consulting team of actuaries and software developers. Our EBT suite is made up the following systems:

- **Report and Actuarial Valuation Expediter (RAVE).** This is the pension worksheet and reporting system. RAVE integrates with ProVal to calculate employer costs for pension plans.
- **Report Writer.** This system is used to produce client valuation reports. Report Writer integrates with ProVal and RAVE. Report Writer can produce totally standard reports or reports customized for specific client needs.
- **Calculators.** We have a variety of annuity, social security, and covered compensation calculators. These run as stand-alone applications and as Excel add-ins.

- **EB Tools eRoom**. While technically not a system, this Web site is a critical tool in our support of the users of our tool set. The eRoom is a collaborative site to submit new issues, research prior issues, request enhancements, conduct discussions, post files, and get updates.

Firm's Potential Conflicts of Interest

7. If the actuarial firm previously has been retained by a statewide or local Minnesota public pension plan, a Minnesota governmental employing unit, a Minnesota public employee labor union, or a comparable party interested in Minnesota public pension policy development, those relationships should be indicated. If the actuarial firm intends to continue any of these prior relationships during the course of a contract with the Commission, address the extent that the relationship constitutes a potential conflict of interest when providing services for the Commission and how the actuarial firm will deal with any actual conflicts.

In the past five years, the only entity described above that Deloitte has been retained to provide actuarial services for is the City of Minneapolis. Our services to the City of Minneapolis were completed in 2012 prior to the City's merger with PERA. Deloitte does not currently have a contract to provide services to the City and does not intend to obtain one during the course of a contract with the Commission. We do not believe this prior relationship will create any conflicts of interest related to our services for the Commission.

Most recent Audited Annual Financial Report

8. If the actuarial firm is publicly held, provide a copy of the firm's most recent audited annual financial report.

Deloitte Consulting LLP is a limited liability partnership and is not a publicly held company.

Approach and Work Plan

We will use a proven approach and methodology that will provide the Commission with real "bottom-line" value.

Regarding RFP Section VI. Approach and Work Plan

1. How the work of the firm under the contract will be coordinated with the Commission staff.

The core members of our client service team are members of the Actuarial, Rewards, and Analytics practice of Deloitte Consulting and are located in our Minneapolis office. We are committed to being accessible to the Commission not only for scheduled meetings, but upon request as well. All communications will be coordinated with the Commission staff through the Lead Actuary for the Commission, Michael de Leon. Michael will closely collaborate with and be supported by Judy Stromback (Supervising Actuary), Jeannie Chen (Valuation Process Actuary), and the local Minneapolis actuarial team.

2. The personnel who will be responsible for presenting reports and results to the Commission.

Michael de Leon and his local Minneapolis team will complete the actuarial review and provide the majority of the consulting services including presenting reports and results to the Commission. Michael leads Deloitte's Public Sector Retirement Actuarial Practice and has spent the past 17 years focused on public sector retirement benefits. He is recognized at Deloitte for his outstanding client service delivery skills, project management abilities, and actuarial experience. He has testified to governmental bodies and provided expert witness testimony on a range of retirement benefit topics. Michael will be your primary contact and will lead any projects requested by the Commission.

3. The personnel who will be assigned as replacements in the event of the subsequent employment termination by or the non-availability of the primary assigned personnel.

All communications will be coordinated with the Commission staff through the Lead Actuary for the Commission, Michael de Leon. Michael will closely collaborate with and be supported by the Supervising Actuary, Judy Stromback, as well as Jeannie Chen and Eric Roling in the roles of Valuation Process Actuary and Peer Advisor, respectively. This will allow other team members to step into the Lead Actuary role as necessary if Michael is unavailable for any reason. Collectively these four team members have over 75 years of actuarial consulting experience and over 75 years working at Deloitte. Any substantive changes to the team will be discussed with the Commission.

Our Understanding of Your Needs and Requirements.

One purpose of an actuarial review is to provide assurance that the actuarial work is being performed correctly and in accordance with generally accepted actuarial practice. Another benefit is that the reviewing actuary can identify areas of improvement that may increase the value and understanding of the actuarial services provided to the Commission.

The actuary retained by the Commission will have substantial responsibilities for the 12 statewide and major local retirement plans. Deloitte's depth and breadth of experience – and local resources – are prepared to serve the Commission for the desired actuarial services, which may include:

- For the various statewide and major local retirement plans, the review or replication of annual actuarial valuations, the review of actuarial cost estimates of proposed pension legislation, the review of optional annuity form table changes or annuity reserve factor changes, and the review of prior service credit purchase payment amount determinations
- For the General State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-General), the General Employee Retirement Plan of the Public Employees Retirement Association (PERA-General), and the Teachers Retirement Association (TRA), the review of the quadrennial experience studies
- Review and recommendation of proposed revisions to the Commission-adopted Standards for Actuarial Work
- Attendance at Commission meetings upon request
- Providing advice and counsel on pension benefit design and funding
- Preparing special studies for the Commission

Approach and Work Plan

The following table describes our approach for each of the actuarial services in the RFP. Following the table is a more detailed explanation of our approach to a comprehensive actuarial review.

RFP Request	Timing Requested	Our Approach
1) Review of the Commission's Standards for Actuarial Work	By January 30, 2015	Review and recommend proposed revisions to the Commission's Standards for Actuarial Work
2) Review of Statewide and Major Local Defined Benefit Retirement Plan Actuarial Valuations	Annually by April 1 of the year following the actuarial valuation date	Comprehensive actuarial review of each plan valuation including data validity analysis, reasonableness review of results, and analysis of contribution development; also includes programming review of individual sample lives to determine accordance with applicable statutes
3) Replication of Statewide or Major Local Defined Benefit Retirement Plan Annual Actuarial Valuations	Annually by April 1 of the year following the actuarial valuation date	Independent determination of the liability, sources of changes in the liability from the prior valuation, assets, actuarial valuation balance sheet, contribution rates and contribution sufficiency or deficiency for each scheduled plan. Includes independent modeling of the plan provisions in accordance with applicable statutes
4) Review of Experience Studies	Periodically; Within 60 days following the date on which the last of the three experience studies is filed with the Commission	Independent analysis of the discount rate; review of remaining assumptions for reasonableness, appropriateness of method, and consistency with other systems
5) Review of Actuarial Cost Estimates of Proposed Legislation	Within 7 days of the receipt of request	Independent analysis of cost estimate
6) Review of Optional Annuity Form Table or Annuity Reserve Factor Changes	Within 30 days of receipt of request	Independent review for consistency with applicable statutes
7) Review of Prior Service Credit Purchase Payment Amount Determinations	Within 30 days of receipt of request	Independent review for consistency with applicable statutes
8) Presentations to Commission	Upon request	Varies based on request
9) Provide Advice to the Commission and Commission Staff	Upon request	Varies based on request
10) Prepare Special Studies or Research	Upon request	Varies based on request

Key Elements of a Comprehensive Actuarial Review

The following are key elements in conducting a comprehensive actuarial review. These elements are equally applicable to a full actuarial replication except that a replication would include the modeling of plan provisions using our actuarial software.

The key elements of a comprehensive actuarial review are:

- Appropriateness of the actuarial assumptions and actuarial methods used in the actuarial valuations;
- Plan actuary's data collection and calculation processes and related interpretation of statutes and benefits;
- Completeness, reasonableness, and consistency of the actuarial valuation and experience study;
- Current actuarial funding policies and practices; and
- Development of report/presentation that is clear, concise and understandable to audiences of diverse and non-technical backgrounds

Our approach to addressing each of the key elements is as follows:

Appropriateness of the actuarial assumptions used in the actuarial valuations. Our review of the actuarial assumptions will primarily occur during the review of the quadrennial experience studies and focus on whether the assumptions were selected in accordance with Actuarial Standards of Practice 27 (Selection of Economic Assumptions for Measuring Pension Obligations) and Actuarial Standards of Practice 35 (Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations).

To analyze the appropriateness of the actuarial assumptions, we will:

- Review the methods used in the most current experience study to select assumptions;
- Interview the plans' staff regarding potential changes to the system's demographics, salary structure, and investment objectives; and
- Review the sources and amounts of actuarial gains and losses in the most recent valuation reports.

Some of the factors that we typically consider in reviewing the economic assumptions, and in particular the assumed rate of investment return, include the following:

- Investment policy
- Investment volatility
- Expenses
- Liquidity needs and timing

- Benefit payment volatility

Some of the factors that we typically consider in the review of the demographic assumptions include the following:

- Experience studies
- Published tables
- Actual plan experience
- Gain/loss analysis
- Actual and expected economic conditions
- Expected future trends in plan experience
- Plan design features that may impact the assumption
- Employer practices
- Job related factors
- Consistency among assumptions
- Materiality
- Presence of retiree medical or other benefit plans

After taking all of the above factors into consideration, we look for reasonable assumptions in light of the particular characteristics of the plan that is the subject of the measurement.

Appropriateness of the actuarial cost method and actuarial asset valuation method. Our review of the actuarial cost method and asset valuation method will include a determination of the appropriateness and accuracy of the asset valuation method of smoothing earnings, the funding method used to determine the contribution rates, the annual gain/loss analyses and the basic valuation results. We will consider Actuarial Standards of Practice 4 and 44 as part of this step. This portion of our review will also include an assessment of any related actuarial valuation procedures.

Current actuary's data collection and calculation processes and interpretation of plan provisions and benefits. We will review the data collection processes to see if they are reasonable and sufficiently accurate. We will also review the official plan document to assess whether the actuary is interpreting it correctly in their valuation.

Completeness, reasonableness and consistency of the actuarial valuation. Our review of the actuarial valuations will determine if the plan provisions, assumptions, and methods are consistent with the applicable statutes and are being appropriately applied to value the liabilities for the plan participants. We will also look at both census and asset data. While we will not be auditing the information provided by

the plans, it is critical to confirm that the data is being collected and utilized appropriately and accurately by the actuary. We will also consider whether the actuarial valuations present fairly, in all material respects, the benefit obligations, actuarial accrued benefits, and required employer contributions in conformity with generally accepted actuarial principles and practices, the statutes, and applicable accounting standards, including the requirements of GASB 67 and 68, as applicable.

Current actuarial funding policies and practices. We will review the contribution policies and practice to determine if the policies align with the goals of the Commission and the Plan's members.

Development of report/presentation that is clear, concise and understandable to audiences of diverse and non-technical backgrounds. After the completion of the assessment, a draft report will be presented to the Commission for discussion and review. Once agreed, final reports will be produced. The Deloitte team selected for this engagement has consistently received praise for their ability to present actuarial information in a manner that is understandable to audiences of non-technical backgrounds.

Team Biographies

Resume for Judy K. Stromback, FSA, FCA, EA, MAAA

Judy K. Stromback

Director

Role in Deloitte Consulting

Director, Chief Pension Actuary, Deloitte Consulting LLP

Years with Deloitte

32 Years

Education

- BS in mathematics from the University of Nebraska-Lincoln, Cum Laude

Training and Certifications

- Fellow of the Society of Actuaries
- Fellow of the Conference of Consulting Actuaries
- Enrolled Actuary under ERISA
- Member of the American Academy of Actuaries
- Actuarial Standards Board Pension Committee

Summary

Ms. Stromback is the Chief Pension Actuary for the Deloitte Human Capital national practice and the retirement actuarial practice leader for the Minneapolis office. She has over 30 years of experience as an actuarial consultant to private and public sector employers. She has worked extensively with the valuation of defined benefit pension and post-retirement medical plans, implementation of pension and post-retirement benefit financial and government accounting standards, defined benefit and defined contribution plan design, and nonqualified deferred compensation arrangements. Recent examples of Ms. Stromback's actuarial consulting experience include:

- Consulting regarding the valuation, design and administration of defined benefit and defined contribution plans, including cash balance, 401(k), 403(b), and profit sharing arrangements
- Consulting regarding corporate financial and government accounting valuations and plan design for postretirement medical benefit plans
- Providing audit support regarding the reasonableness of actuarial assumptions and methods used to value defined benefit and postretirement medical plan liabilities
- Performing short- and long-term financial projections, including cash flow, assets, liabilities, and annual costs, for defined benefit pension plans, and severance pay plans
- Designing nonqualified deferred compensation arrangements for key employees
- Providing expert analysis and testimony regarding actuarial issues in multi-national corporate accounting dispute
- Implementing plan terminations, mergers, and spin-offs of qualified pension and profit sharing plans

Resume for Michael de Leon, ASA, FCA, EA, MAAA

Michael de Leon

Specialist Leader

Role in Deloitte Consulting

Specialist Leader

Years with Deloitte

17 years

Education

- BBA – Actuarial Science; Georgia State University

Training and Certifications

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

Summary

Michael has over 17 years of experience consulting with defined benefit pension plans and postretirement medical plans, including extensive experience with public sector retirement systems. He leads the Public Sector Retirement Actuarial Practice for Deloitte. He has significant experience leading projects to provide retirement actuarial services to all levels of state and local government and institutions of higher education. Michael is an active member of the Conference of Consulting Actuaries Public Plans Committee and an associate of the National Association of State Retirement Administrators. Recent examples of Michael's actuarial consulting experience include:

- Designing defined benefit, and hybrid plans for public sector retirement systems
- Providing actuarial review services for pension and retiree health plans of governmental entities
- Providing expert witness testimony
- Providing audit support regarding the reasonableness of actuarial assumptions and methods used to value defined benefit pension and OPEB liabilities of public sector retirement systems
- Creating strategic funding and administration policies for public sector retirement systems
- Designing cost reduction strategies for public sector pension and retiree health plans
- Evaluating the impact of changes in benefit structure and actuarial assumptions for defined benefit plans
- Preparing annual valuation reports for qualified retirement plans and postretirement medical plans
- Assisting public sector retirement systems with the preparation and costing of proposed legislation
- Providing actuarial valuation services under GASB Statement Nos. 16, 25, 27, 43, and 45 for several states, counties, cities, and school districts
- Providing training on implementation assistance on GASB Statement Nos. 67 and 68
- Providing public testimony to various governmental bodies
- Providing bargaining support

Resume for Jeannie Chen, ASA, EA, MAAA

Jeannie Chen

Manager

Role in Deloitte Consulting

Manager

Years with Deloitte

11 years

Education

- BS – Mathematics (Actuarial Science); The University of Texas at Austin

Training and Certifications

- Associate, Society of Actuaries
- Enrolled Actuary under ERISA
- Member of the American Academy of Actuaries

Summary

Jeannie has over 10 years of experience as an actuary consulting with public sector pension and post-retirement health and welfare plans. She has experience with actuarial valuations, data validations, actuarial review services, financial statement audits, evaluating pension and retiree health plan designs and the cost associated with plan design changes. Jeannie focuses her time on governmental entities and has managed actuarial projects at all levels of state and local government and institutions of higher education. Recent examples of Jeannie's actuarial consulting experience include:

- Preparing actuarial valuations services under GASB Statement Nos. 25, 27, 43, and 45 for several states, counties, cities, school districts, and universities
- Providing actuarial review and audit support services regarding the reasonableness of actuarial assumptions and methodology used to value defined benefit pension and postretirement medical plan liabilities of public sector retirement systems
- Review underlying demographic data and output from valuation systems
- Providing actuarial review of actuarial valuation calculations for compliance with GASB and SFFAS provisions
- Reviewing and updating actuarial assumptions based on plan experience
- Providing actuarial consulting related to plan design and asset and liability projections
- Providing bargaining support
- Assisting local government with the implementation of GASB Statement Nos. 67 and 68
- Providing trainings on GASB Statement Nos. 67 and 68

Resume for Kent Schrad, ASA, MAAA

Kent Schrad

Consultant

Role in Deloitte Consulting

Senior Consultant

Years with Deloitte

6 years

Education

- BS – Actuarial Science, Mathematics ; University of Iowa

Training and Certifications

- Associate, Society of Actuaries
- Member of the American Academy of Actuaries

Summary

Kent has 6 years of experience consulting with defined benefit pension plans and postretirement medical plans. Recent examples of Kent's actuarial consulting experience include:

- Providing actuarial valuation services under GASB Statement Nos. 25, 27, 43, and 45 for several states, counties, cities, and school districts
- Providing actuarial review or audit services for pension and post-retirement medical plans
- Preparing annual valuation reports for qualified retirement plans and postretirement medical plans
- Providing audit support regarding the reasonableness of actuarial assumptions and methods used to value defined benefit and postretirement medical plan liabilities for several public sector retirement systems
- Designing programs to calculate pension benefits and employee benefit statements
- Evaluating the impact of changes in benefit structure and actuarial assumptions for defined benefit plans
- Reviewing and updating actuarial assumptions based on plan experience

Resume for Eric J. Roling, FCA, ASA, EA, MAAA

Eric J. Roling

Specialist Leader

Role in Deloitte Consulting

Specialist Leader

Years with Deloitte

20 years

Education

- BSBA – Actuarial Science and Finance; Drake University

Training and Certifications

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

Summary

Eric has over 20 years of experience consulting to private and public organizations regarding the design, funding and administration of employee benefits, with particular expertise working with sponsors of defined benefit retirement plans. He has experience working with plan terminations, mergers and acquisitions, spin-offs, and plan redesigns. He is an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries, an Enrolled Actuary, and a Fellow of the Conference of Consulting Actuaries. His experience includes:

- Consulting regarding the design, funding and operation of defined benefit and defined contribution plans
- Conducting studies of projected contribution requirements and accounting results for qualified plans, including performing integrated asset/liability studies using deterministic and stochastic projections
- Preparing annual actuarial valuations of qualified and nonqualified plans for public and private employers
- Preparing annual actuarial valuations of postretirement medical plans and consulting with plan sponsors regarding managing plan costs.
- Providing due diligence review and integration consulting regarding benefit programs in mergers and acquisitions
- Conducting plan experience studies and assisting sponsors with the selection of actuarial assumptions
- Performing cost estimates for proposed changes in benefit provisions and legislation
- Consulting for and assisting with pension plan terminations
- Providing actuarial support for benefits issues in union negotiations

Fees

Regarding RFP Section VII. Actuarial Services Compensation

We are pleased to propose on serving the Commission in an actuarial capacity and our pricing reflects professional fees that recognize the economic realities of public sector consulting.

The annual fixed fee amounts and the hourly rates for the five-year period will be subject to annual Consumer Price Index ("CPI") adjustments.

<table>
<tr><th>Service</th><th>Fees</th></tr>
<tr><td>

Replication of the annual actuarial valuation results according to the following replication schedule:
<table>
<tr><th>Retirement Plan</th><th>Valuation Date</th></tr>
<tr><td>MSRS – General</td><td>July 1, 2014</td></tr>
<tr><td>PERA – General</td><td>July 1, 2015</td></tr>
<tr><td>TRA</td><td>July 1, 2016</td></tr>
<tr><td>St. Paul Teachers Retirement Fund Association</td><td>July 1, 2017</td></tr>
<tr><td>Public Employees Police and Fire Retirement Plan</td><td>July 1, 2018</td></tr>
</table>

Actuarial review of the annual actuarial valuation results for the 11 other plans not subject to a replication valuation

</td><td>$88,000 per year</td></tr>
<tr><td>Review of the quadrennial experience studies for MSRS – General, PERA – General, and TRA</td><td>$20,000</td></tr>
</table>

In addition to the services listed above, we will make an initial investment in our relationship with the Commission by replicating all 12 plans in our valuation software in the first year after the contract is executed. This initial investment will allow us to provide the Commission with more accurate and timely cost estimates, when requested, and provide a higher level of overall actuarial consulting services.

All other projects will be performed on a rate per hour basis. Our discounted public rates for the first year of the contract are listed below. The assigned team members, their roles, and current titles are listed below. We have also listed unassigned staff that will provide services as necessary.

Commission's Team from Deloitte	Role	Title	Discounted Rate Per Hour
Judy Stromback	Engagement Director and Supervising Actuary – responsible for all engagement deliverables and overall quality assurance.	Director	$440
Michael de Leon	Engagement Manager and Lead Actuary – responsible for leading the engagement and will be your primary contact	Specialist Leader	$408
Eric Roling	Peer Advisor and Support Actuary – responsible for quality assurance oversight as a peer reviewer	Specialist Leader	$408

Jeannie Chen	Lead Consultant and Valuation Process Actuary – responsible for leading most of the day-to-day activities of the actuarial consulting services	Manager	$375
Kent Schrad	Primary Staff Actuary – responsible for performing the initial analysis on many of the projects of this engagement	Senior Consultant	$325
Unassigned Staff	Engagement Support – perform analysis in support of the engagement	Consultant	$270
Unassigned Staff	Engagement Support – perform analysis in support of the engagement	Analyst	$240

Out-of-pocket expenses will be charged as incurred. However, since the team will be primarily staffed locally, we do not anticipate significant out-of pocket expenses during this engagement. Any special requests by the Commission that would generate out-of-pocket expenses would be discussed prior to us incurring these expenses.

All computer and development costs are included in the fixed and hourly fee proposals.

Affirmative Action

Regarding RFP Section VIII. Affirmative Action

Below is a copy of our current certificate of compliance issued by the Minnesota Commissioner of Human Rights.

CERTIFICATE OF COMPLIANCE

DELOITTE CONSULTING, LLP is hereby certified as a contractor by the Minnesota Department of Human Rights. This certificate is valid from 2/15/2013 to 2/15/2015.

This certification is subject to revocation or suspension prior to its expiration if the department issues a finding of noncompliance or if your organization fails to make a good faith effort to implement its affirmative action plan.

Minnesota Department of Human Rights

FOR THE DEPARTMENT BY:

Kevin M. Lindsey, Commissioner

Additional Information Regarding Diversity and Inclusion

A Diverse Culture

At Deloitte, we are committed to fostering an inclusive environment, one which celebrates and harnesses strength from diversity of all kinds — backgrounds, experiences, and perspectives. We see our commitment to an inclusive environment as an investment in our organization and our talent.

Starting with the inception of our Women's Initiative (WIN) in 1993, and Diversity in 1994, each CEO has supported and has been deeply committed to our inclusive culture. Since then, this personal commitment has not waivered and has continued to grow with each new leadership team.

Two decades later, this commitment to an inclusive environment and diverse workforce still starts at the very top with Deloitte LLP CEO Joe Echevarria. Deloitte LLP's Chief Inclusion Officer, Deb DeHaas, along with the Inclusion executive team - Julia Cloud, WIN managing partner, Deloitte & Touche LLP; Kelvin Womack, Diversity managing principal, Deloitte Consulting LLP; Paul Silverglate, Work Life managing partner, Deloitte & Touche LLP; and Christie Smith, Deloitte University Leadership Center for Inclusion managing principal, Deloitte Consulting LLP – drive the Inclusion strategy and report regularly to Deloitte LLP CEO Joe Echaverria.

The teams behind these leaders are deep and powerful in their own right. Each is represented by business unit, regional, channel, and industry leaders, who drive our Inclusion efforts throughout the organization. A national partner, principal, or director champion leads each of our Business Resource Groups (BRGs) — nationally sponsored communities that are aligned with our business objectives — backed by leaders of each of our local chapters.

While internal accountability is vital, it's not the same as being held responsible to outside judgment. That's why Deloitte created the Inclusion External Advisory Council of respected business, academic, government, and community leaders. Deloitte was proactive in forming this powerful, independent group. Its existence is just another example of our commitment to making an inclusive environment a daily reality.

Our current strategy focuses on:

- Achieving greater representation in the advancement pipelines
- Improving talent acquisition in specific segments
- Enhancing inclusive behavior within the organization
- Extending marketplace eminence

Equal Opportunity/Affirmative Action Policies

Deloitte LLP and its subsidiaries located in the U.S (U.S.-based Firms) are equal opportunity employers. Each U.S.-based Firm recruits, employs, trains, compensates and promotes without regard to race, religion, creed, color, citizenship, national origin, age, sex, gender, gender identity/expression, sexual orientation, marital status, disability, genetic information, veteran status or any other legally protected basis, in accordance with applicable federal, state or local law.

Each U.S.-based Firm will make reasonable attempts to accommodate the expression of religious beliefs, as long as that expression does not harass or intimidate coworkers or place an undue hardship on its business or that of another U.S.-based Firm. Employees seeking a religious accommodation should contact their local Talent Manager from Deloitte Services LP.

As federal contractors, the U.S.-based Firms also provide an affirmative action program for minorities, women, disabled and Vietnam-era veterans and persons with disabilities. In response to a request from a qualified individual with a disability, each U.S.-based Firm will make a reasonable accommodation that would allow such individual to perform the essential functions of his or her job, unless doing so would create undue hardship on its business or that of another U.S.-based Firm. Employees who wish to make such a request, should contact their local Talent Manager.

The U.S.-based Firms provide equality of benefits between their respective personnel with spouses and their personnel with domestic partners (same or opposite sex), between spouses of their personnel and domestic partners of their personnel, and between dependents and family members of spouses and dependents and family members of domestic partners in accordance with federal, state or local laws, rules or regulations and the U.S.-based Firms' administrative practices. If the U.S.-based Firms offer or make available a benefit that covers, applies to, or is made available to or for the benefit of spouses of their respective personnel, such benefit shall be deemed to cover, apply to, or be available to or for the benefit of domestic partners of their personnel, unless disallowed by law.

The Deloitte U.S. Firms Diversity & Inclusion Initiatives: A Recognized Leader in the Market

At Deloitte, we are committed to fostering an inclusive environment, one which celebrates and harnesses strength from diversity of all kinds—backgrounds, experiences and perspectives—to the benefit of our clients and ourselves. We see our commitment to an inclusive environment as an investment in our organization and our talent—their recruitment, retention, development and advancement— which is why we offer a robust slate of career development and networking opportunities at every level. We are honored to be recognized for these efforts to demonstrate we walk the talk; select external recognitions include:

• DiversityInc magazine's "Top 50 Companies for Diversity," 2013 • DiversityInc magazine's "Top 10 Companies for Asian Americans," 2013 • DiversityInc magazine's "Top 10 Companies for LGBT Employees," 2013 • Working Mother Magazine's "100 Best Companies," 2013 (20th consecutive year) • Working Mother Magazine's "Top 10 for Best Companies for Multicultural Women," 2013 (9th consecutive year)	• Universum Top 100 IDEAL Diversity Employers • Human Rights Campaign Corporate Equality Index:100% • Human rights Campaign "Best Places to Work," 2014 • Fortune Magazine's "100 Best Companies to Work For," 2013 (14th year)

Workers' Compensation

Regarding RFP Section IX. Workers' Compensation

Deloitte Consulting LLP maintains the insurances required by federal, state, or local statutes, including worker's compensation and employer's liability coverage. We also maintain commercial general liability and automobile liability in amounts sufficient to protect the US firms, as well as the interests of our clients, where appropriate. The attached sample certificate of insurance provides evidence of the minimum limits the US firms maintain for each of these coverages.

Deloitte LLP maintains professional liability coverage believed to be similar to the programs of other large professional services organizations in the United States. We believe our insurance coverage is adequate to sufficiently cover the services detailed in this request for proposal. The second attached sample certificate of insurance provides evidence of the minimum limits the US firms maintain for this coverage.

If Deloitte Consulting is awarded the work, the insurance requirements will be negotiated in good faith as part of the overall contract negotiation process.

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 05/27/2014

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 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 Marsh USA, Inc. 1166 Avenue of the Americas New York, NY 10036 709965-ECSM--14-15	CONTACT NAME: PHONE (A/C, No, Ext): E-MAIL ADDRESS:	FAX (A/C, No):
INSURED Deloitte LLP Deloitte Consulting LLP	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : National Union Fire Ins Co Pittsburgh PA	19445
	INSURER B : New Hampshire Insurance Co.	23841
	INSURER C : The Insurance Company of the State of PA	19429
	INSURER D : N/A	N/A
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** NYC-005361686-09 **REVISION NUMBER:** 5

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 INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [ ] PRO-JECT [X] LOC			GL 7266959	06/01/2014	06/01/2015	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 1,000,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS			CA 7062848 "Auto Physical Damage" "$500 DEDUCTIBLE COMP/COLL"	06/01/2014	06/01/2015	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000
	UMBRELLA LIAB OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $						EACH OCCURRENCE AGGREGATE	
B C C C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] N/A If yes, describe under DESCRIPTION OF OPERATIONS below			WC 027527701 (AOS) WC 027527702 (IL,KY,NC,NH,UT,VT) WC 027527703 (MA,ND,OH,WA,WI,WY) WC 027527704 (NJ,PA)	06/01/2014 06/01/2014 06/01/2014 06/01/2014	06/01/2015 06/01/2015 06/01/2015 06/01/2015	X WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
C C	WORKER'S COMP WORKER'S COMP			WC 027527705 (CA) WC 027527706 (AK,AZ,GA,VA)	06/01/2014 06/01/2014	06/01/2015 06/01/2015		

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

Deloitte Consulting LLP

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 of Marsh USA Inc.

Robert A. Mazzaro

Attachment A – Sample Work Product: Actuarial Review and Experience Study

Client XYZ
Actuarial Review

As of June 30, 20yy

July 31, 2007

Name
Title
Client XYZ
Address
City, State Zip

Re: Actuarial Review as of June 30, 20yy

Dear Client:

As requested, we have performed a review of the actuarial valuation as of June 30, 20yy for the Client XYZ (CLIENT XYZ). We also performed a review of the experience study as of June 30, 20xx for CLIENT XYZ, including a full independent replication of the study. This report presents our findings.

All participant data, asset information, and Client provisions that we relied upon for this study were provided by CLIENT XYZ and the currently retained actuary, Actuary. If any of the information provided to us for purposes of this review is incorrect, our conclusions presented hereunder may change.

To the best of our knowledge, this report is complete and accurate and was prepared in accordance with actuarial standards of practice as prescribed by the Actuarial Standards Board.

We would like to express our gratitude to Actuary and CLIENT XYZ staff for their cooperation in providing us with the documentation needed to carry out our review.

The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

_____ _____

DC Actuary 1 DC Actuary 2

CLIENT XYZ (CLIENT XYZ)
ACTUARIAL AUDIT
AS OF JUNE 30, 2006

TABLE OF CONTENTS

I. BACKGROUND AND PURPOSE

The purpose of an actuarial valuation is to provide a timely best estimate of the Client's liabilities and contribution levels. This can help ensure that the current assets and future contributions will be sufficient to provide the promised future benefits. To make these determinations, actuarial assumptions are made to project the occurrence, amount, and timing of benefits which will become payable under CLIENT XYZ. The extent to which the actuarial valuations accurately measure the Client's liabilities and contribution levels depends on how well the actuarial assumptions predict emerging Client experience.

The purpose of an experience study is to determine reasonable assumptions to use in the actuarial valuation. Generally, they should be based on a combination of past Client experience, future long-term expectations, and professional judgment.

One purpose of an actuarial review is to help a plan sponsor determine if the actuarial valuation work appears to be performed correctly and in accordance with actuarial standards of practice. Another benefit is that the reviewing actuary can identify potential areas of improvement that may increase the value and understanding of the actuarial services provided to the plan sponsor.

We have been retained by CLIENT XYZ for the following purposes:

- Review the actuarial valuation of pension and retiree health plans as of June 30, 20yy
- Review the experience study as of June 30, 20xx, including an independent replication
- Reconcile significant findings of our review with the retained actuary

The information contained in this report was prepared for the internal use of Client XYZ for the purposes stated herein, and it is not intended nor necessarily suitable for other purposes. Except as required by law, further distribution to, or use by, other parties of all or part of this report is expressly prohibited without Deloitte Consulting's prior written consent.

Because we did not perform a full replication of the actuarial valuation as of June 30, 20yy, we are unable to determine the potential impact of changes suggested in this report. The actual financial impact of any changes should be reviewed by the Client's retained actuary.

We have provided our observations, advice and recommendations. However, our services do not constitute an engagement to provide audit, compilation, review, or attestation services as described in the pronouncements on professional standards issued by the American Institute of Certified Public Accountants ("AICPA"), and, therefore we do not express an opinion or any other form of assurance with respect to the results from the Plans' calculations.

This report discusses our findings and recommendations and details the processes we used to perform our review.

II. SUMMARY OF FINDINGS AND RECOMMENDATIONS

The overall findings of this actuarial review is that the June 30, 20yy valuation and June 30, 20xx experience study were performed by Actuary in a way that appears to be reasonable and consistent with actuarial standards of practice. The valuation appears to present a fair representation of the actuarial liabilities and develops contribution rates which are generally appropriate to satisfy the funding obligations of the Client. Based on our review processes as described in this report, we did not find any issues that rose to the level of serious concern.

Within the limitations of the scope of our review, the valuation results, assumptions, and methodologies appear to be reasonable and appropriate. However, we believe there is some room for improvement. We have made recommendations in this report that in our opinion may more accurately estimate the liabilities and appropriate contribution levels. We have also noted clarifications in the reporting that could be made to improve understanding of the actuarial work performed.

Generally, our review comments will be one of the following:

- Level of Serious Concern - concluding that some part of the work may be incorrect, unreasonable, or inconsistent with actuarial standards of practice; or

- Suggestions and Considerations - suggesting changes or further analysis which might improve the actuarial estimates and add value and understanding to the actuarial work.

The following issues rise to the **level of serious concern**:

There were no issues that rose to the level of serious concern.

The following are **suggestions and considerations**:

The table below summarizes the issues and estimated impact of any changes. Please note that we can only provide a high level comment on the impact of change because we were not asked to perform a matching valuation. The retained actuary can provide more detailed estimates of the impact of change (as was provided for the Programming of the Retiree Medical Plan benefits).

Area	Issue	Impact of Change
Actuarial Cost Method	Entry Age Normal method should be considered	May provide more contribution stability
Programming, Retiree Medical	A portion of the benefits provided to retirees that are assumed to elect single coverage is not being valued, and several shortcuts have been taken that individually overstate or understate the liabilities	The retained actuary estimated the net effect of making the key programming changes to be an increase in the liability of 1.5% and an increase in the ARC of 3.2%. These changes can flow through future gains and losses.

Area	Issue	Impact of Change
Programming, Retirement	100% pre-retirement survivor benefit is treated as 50%	Minor increase in retirement liabilities
	The 401(a)(17) pay limit does not appear to be applied	De minimis decrease in retirement liabilities (effects less than six active members at 7/1/06)
Report Content	Clarify purpose statement on page i of the retirement report	Report clarification
	Add a 10- to 20-year benefit payout projection to retirement report	Enhanced report content
	Add gain/loss by retirement, withdrawal, disability and mortality	Enhanced report content
	Present asset reconciliations on market, rather than actuarial basis	Report clarification
	Add an historical summary of significant plan changes	Enhanced report content
	Increase disclosure of some assumptions	Report clarification
	State the per capita cost assumption in the report by showing tables of the subsidies by plan and by years of service	Report clarification
Actuarial Assumptions	Consider lowering the assumed investment return on member accounts	Minor decrease in retirement liabilities; only affects members that take a refund of member contributions at termination
	Begin to recognize future mortality improvement	Potential increase in retirement and retiree medical liabilities
	Consider an assumption that some vested members will withdraw their member account at termination, forfeiting their city-provided benefit	Decrease in retirement liabilities
	Lower the starting point of the health trend to give more weight to actual experience	Decrease in retiree medical liabilities

More discussion of our findings and review process are included in the following sections.

III. AUDIT OF THE ACTUARIAL VALUATION AS OF JUNE 30, 20YY

A. DATA VALIDITY

Actuarial Standard of Practice No. 23, *Data Quality,* provides general guidance for determining if data is appropriate for its intended purpose and whether it is sufficiently reasonable, consistent, and comprehensive.

This section determines the completeness, quality, and consistency of the data delivered by the Client to the retained actuary. It also assesses the reasonableness of the retained actuary's reconciliation and data adjustment procedures.

Review Findings:

We believe the client data appear to be of sufficient completeness, consistency, and quality to perform the actuarial valuation and that all data procedures used by the retained actuary appear to be reasonable, such as the data reconciliation and data adjustments. In general, the data maintained by CLIENT XYZ is above average when compared to the quality of data we have reviewed for other governmental entities.

Comments:

Our process for reviewing data validity focused on the reasonableness of values included in the data field, year over year changes, and a comparison of the data provided to Actuary by CLIENT XYZ to the final data actually used by Actuary. We did not verify the accuracy of the individual data by going back to original sources as that was outside of the scope of this review.

We received the following CLIENT XYZ data files:

- Member data: Memberdd.txt, Membercc.txt, Memberbb.txt, and Memberaa.txt
- Retiree data: Payeedd.txt, Payeecc.txt, Payeebb.txt, and Payeeaa.txt

The data files looked very consistent from year to year. The number of records and the layout of the data provided were similar in each of the years. We compared the records from the Member05 file to the records in the Memberdd and Payeedd file to see if many records dropped off. We found that only zz records from the 20xx file were not in either of the 20yy files. This is very good considering the total number of records is about 45,000.

We analyzed the Memberdd and Payeedd files to assess the quality of the data received. We believe the data is of sufficient quality to perform the actuarial valuation. There are very few missing values. The following are some of the active member data issues, none of which occurred very frequently (note that the issues listed below are commonly found in any retirement Client database):

- Members that were hired at ages less than 16, which probably points to either date of birth errors or date of hire errors (< 1% of active data)
- Members with zero credited service when their hire dates would indicate that they should have some credited service (< 3% of active data)
- Members with zero salary (< 1% of active data - these records were also missing a lot of other data)

Retirees all had total benefit amounts that were greater than zero and reasonable. Some of the payment options appeared to be erroneous (i.e., a 1% J&S option), but there were very few of those. Quite a few of the J&S payment options were missing spouse information, which require assumptions for spouse birth dates, but this is a fairly common occurrence in valuations.

Overall, the client data seemed to have few problems and was reasonably complete.

The following table was created to compare the client's data to the data used in the valuation. This helps provide an assessment of the data reconciliation procedures and the level of data adjustments made by the retained actuary to the client's data.

	Client Data	Valuation Data	Val/Client
Active Members			
Count	28,841	28,839	100%
Avg. Age	45.4	45.4	100%
Avg. Svc	11.6	11.7	101%
Avg. Earned Pay	57,463	60,104	105%*
Avg. Member Account	40,116	40,118	100%
Vested Inactive Members			
Count	2,903	2,903	100%
Avg. Age	42.6	42.7	100%
Retired Members			
Count	10,244	10,234	100%
Avg. Age	71.3	71.4	100%
Avg. Svc	26.3	26.3	100%
Avg. Benefit	3,025	3,116	103%**
Disabled Members			
Count	885	885	100%
Avg. Age	60.2	60.2	100%
Avg. Svc	12.1	12.2	100%
Avg. Benefit	1,254	1,290	103%**
Beneficiaries			
Count	3,451	3,451	100%
Avg. Age	75.3	75.3	100%
Avg. Benefit	1,391	1,433	103%**

*We understand that the difference in average earned pay is because the retained actuary makes a half-year increase to get the correct salary timing in their valuation Client, which is reasonable.

**We understand that the difference in average benefit is that the actuary added a 3% cost-of-living increase that was not reflected in the data in order to get the correct COLA timing in their valuation system, which is reasonable.

The above data summary that we prepared is very close to the data summary in the valuation report. This indicates the actuary does not make many adjustments to the client's data and that the data reconciliation procedures are fairly straightforward.

III. REVIEW OF THE ACTUARIAL VALUATION AS OF JUNE 30, 20YY

B. REVIEW OF ACTUARIAL METHODS AND PROCEDURES

This section determines if the actuarial cost method, actuarial asset method and amortization method are reasonable and consistent with actuarial standards of practice.

Actuarial Cost Method

Under Actuarial Standard of Practice No. 4, *Measuring Pension Obligations*, an "acceptable actuarial cost method" meets the following criteria:

- costs are allocated over the period of time that benefits are earned; and
- costs are allocated on a basis that has a logical relationship to the plan's benefit formula (compensation, service, benefit level, etc.)

It is also commonly desired that the actuarial cost method will produce stable normal costs as a percent of pay.

Review Findings:

The actuarial cost method is an acceptable method. However, we suggest that the Entry Age Normal method should be considered because it may provide more contribution stability.

Comments:

We understand that the annual recommended CLIENT XYZ contribution is based on the Client's normal cost plus an amortization of the unfunded actuarial liability. This total amount is divided by covered payroll to determine the recommended contribution rate.

The normal cost is determined using the Projected Unit Credit (PUC) actuarial cost method. PUC is an "Accrued Benefit" funding method. This means that the liability is determined as the benefit accrued to date with salary increases projected to decrement age. The normal cost under this method is determined as the amount of benefit that will accrue during the year. This is a generally acceptable actuarial cost method. However, it has characteristics that could be undesirable for CLIENT XYZ.

PUC is a popular method used for funding private sector plans and is the required method to use when reporting under FASB. The advantage of using the PUC method is that the liability relates directly to the pattern of earning benefits. In the private sector, this permits a plan that is 100% funded on a PUC basis to freeze future accruals (for example if the company wanted to switch to a Defined Contribution Plan), and if all assumptions are met, to have no future contribution requirements to the plan. The disadvantage to this funding method is that as a population ages, the normal cost will increase as a percent of payroll because of the pattern of earning benefits. The benefits earned for an employee near retirement age are much more valuable than when they are younger.

The Entry Age Normal (EAN) actuarial cost method is more commonly used in public sector pension plans. EAN is a "Prospective" funding method. This means that the present value of all future benefits (PVFB) is determined for each employee, and is then spread evenly (as either a level dollar or level percentage of pay) over each employee's career. This funding method has the advantage of stability of contributions over time because the normal cost is intended to be the same regardless of the age of the

population. Since governmental entities generally do not have the ability to freeze the accruals of their plan, a "Prospective" funding method is generally preferable to an "Accrued Benefit" funding method. According to the Public Funds Survey*, 70% of surveyed public sector pension plans use the Entry Age Normal funding method (14% use PUC, 9% use Aggregate, and 7% use Frozen Initial Liability).

We recommend that CLIENT XYZ consider changing the actuarial funding method to Entry Age Normal – Level Percent of Pay for the pension plan and Entry Age Normal – Level Dollar for the OPEB plan. The immediate effect on liabilities and annual contributions should be considered as well as the long-term funding goals of the Client.

*The Public Funds Survey, sponsored by the National Association of State Retirement Administrators and the National Council on Teacher Retirement, is a continuously updated collection of data regarding over 100 major governmental pension Clients.

Actuarial Asset Method

Paragraph 10(e) of GASB No. 27 says: "Plan assets should be valued using methods and techniques that are consistent with the class and anticipated holding period of the assets, the investment return assumption, other assumptions used in determining the actuarial present value of total projected benefits, and current actuarial standards for asset valuation. Accordingly, the actuarial value of plan assets generally should be market related."

The Actuarial Standards Board published the Actuarial Standard of Practice (ASOP) No. 44 regarding the selection and use of asset valuation methods for pension valuations. ASOP No. 44 states that when selecting an asset value other than the market value, the actuary should select an asset valuation method that is designed to produce actuarial values of assets that bear a reasonable relationship to the corresponding market values. The qualities of such an acceptable method should satisfy one of the following:

A. The method produces values within a sufficiently narrow range around market value;

B. The method recognizes differences from market value in a sufficiently short period; or

C. The asset values fall within a reasonable range around the corresponding market values, and any differences between the actuarial value of assets and the market value are recognized within a reasonable period of time.

Review Findings:

The actuarial asset method is an acceptable method. This actuarial asset method satisfies the current actuarial standards for asset valuation per ASOP No. 44.

Comments:

The actuarial value of assets for the entire Client equals the total market value minus any unrecognized gains and losses from the past five years. Gains and losses are the difference between the actual return and the expected return (currently 8.0%). This is a commonly-used approach and it meets the "acceptable method" criteria above.

To determine the actuarial value of retirement assets (for funding retirement benefits), the total actuarial value is multiplied by the ratio of the market value of retirement assets to the total market value:

$$AV\ retirement\ assets = total\ AV \times (MV\ retirement\ assets \div total\ MV)$$

Similarly, to determine the actuarial value of retiree health assets (for funding retiree health benefits) the total actuarial value is multiplied by the ratio of the market value of retiree health assets to the total market value:

$$AV\ retiree\ health\ assets = total\ AV \times (MV\ retiree\ health\ assets \div total\ MV)$$

This is a reasonable split of the actuarial value for the retirement and retiree health plans, including a reasonable allocation of gains and losses among the plans.

Amortization Methods

There are many ways to amortize the changes to the unfunded actuarial liability due to gains and losses, plan changes, assumption and method changes, and other items. Generally, amortization should be made:

- over a reasonable time period
- in a rational and systematic way, such as a level dollar amount or a level percentage of pay

Review Findings:

The amortization method is an acceptable method.

Comments:

The amortization of unfunded actuarial liabilities is made as a level percent of projected pay over various time periods, depending on the source:

Unfunded Liability	Amortization Period
Combined Bases	30 years
Plan Changes	30 years
Assumption Changes	30 years
Gains and Losses	15 years
One-year Contribution Lag	15 years
GASB Contribution Deficiency	15 years

"Combined Bases" means that several existing bases are combined and re-amortized over 30 years.

"One-year Contribution Lag" means there is a gain or loss because the new contribution rate is not implemented until one year after its determination.

"GASB Contribution Deficiency" means that deficiencies from contributions less than the Annual Required Contribution are amortized as a separate component of the GASB ARC.

These are reasonable time periods, and level percent of pay amortization is a rational basis.

Several old bases were combined and re-amortized over 30 years as of June 30, 20xx. This is a reasonable approach that slightly decreased the contribution (the net effect of all changes in 20xx resulted in a slightly higher contribution than 20ww). We assume this will not be done frequently, however, so that the shorter, more conservative amortization periods will generally be maintained.

The amortization method also requires adjustments to the time periods shown above if the equivalent single amortization period exceeds the maximum amortization period permitted by the applicable GASB statements. For GASB Nos. 25 and 27, the maximum amortization period has been 40 years but changes to 30 years for fiscal year 2007 and beyond. For GASB Nos. 43 and 45, the maximum amortization period is 30 years.

It appears that the current actuary correctly established “GASB Contribution Deficiency” bases for deficiencies at June 30, 20ww and June 30, 20xx. These deficiencies occurred because prior to 20yy, the amortization method was not adjusted when the equivalent single amortization period exceeded the 40-year amortization limit.

For the OPEB valuation, the actuarial gains during fiscal year 20yy were not separately amortized. Instead the gains were aggregated with the initial unfunded actuarial accrued liability and amortized over the remaining period for the combined bases (29 years). This is a reasonable method for amortizing the liability to avoid exceeding the 30-year maximum amortization period.

III. REVIEW OF THE ACTUARIAL VALUATION AS OF JUNE 30, 20YY

C. DETAILED REVIEW OF SAMPLE LIVES

We reviewed test cases from the retained actuary's valuation system that we selected in order to determine if the actuarial assumptions, methods and plan provisions are being applied appropriately in their valuation with respect to the test cases. We consider this to be a reasonable alternative to completing a full reproduction of the actuarial valuation, but due to the limited nature of this review of test calculations, we can express no definitive assurance that all calculations under the valuation were performed consistently with these test cases reviewed.

Review Findings:

We determined that the pension plan provisions appear to generally be valued correctly for the cases we reviewed, but that the retiree medical plan provisions had some concerns that need to be addressed.

Comments:

We selected seven test cases with different combinations of gender, age, service and pay. The retained actuary provided us with detailed output for these seven members from their valuation system. Retirement output was received for all samples selected. For the retiree medical plan, Actuary was not able to provide the requested test cases before the necessary deadline. Instead, we reviewed the output for one requested test case plus four additional members for whom Actuary had already produced output as part of their annual valuation process. We felt this to be a reasonable method for the retiree medical plan sample lives since independently selecting the individuals would not likely have raised any different programming issues from the ones noted below.

For the retiree medical benefits, we found some concerns in the programming being used. The retained actuary estimated the effect of making the changes noted in the first, fourth, and fifth bullet points below. The net effect of the changes was estimated to increase liability by 1.5% and increase the annual required contribution by 3.2%. Based on these estimates, we do not feel that the programming issues rise to the level of a serious concern. Changes in the programming should be made in the June 30, 2007 valuation and the effect of these changes should appear as an actuarial loss.

We found the following areas for concern in the programming for retiree medical benefits:

- For active employees, the expected premium and maximum subsidy during retirement are split evenly between the retiree and spouse with the probability of marriage applied for the spouse benefit. The problem is that if the retiree is not married, the benefit is being limited by 50% of the maximum subsidy. This means that the pre-65 claims are being undervalued.

- For active employees, the PPO benefit is weighted 25% and the HMO is weighted 75%. This seems reasonable for pre-65 benefits (and post-65 with Part B only) since the observed participation in 20yy was 23.4% in the PPO and 76.6% in the HMOs; however, for the post-65 population (with Parts A and B), this may not be reasonable. The post-65 observed participation in 20yy was 32.8% in the PPO and 67.2% in the HMOs. A split of 1/3 PPO and 2/3 HMO may be more appropriate for the post-65 group.

- The HMO plans are being combined and valued as if they are all Provider. For the pre-65 population, the HMO1 premium is about 3% higher than the Provider premium (Single coverage). Since 18% were observed to participate in the HMO1 in 20yy, this could have a significant effect on the liabilities. For the post-65 population, HMO1 premium is 5%-6% lower than the Provider premium. Since 10.4% were observed to participate in the HMO1 in 20yy, this could have a significant effect on the liabilities. The other providers are each less than 1% of the observed population and could reasonably be ignored.

- The maximum post-65 subsidy for a married retiree in the PPO plan was determined as $7,959. This should be $6,998 (or $6,992 depending on the correct maximum subsidy for 2007 – reported in different locations as $983 and $984 per month).

- The spouse allocation of the maximum subsidy for post-65 benefits was determined as $2,223 ($7,959 – $5,736). Based on our understanding of the intention of this calculation, it should be $2,893 ($6,998 – $4,105).

- The method of allocating the remaining maximum subsidy to the spouse incorrectly applies the post-65 benefit if the participant has less than 25 years of service because the member's vesting percentage follows a different pattern than the spouse's vesting percentage. For example, one sample life we reviewed valued 100% of the post-65 maximum benefit for the spouse even though the participant only had 23 years of service at retirement (the pre-65 vesting percentage was being correctly determined as 92%). 100% is, of course, the correct post-65 vesting percentage if the participant only has Single coverage.

- Retirees and spouses are assumed to have the same premium costs. This may be reasonable for pre-65 benefits (the Single + 1 premium is between 0.2% and 0.6% less than twice the Single premium), but the effect could be somewhat significant for post-65 benefits (the Single + 1 premium is between 0.5% and 3.2% less than twice the Single premium).

- For the active sample life with 23 years of service at age 55, the maximum subsidy provided to the spouse while the participant is over 65 and the spouse is under 65 is not correct. It is listed as $5,277, which is half of the family subsidy ($11,472 * 92% = $10,554). It should actually be $1,975 which is the excess of the family subsidy over the single premium ($10,554 - $8,579).

- For the retiree sample life with Single + 1 coverage that we reviewed, the maximum subsidy is not being applied correctly while the spouse is under age 65 and the member is over age 65. We are not certain how the maximum subsidy of $5,050 is being determined, but the value should be $4,504 ($6,500 - $1,996).

- For the same retiree benefit sample life, the <u>surviving</u> spouse maximum subsidy is not being valued correctly. While the spouse is under age 65, the maximum subsidy should be $4,920 (88% * $465.91 * 12).

- For the deferred vested sample life, the maximum subsidy is not being applied correctly after age 65. For the member, the limit should be 90% of the claim amount since the member had only 19 years of service at termination. That would be $3,695 for the PPO and $1,796 for the HMO. There are similar issues for the spouse/survivor benefits for this sample life as mentioned above.

- In the sample lives provided, we did not see the determination of the reimbursement of Medicare Part B premiums for the member.

In general, it appears that a couple of shortcuts were taken to simplify the programming of the retiree medical benefits. While we do not have a problem with taking the shortcuts in general, we believe that the effects that these shortcuts have on liability should be initially determined to be certain that they are not adversely affecting the results and can be used with confidence in the future.

For the pension benefits, we found that the actuarial assumptions and plan provisions seem to be used appropriately. However, we feel the following two issues need to be noted:

- We understand that CLIENT XYZ provides a 100% survivor benefit for death before retirement for certain members, but it seems that a 50% spouse factor is being used in the valuation. This has a minor impact on the results of the valuation.

- We understand that CLIENT XYZ limits the pay used in determining a member's benefit according to the compensation limits of Internal Revenue Code 401(a)(17), but it does not seem that the pay limits are being applied to the sample lives we received. It is possible that pay is limited, but we could not discern this from the information provided. This only affects a handful of participants and has a very minor impact on the results of the valuation. It may be reasonable not to value this limitation given that it affects so few members.

III. REVIEW OF THE ACTUARIAL VALUATION AS OF JUNE 30, 20YY

D. REVIEW OF VALUATION REPORT

Calculations

This section discusses whether the calculations in the report appear to have been performed correctly, including application of the actuarial methods.

Review Findings:

The calculations appear to have been carried out correctly and the methods appear to have been applied appropriately.

Comments:

The only comment we have is on the development of the Net Pension Obligation and Annual Pension Cost pursuant to GASB 27. In the development of the GASB Net Pension Obligation, interest on the NPO and the ARC adjustment were delayed one year. The actuary made this adjustment due to the one-year contribution lag. The intention appears to be to match the timing of the ARC adjustment with the required contribution that includes the amortization of the shortfall contribution.

While this method does not follow the rules specifically outlined in Paragraphs 12 and 13 of GASB No. 27, it does follow the intent of the ARC adjustment. We think this is a reasonable method for determining the ARC adjustment based on the spirit of the GASB Statement. Ultimately, the decision to permit this method of determining the Net Pension Obligation under GASB No. 27 is the responsibility of reviewor of the City's financial statements.

Report Content

This section determines if the valuation report meets applicable professional standards. Specifically, it should:

- Accurately and fairly represent the financial condition of the Client
- Be written so that it can be reasonably understood by the intended audience
- Contain enough information for another actuary to form an opinion about the reasonableness of its conclusions

Review Findings:

The report meets applicable actuarial standards of practice, and it seems to accurately represent the funded status of CLIENT XYZ.

Comments:

Below are some general comments to the retained actuary. These comments do not seem be serious concerns, but they are areas for consideration.

- On page 5 of the retirement valuation, the Market Value should be $7,6**74**,999,374.
- On p. i of the retirement report, the stated purpose is, "to determine whether the assets and contributions are sufficient to provide the prescribed benefits." It seems that the primary purpose is to determine the recommended contribution rate itself.
- We understand that salaries are now annualized for part-time members. We could not determine the reason for this adjustment or its impact on the recommended contribution rate. We feel that these issues should be disclosed.
- We suggest showing projected benefit payments in the retirement valuation. This could be for a 10- to 20-year period, showing current and future retirees separately.
- We suggest adding a gain/loss analysis by source to future valuations. This would show gains and losses due to withdrawal, retirement, mortality and disability from experience different than assumed. This analysis, together the existing gain/loss information, would help track assumption issues for the next experience study.
- The ProgramX and ProgramY are not discussed, but we assume those benefits are not included. We feel that the actuary should clarify whether those benefits have been included in either the retirement or retiree medical valuation reports.
- We feel that Exhibit F in the retirement valuation would be more useful to CLIENT XYZ if presented on a Market Value basis.
- We recommend adding detail to describe how the 10% reciprocal service assumption is applied. For example, how much service is presumed to be earned?
- The retiree medical program report should discuss the impact of Medicare Part D reimbursements and Medicare Part B income-level premium adjustments.

- We recommend adding more detail regarding the per capita cost development (see Section IV for more detail)

- We suggest adding statistics on data adjustments. For example, how many records have missing birth dates or missing salary?

- We suggest adding detail on the nature of data adjustments. For example, what is the assumed age of members with missing birth dates?

- We suggest adding a historical summary of significant plan changes. Even if there is not much history known that can be included immediately, this could be a useful repository for future changes.

- We suggest that the actuary disclose any assumptions for the following:

    - Form of payment assumed at retirement

    - Probability of electing a refund of member account at termination

IV. REVIEW OF THE EXPERIENCE STUDY AS OF JUNE 30, 20xx

A. REVIEW OF ECONOMIC ASSUMPTIONS

Actuarial Standards of Practice No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations,* provides guidance to actuaries in selecting economic assumptions.

Generally stated, economic assumptions should be based on a combination of the actuary's professional judgment, past experience, and expected long-term future trends. The actuary should first develop a "best-estimate range", or the smallest expected range of actual outcomes, and then select a point within that range. Assumptions should be individually reasonable and in combination with others, and they should be consistent.

Inflation

Review Findings:

We recommend 3.00%, which is lower than the chosen assumption of 3.75%. The impact is not significant, though, because CLIENT XYZ limits retiree COLAs to 3.00%.

Comments:

Assumed inflation is the basis for assumed retiree Cost-of-Living Adjustments (COLAs). It is also a "building block" for the wage growth and investment return assumptions.

Inflation can be studied by reviewing historical increases in the Consumer Price Index, or CPI. Average CPI-W (Urban Wage Earners and Clerical Workers), 1955 to 20xx, is shown below, for the U.S. and the Client's area. We also show an average since 1955 excluding the exceptionally high inflationary decade 1975 to 1985:

Period	Years	CPI-W (US)	CPI-W (Client's Area)
19ee-20xx	10	2.46%	2.70%
19dd-20xx	20	2.95	3.08
19cc-20xx	30	4.33	4.47
19bb-20xx	40	4.63	4.64
19aa-20xx	50	4.04	4.10
19aa-20xx, excluding 19cc-19dd	40	3.27	3.31

Also, the Office of the Chief Actuary of the Social Security Administration provided inflation forecasts for a 30-year period in the 20xx OASDI Trustees Report:

Scenario	CPI
Low Cost	1.80%
Intermediate Cost	2.80
High Cost	3.80

These scenarios imply that a reasonable range for inflation is 1.80% to 3.80%.

Recommendation:

Using a reasonable range of 1.80% to 3.80%, and the historical data above, we would recommend an inflation assumption of 3.00%.

Wage Growth

Review Findings:

We recommend 4.00%, which is the same as the chosen assumption of 4.00%. (The difference in assumed inflation was offset by a difference in assumed real wage growth.)

Comments:

Assumed wage growth is needed to model year-to-year compensation increases. It includes productivity gains and inflation. Individual compensation increases above wage growth, also called "merit" increases, are included with other demographic assumptions.

National wage growth can be studied by reviewing increases in the historical Average Wage Index, or AWI, published by the Social Security Administration. The AWI, 1955 to 20xx, is shown below. Real Wage Growth is the AWI less the CPI-W.

Period	Years	AWI	CPI-W (US)	Real Wage Growth
19ee-20xx	10	4.12%	2.46%	1.66%
19dd-20xx	20	4.02	2.95	1.07
19cc-20xx	30	4.99	4.33	0.66
19bb-20xx	40	5.33	4.63	0.70
19aa-20xx	50	4.97	4.04	0.93

Also, the Office of the Chief Actuary of the Social Security Administration provided real wage growth forecasts for a 30-year period in the 20xx OASDI Trustees Report:

Scenario	Real-Wage Differential
Low Cost	0.60%
Intermediate Cost	1.10
High Cost	1.60

These scenarios imply that a reasonable range for real wage growth is 0.60% to 1.60%.

Recommendation:

Using a reasonable range of 0.60% to 1.60%, and the historical data above, we would recommend a real wage growth assumption of 1.00%. Adding this to our 3.00% inflation assumption yields a total wage growth assumption of 4.00%.

Real Wage Growth		1.00%
Inflation	+	3.00%
Wage Growth		4.00%

Merit Salary Increases

Review Findings:

We recommend increasing the merit increase rates. This is consistent with the retained actuary's recommendation, although our proposed rates are higher than theirs. However, the retained actuary's proposed assumptions are not unreasonable. We suggest that gains and losses due to salary increases continue to be closely monitored.

Comments:

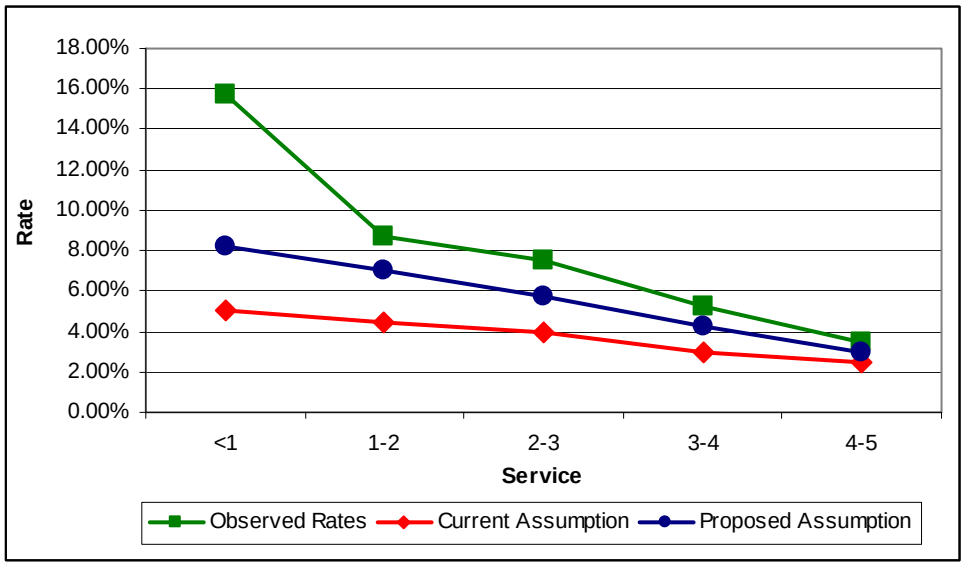
Merit salary increases are individual compensation increases above general wage growth. They include job promotion and longevity increases.

The merit increase assumption used in the June 30, 20ww Actuarial Valuation is a graded set of rates that vary by age and service. Service-based rates apply to members with less than five years, starting at 5.00% and decreasing gradually to 2.50% (assuming 4.00% general wage growth). Age-based rates apply to members with at least five years of service, which are 1.00% at all ages (assuming 4.00% general wage growth).

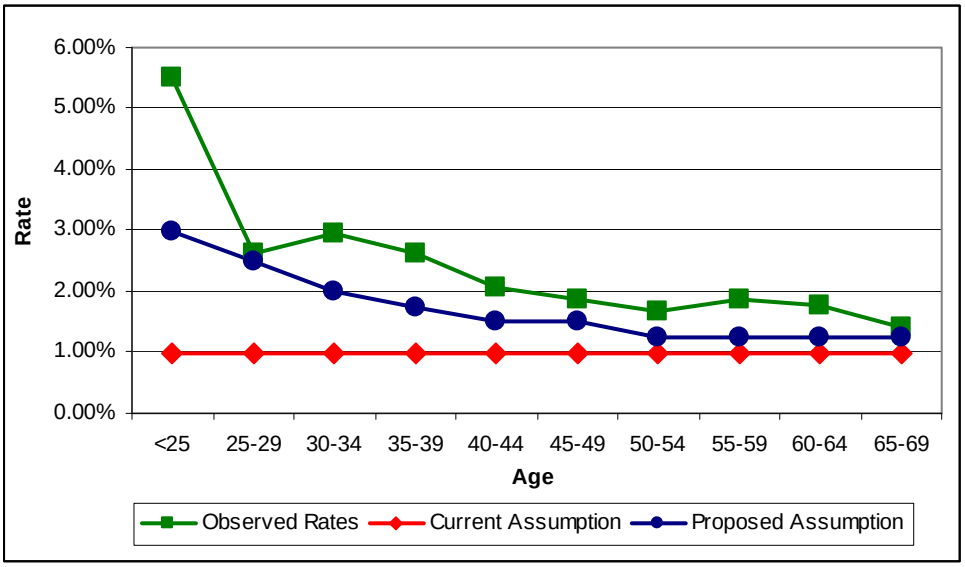
Actual merit increases during the study period were generally higher than assumed. Also, there were losses in the June 30, 20vv and June 30, 20ww Actuarial Valuations of $22M and $225M, respectively, due to salary increases higher than assumed. Therefore, we recommend increasing the merit increase rates. The basis of our proposed assumption is to move midway between the current rates and the observed rates, and then smoothing out those rates gradually. Despite recent losses and the significant difference between observed and current rates, we do not want to put too much weight on the three-year study period. The rates should be based on several study periods.

We recommend service-based rates for members with less than five years, starting at 8.25% and decreasing gradually to 3.00%. For age-based rates, we recommend starting at 3.00% at age 20 and decreasing gradually to 1.25% at age 50 and after.

The charts below compare observed increases to current and proposed assumptions:



We assumed that the increases for members with less than 1 year were extraordinarily high because of recently hired members with a partial year of pay. We did not attempt to determine annual rates of pay for these members, but instead set the assumption for their increases to be much lower than observed.



Recommendations:

We recommend increasing the merit increase rates.

Investment Return – Employer Assets

Review Findings:

We recommend 8.0%, which is consistent with the chosen assumption of 8.0%.

Comments:

The investment return assumption reflects anticipated returns on the plan's current and future assets. It is also used to calculate the present value of projected benefit obligations.

A rate of return should represent an estimate of long-term future earnings. We have considered historical CLIENT XYZ returns, historical market returns, and a "building block" approach which considers both historical market returns and expected future asset category returns in determining our interest rate recommendations.

Actual Plan Experience

During the 12 fiscal periods beginning with fiscal year 1994 and ending with fiscal year 20xx, CLIENT XYZ experienced an annual average investment earnings rate of 9.3%. The investment rates of return in the following table are based on beginning and end-of-year market values for all asset categories.

Fiscal Year Ending	Historical Investment Returns		
	Annual	Five-Year Average	Period Average
June 30, 20xx	10.0%	4.8%	9.3%
June 30, 20ww	18.6	5.0	9.3
June 30, 20vv	4.5	3.9	8.3
June 30, 20uu	(4.8)	5.1	8.7
June 30, 20tt	(4.2)	9.9	10.4
June 30, 20ss	11.1	14.1	12.5
June 30, 19rr	12.8	14.8	12.8
June 30, 19qq	10.5	12.8	12.8
June 30, 19pp	19.2		13.3
June 30, 19oo	16.7		11.4
June 30, 19nn	14.9		8.7
June 30, 19mm	2.5		2.5

Past experience is useful in determining the performance of the investment managers and to some degree the volatility of the entire portfolio. However, basing the investment return assumption on the experience of the last 12 years should not be the sole consideration in determining what future investments will yield.

Examination of Long-Term Historical Trends

The Pension Practice Council Practice Note, "Selecting and Documenting Investment Return Assumptions," from May, 2001, sets forth guidelines for establishing interest rate assumptions. The following approach follows those guidelines.

For purposes of this analysis we assume a 30-year investment time horizon. The final investment rate of return chosen should be viewed as an average rate of return reasonably expected to be achieved over this time horizon but not necessarily achieved over shorter periods of time. By observing the range of historical investment returns by asset category, a range of investment return assumptions can be determined and it is within this range that any final investment return assumption should fall. The range of investment returns determined using this methodology reflects target asset allocations by category, e.g., fixed income, equity, and cash. While this approach, like others that might be used, cannot precisely predict future investment results, we believe it is a reasonable consideration in setting the investment return assumption.

The source for the historical investment returns data provided below is *Stocks, Bonds, Bills and Inflation, 2000 Yearbook*, published by Ibbotson Associates. Historical investment returns by asset category for rolling 30-year periods were determined based on this source document (this data was augmented with returns for 2000 – 20xx). The results were as follows:

Rates of Return	Large Company Stocks	Long-Term Corporate Bonds	Long-Term Gov't Bonds	Interm.-Term Gov't Bonds	U.S. T-Bills
Lowest	8.5%	1.8%	1.5%	2.2%	0.9%
25th Percentile	10.2	2.9	2.5	2.8	1.7
Median	10.8	3.8	3.2	4.0	4.3
75th Percentile	12.4	7.3	6.9	7.8	6.5
Highest	13.7	9.8	9.5	8.7	6.8
Avg.	11.2	5.1	4.7	5.2	4.1
Avg. over entire 79 year horizon	10.4	5.9	5.4	5.3	3.7

Number of periods in the above source data: 51.

We understand the June 30, 20xx target allocation was:

	Target Allocation
Unallocated Cash	1.0%
Real Estate	7.0
Alternative Investment	7.0
Core Fixed Income	27.0
US Equity	40.0
Non-US Equity	18.0
Total	100.0

Based on this target allocation, we assumed the following portfolio for determining the investment return assumption based on the Ibbotson historical data:

	Assumed Allocation
U.S. T-Bills	1.0%
Interm.-Term Government Bonds	14.0
Long-Term Government Bonds	0.0
Long-Term Corporate Bonds	27.0
Large Company Stocks	58.0
Total	100.0

In any given year, having a balanced investment policy will tend to temper the high and low investment returns. Applying the target allocation percentages above to each year of historical investment returns and then determining the rolling 30-year periods provides a good indicator of how this asset allocation would have performed over the years. Using this methodology creates a range of investment returns, as follows:

	Assumed Allocation Return
25th Percentile	8.1%
Median	8.7
75th Percentile	9.6
Average	9.0

The best-estimate return range is 8.1% to 9.6%.

The investment return is determined net of administrative and investment expenses. Over the three fiscal years ending June 30, 20xx, plan expenses have been as follows:

(in $millions)

Period Ending	Investment Expense	Admin Expense	Total Expense	Average Assets	Return Reduction
6/30/xx	$18	$11	$29	$7,642	0.38%
6/30/ww	20	11	31	6,586	0.47
6/30/vv	17	9	26	6,580	0.40
				Average	0.42%

With estimated expenses equal to approximately .4%, the best-estimate range net of expenses is to 7.7% to 9.2%.

The Building Block Analysis

Following is the derivation of an investment return assumption based on a "building block" analysis. Please see Appendix A for further information regarding the methodology employed in this analysis.

Asset Category		Expected Return
Future Inflation Assumption	3.0%	
Risk-free Premium	0.7%	
Cash Equivalent		3.7%
Risk Premium – Intermediate/Long-Term Government Bonds	1.8%	
Intermediate/Long-Term Government Bonds		5.5%
Risk Premium – Corporate Bonds	0.5%	
Long-Term Corporate Bonds		6.0%
Risk Premium – Large-Cap Equities	4.3%	
Large-Cap Equities		10.3%

Applying the assumed asset allocation percentages noted earlier to the asset category expected returns above, yields a total investment return rate of 8.4% *[(1%)(3.7%) + (14%)(5.5%) + (27%)(6.0%) + (58%)(10.3%].* After deducting .4% for assumed expenses, the result is a net investment return rate of 8.0%.

A consideration in adopting any final interest rate assumption is that future expectations with respect to risk premium levels for equity investments will vary among investment consultants. If the risk premium for large cap equities were 3.5% and alternatively 5.0%, the total net investment return rate would range from 7.5% to 8.4%. Any interest rate adopted by the Board within this range we believe would be reasonable.

Most interest rates selected from the range 7.5% to 8.4% will also fall within the best-estimate range of 7.7% to 9.2% based on historical returns (developed above).

Recommendation:

The considerations discussed in this section have shown a wide range of possible investment return assumptions. However, we have given considerable weight to the building block analysis. Based on the June 30, 20xx assumed asset allocation for the fund, the building block analysis develops a reasonable range of 7.5% to 8.4%. While the actual returns experienced by the plans have recently been higher, we do not feel that these rates of return are sustainable in the long term.

Based on the above analysis, we recommend an investment return assumption of 8.0%.

Investment Return – Member Accounts

Review Findings:

We recommend 5.5%, which is considerably lower than the chosen assumption of 6.5%. We presume the impact is minor because it only affects those members who take a refund of employee contributions at termination, but the retained actuary should review.

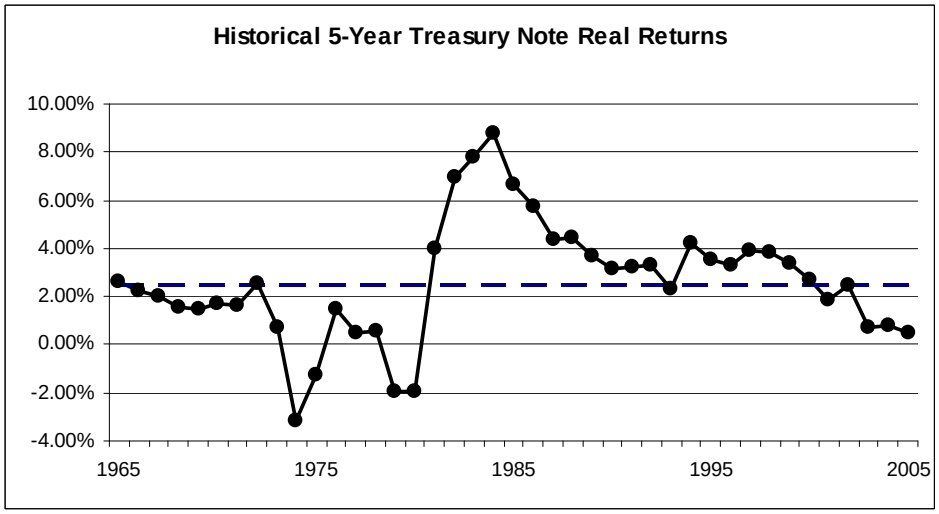
Comments:

A separate return assumption is needed to project member accounts. We understand that the crediting rate is based on average rates of five-year U.S. Treasury Notes.

Under the Building Block approach discussed above, an expected return for a five-year U.S. Treasury Note would be about 5.5% as follows:

Asset Category		Expected Return
Future Inflation Assumption	3.0%	
Risk-free Premium	0.7%	
Cash Equivalent		3.7%
Risk Premium – Intermediate/Long-Term Government Bonds	1.8%	
Intermediate/Long-Term Government Bonds		5.5%

The 2.5% real return (5.5% minus 3.0% inflation) is compared to historical returns below:



The 2.5% real return is comparable to historical rates. Adding 3.0% assumed inflation yields a 5.5% assumed return.

Recommendations:

Based on the above analysis, we recommend an investment return assumption of 5.5% to represent investment returns in the member accounts.

Health Trend

Review Findings:

We recommend lowering the initial trend to give the actual CLIENT XYZ short-term trend experience more weight. The grading period to the ultimate trend, which is seven years, and ultimate trend of 5% are reasonable and consistent with other retiree medical plans.

Comments:

The health care trend rate reflects the change in per capita health subsidy over time. The trend rate is affected by the following interdependent factors;

- General economic inflation,
- Covered charges,
- Utilization of services,
- Leveraging caused by plan design features,
- Aging,
- Participation.

These factors affect the fully insured premium rates charged by the vendors to CLIENT XYZ.

Every year Actuary publishes a set of healthcare trend assumptions based on the latest research and information available to its health actuaries. The healthcare trend assumptions take into account factors such as: recent and expected premium increases affecting vendor policyholders, expected changes in utilization of healthcare, cost shifting from Medicare, and other measures taken by the Board to control costs. Health care trend measures the anticipated overall rate at which health plan costs are expected to increase in future years. Trend rates are used to increase the current stated subsidies into the future, year after year until retirement.

The following table shows the detailed healthcare trend assumptions used for the June 30, 20xx and 20yy actuarial valuations. The assumptions used for the 20yy valuation are intended to predict a somewhat higher level of health inflation over the short term and hence a higher ultimate cost.

Health Care Cost Subsidy Trend Rates for June 30, 20xx Valuation						
Increase to Plan Year	Medical Trend				Dental Trend	Medicare Part B
	Pre-65		Post-65			
	PPO	HMO	PPO	HMO		
20aa-20bb	13%	12%	12%	12%	5%	15.0% (Actual)
20bb-20cc	12%	11%	11%	11%	5%	5%
20cc-20dd	11%	10%	10%	10%	5%	5%
20dd-20ee	10%	9%	9%	9%	5%	5%
20ee-20ff	9%	8%	8%	8%	5%	5%
20ff-20gg	8%	7%	7%	7%	5%	5%
20gg-20hh	7%	6%	6%	6%	5%	5%
20hh-20ii	6%	5%	5%	5%	5%	5%
20ii & later	5%	5%	5%	5%	5%	5%

Health Care Cost Subsidy Trend Rates for June 30, 20yy Valuation						
Increase to Plan Year	Medical Trend				Dental Trend	Medicare Part B
	Pre-65		Post-65			
	PPO	HMO	PPO	HMO		
20aa-20bb	12%	12%	12%	12%	5%	5.6% (Actual)
20bb-20cc	11%	11%	11%	11%	5%	5%
20cc-20dd	10%	10%	10%	10%	5%	5%
20dd-20ee	9%	9%	9%	9%	5%	5%
20ee-20ff	8%	8%	8%	8%	5%	5%
20ff-20gg	7%	7%	7%	7%	5%	5%
20gg-20hh	6%	6%	6%	6%	5%	5%
20hh & later	5%	5%	5%	5%	5%	5%

Based on Deloitte's experience working with clients sponsoring postretirement benefit plans, these plans are generally experiencing trend rates less than 10% for medical and prescription drugs combined. Postretirement medical valuations typically use an initial trend assumption that is intended to reflect the current short-term trend experience of the group to the extent it is credible. This initial trend assumption may be lower than the current trend being experienced because of age grading that is usually built into the per capita costs. The initial rates will usually be graded down over a period of 5 or more years to an ultimate rate of 4% to 6%. The ultimate rate is determined by economic considerations since health care spending cannot increase at current rates indefinitely. Otherwise it will eventually consume the entire Gross Domestic Product.

Based on the Deloitte Consulting Human Capital Advisory Services 20yy Survey of Economic Assumptions Used for SFAS No. 87 and SFAS No. 106 Purposes, 71% of companies surveyed disclosed an initial health cost trend assumption of between 9.00% and 10.00%. In this survey, the average initial trend rate disclosed was 9.42%, and the average ultimate health care trend rate was roughly 5.00%. Survey results for 2007 are expected to show slightly lower trends because of continuing market pressures.

In the Actuary's ninth annual survey of managed care organizations, health insurers, pharmacy benefit managers, and third party administrators short-term trends for PPOs and HMOs covering actives and retirees under age 65 are expected to be around 12%. For Medicare Supplemental Indemnity Plans and Medicare Advantage Plans, trends are expected to be 11.2% and 10.7%, respectively. For dental plans, trends are expected to be 6.3% for dental PPOs and 5.2% for dental HMOs.

In setting trend assumptions for postretirement medical plans under GASB 43/45, however, it is important that they be based on expected experience that takes into account past experience, to the extent it is credible, and appropriate modifications expected for the future. In the case of CLIENT XYZ health program, we would expect the trend experience to be 100% credible.

We have reviewed the historical trend experience for CLIENT XYZ postretirement medical plans. The following table shows historical trend rates during the period 20uu through 20yy based on subsidy rates per retiree for all plans combined.

Medical Trend	20uu	20vv	20ww	20xx	20yy	Overall
All Plans	20.9%	18.8%	19.9%	-4.7%	-9.6%	8.2%

It would appear that the trend assumptions being used on a short-term basis for the CLIENT XYZ postretirement medical valuation may be on the conservative side when compared to recent experience.

Recommendations:

We recommend that the actual CLIENT XYZ short-term trend experience be given more weight in selecting the initial trend assumption rather than survey results of what other postretirement medical plans are using for their trend assumptions. For a plan as credible as CLIENT XYZ, its own past experience with appropriate modifications based on future expectation should be the most important criteria used in determining reasonable trend assumptions over the short term. The grading period to the ultimate trend, which is seven years, and the ultimate trend of 5% are reasonable and consistent with other postretirement medical plans. The following table would be consistent with the CLIENT XYZ short-term trend experience and a reasonable grading period and ultimate trend rate.

Recommended Health Care Cost Subsidy Trend Rates for June 30, 20yy Valuation						
Increase to Plan Year	Medical Trend				Dental Trend	Medicare Part B
	Pre-65		Post-65			
	PPO	HMO	PPO	HMO		
20aa-20bb	9.0%	9.0%	9.0%	9.0%	5%	5.6% (Actual)
20bb-20cc	8.5%	8.5%	8.5%	8.5%	5%	5%
20cc-20dd	8.0%	8.0%	8.0%	8.0%	5%	5%
20dd-20ee	7.5%	7.5%	7.5%	7.5%	5%	5%
20ee-20ff	7.0%	7.0%	7.0%	7.0%	5%	5%
20ff-20gg	6.5%	6.5%	6.5%	6.5%	5%	5%
20gg-20hh	6.0%	6.0%	6.0%	6.0%	5%	5%
20hh-20ii	5.5%	5.5%	5.5%	5.5%	5%	5%
20ii & later	5.0%	5.0%	5.0%	5.0%	5%	5%

Per Capita Costs

Review Findings:

In our opinion, the per capita cost assumptions being used by Actuary are reasonable since they are consistent with the actual subsidies described in CLIENT XYZ's health benefits guide. As was noted earlier in this report, however, our detailed review of sample lives would indicate that Actuary may need to make some changes to the programming methodology. We recommend that the retained actuary clarify the per capita cost assumption in the valuation report by showing tables of what the subsidies are by plan and by years of service and how the two years are blended.

Comments:

The medical subsidy for members, which represents the cost paid by CLIENT XYZ, is calculated as follows:

1) Under age 65 or over age 65 and only enrolled in Medicare Part B
    a) The Client will pay 4% of the maximum medical subsidy ($928 per month as of July 1, 20yy) for each year of Service Credit up to 100%.
2) Over age 65 and enrolled in both Medicare A and B
    a) Maximum medical subsidy limited to single-party monthly premium of the plan in which member is enrolled, subject to the following vesting:
        i) 10 – 14 years of service: 75%
        ii) 15 – 19 years of service: 90%
        iii) 20+ years of service: 100%
    b) An additional amount is added for coverage of dependents which shall not exceed the amount provided for the dependent of a retiree not enrolled in Parts A and B and covered by the same medical plan and with the same years of service.
    c) The combined member and dependent subsidy shall not exceed the actual premium.

The dental subsidy for members is calculated as 4% of the maximum dental subsidy ($34.84 per month as of July 1, 20yy) for each year of Service Credit up to 100%. There is no subsidy for dependents.

The Medicare Part B reimbursement for members is calculated as the basic Part B Medicare premium and is only available if the retiree is covered by Medicare Parts A and B and is enrolled in a CLIENT XYZ medical plan.

The surviving spouse subsidy is calculated as follows:

1) Under age 65 or over age 65 and only enrolled in Medicare Part B

   a) The maximum medical subsidy available for survivors is the Kaiser single-party premium ($439.45 per month as of July 1, 20yy) or the single-party premium of the plan in which the survivor is enrolled, whichever is less.

2) Over age 65 and enrolled in both Medicare A and B

   a) For survivors, a maximum medical subsidy limited to the single-party monthly premium of the plan in which the survivor is enrolled is provided subject to the vesting schedule in (2)(a) above.

The available medical and dental plans being offered to members are fully insured, and the premium rates being charged for 20yy are shown in the table below.

20yy Monthly Medical Premiums

Medicare Eligibility	**Blue Cross All**	**Kaiser CA**	**SCAN/BC HMO CA**	**Secure Horizons CA**	**Secure Horizons AZ**	**Secure Horizons NV**
Retirees Not on Medicare	$650.43	$439.45	$443.90	$443.90	$443.90	$443.90
Retirees and Dependent Not on Medicare	$1,295.69	$877.30	$882.63	$882.63	$882.63	$882.63
Retirees with Medicare Parts A & B	$320.01	$161.01	$202.14	$162.19	$172.02	$107.42
Retirees and Dependent both with Medicare Parts A & B	$619.26	$320.42	$399.11	$320.81	$340.47	$211.27
Retiree with Medicare Parts A & B and Dependent Not on Medicare	$965.27	$598.86	$640.87	$600.92		
Retiree without Medicare and Dependent with Medicare Parts A & B	$949.68	$598.86	$909.84	$869.89		

20yy Monthly Dental Premiums

	Retiree Only	**Retiree & Dependent**	**Retiree & Family**
Wellpoint/Blue Cross PPO	$34.84	$69.07	$99.79
SafeGuard Prepaid Dental	$13.68	$25.45	$29.55

The actuarial valuation projects the stream of future subsidies for current retirees and active members when they retire. Actuary uses the actual premium rates during the July 1, 20yy through June 30, 20zz plan year (50/50 blend of 20yy and 20zz premiums) for each plan to develop subsidies based on the member's enrollment in Medicare (Parts A and B or Part B only) or non-Medicare eligibility and service at retirement. The formula used for calculating the subsidy can be found in CLIENT XYZ's health benefits guide. The premium subsidies used in the actuarial valuation are adjusted for future years using the trend rates to reflect the higher level of premiums payable for each plan.

The following table was used for the June 30, 20yy actuarial valuation for calendar year 20yy. This table shows the observed utilization and participation rates based on the June 30, 20yy membership data. Even though this table shows maximum subsidies, the

valuation is performed using the actual subsidy for each participant based on the average subsidies in effect for the second half of calendar year 20yy and the first half of calendar year 2007. For retirees, this subsidy is calculated using the actual premiums during the plan year July 1, 20yy through June 30, 20zz for the plan elected and the formulas described in CLIENT XYZ's health benefits guide. For actives, this subsidy should be calculated at each projected retirement date using the formulas described in this guide and current average 20yy and 20zz calendar year premium rates trended to retirement, projected service at retirement, the proportion of members assumed to be enrolled in each available medical plan, and the percentage of retirees, spouses and beneficiaries electing health coverage.

Plan	Observed Participation*	Single Maximum Subsidy	Married Maximum Subsidy	Surviving Spouse Maximum Subsidy	Observed Utilization**		Proposed Utilization
					All Retirees	≥ 10 Yrs Svc	≥ 10 Yrs of Svc
Pre-65 & Over 65 With Medicare Part B only							
PPO	0.234	$650.43	$928.00	$439.45	0.810	0.870	0.900
Kaiser	0.586	$439.45	$877.30	$439.45	0.810	0.870	0.900
Blue Cross HMO/SH	0.180	$443.90	$882.63	$439.45	0.810	0.870	0.900
Dental	1.000	$34.84	$34.84	$0.00	0.760	0.840	0.900
Over 65 With Medicare Parts A and B							
PPO	0.328	$320.01	$597.58	$320.01	0.810	0.870	0.900
Kaiser	0.568	$161.01	$320.42	$161.01	0.810	0.870	0.900
Blue Cross HMO/SH	0.104	$202.14	$399.11	$202.14	0.810	0.870	0.900
Dental	1.000	$34.84	$34.84	$0.00	0.830	0.870	0.900
Medicare Part B	1.000	$88.50	$88.50	$0.00	0.740	0.780	0.900
* Participation ratio is the proportion of retirees electing to receive a subsidy that select that specific plan.							
** Utilization ratio is the proportion of all retirees that elect to receive a subsidy.							

No age adjustment factors are used for the subsidies; instead, the premium costs are constant for all ages <65 and for all ages 65+. This methodology is being used instead of age grading the premium rates. It makes the subsidy calculation easier to perform and to review since the actual premium rates being charged are used in the calculation. Such an approach is acceptable, especially since the premium rates are fully insured. However, the age-grading normally built into per capita costs must now be accounted for through the trend rate assumption.

As part of our review of the per capita cost assumptions, we received copies of the 20yy renewal exhibits provided by each carrier so that we could determine what funding arrangements are being used and what methodology is being used to calculate premium rates. We determined that the pre-65 premium rates for Blue Cross and Kaiser are experience rated and are based on the CLIENT XYZ pre-65 retiree claim or "equivalent claims" experience in the case of Kaiser. The post-65 premium rates are either experience rated or community rated depending on the size of the group covered and are indicative of post-65 retiree experience.

Kaiser Permanente is not a "claims based" organization and processes a relatively small number of claims. Kaiser Permanente owns and operates its own hospitals and provides

virtually all medical services to members exclusively through two groups. Claims are generally only filed when a member receives emergency medical services outside of the plan or when a specialist referral outside the plan is necessary. Instead of claims, Kaiser bases its premium rates on "equivalent claims" generated by fee schedules, which are designed to cover its costs and to produce prices that make sense in the marketplace. In creating the fee schedules, Kaiser established relative values that reflect the different resource requirements for each service. Kaiser benchmarked Medicare and competitor fee schedules to help in establishing the relative values, which were then applied to its revenue needs to determine actual prices. Although the fees are, by necessity, somewhat related to its costs, its budget-based financial models do not require a direct relationship as long as the overall revenue meets its overall financial targets. Kaiser uses external benchmarks rather than internal costs for individual services in its fee schedule development, but attempts to ensure that the sum of these individual fees add up to its total revenue needs. In addition:

- Kaiser uses the same approach for all of its large group purchasers.
- The fee schedule that it uses to price encounters is the same fee schedule that is used to determine member cost shares.
- For inpatient services, the fee schedule is based on DRG, with adjustment for length of stay.
- For outpatient services, the fee schedule varies based on the service performed and, in some instances, based on the setting in which the care is delivered.

In conclusion, Kaiser's pre-65 premium rates are indicative of pre-65 retiree experience even though actual claims data is not used in their development.

In our opinion, the per capita cost assumptions being used by Actuary are reasonable since they are consistent with the actual subsidies described in CLIENT XYZ's health benefits guide, subject, however, to the qualifications described earlier based on our detailed review of sample lives.

In the census data used for the June 30, 20yy valuation that Deloitte was provided, the 20yy medical premium, medical subsidy paid by plan, dental subsidy paid by plan, and Medicare Part B premium paid by plan are included as fields in the file for non-disabled retirees, disabled retirees and beneficiaries. In order to determine if the medical subsidies have been correctly calculated in the actuarial valuation, Deloitte compared the medical subsidies found in the valuation data with the subsidies provided in CLIENT XYZ's health benefits guide after correcting the guide for the revised 20yy Kaiser premiums. Deloitte performed this review for the largest subset of the retiree population consisting only of the non-disabled retirees. Our review indicated that the medical subsidies for non-disabled retirees correspond to the subsidy amounts shown on pages 26 to 29 of the guide.

<u>Recommendations:</u>

In our opinion, the per capita cost assumption is presented in the Actuary report in a confusing manner because it is described in terms of single and married maximum subsides. Deloitte recommends that Actuary describe this assumption by showing tables of what the subsidies are by plan and by years of service.

IV. REVIEW OF THE EXPERIENCE STUDY AS OF JUNE 30, 20xx

B. REVIEW OF DEMOGRAPHIC ASSUMPTIONS

Actuarial Standard of Practice No. 35, *Selection of Demographic and other Noneconomic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries in selecting demographic and other assumptions not covered by ASOP No. 27.

The selection process is similar to ASOP No. 27. Demographic assumptions should be based on a combination of the actuary's professional judgment, past experience, and expected long-term future trends. The actuary should first determine the "assumption universe", which includes all possible assumptions that the actuary might reasonably use, and then select an assumption from that group. Assumptions should be individually reasonable and in combination with others, and they should be consistent.

Assumptions are "reasonable" if they appropriately model the events that give rise to benefits (or result in loss of benefits) and they are not expected to produce significant gains or losses over time.

Our recommended assumptions appear in more detail in Appendix B.

Mortality

Review Findings:

We recommend adopting recently published mortality tables that include recognition of projected future mortality improvement. This is more conservative than the retained actuary's recommendation. We suggest that the retained actuary review the impact of recognizing future mortality improvement with CLIENT XYZ.

Comments:

For healthy retirees, the mortality assumption in the June 30, 20ww Actuarial Valuation is the 1994 Uninsured Pensioner Mortality Table for Males, set back 3 years for females.

Actual mortality during the study period was generally lower than assumed. Therefore, we recommend adopting a mortality table that reflects recent mortality improvement (lower mortality rates). Furthermore, we suggest recognizing expected future mortality improvement.

We recommend adopting the RP-2000 Combined Healthy Mortality tables (without collar adjustment) for males and females with generational mortality improvement projected using Scale AA.

It is a commonly held opinion in the actuarial community that mortality rates will continue to improve as they have over the last few decades. Given this assumption, the current methodology of not using generational improvements builds in an expected loss because the mortality table is expected to be changed every three years to a more conservative table. By including generation improvements, there may be gains or losses every three years when the experience is reviewed and changes are made, but there is not an expectation that the change will consistently be a loss.

Including the expected mortality improvements now more appropriately assigns the cost of the benefits earned to the population that earns them. Without using this methodology, there could be some degree of unwanted generational cost-shifting.

The following table compares actual deaths to expected deaths for healthy retirees during the three-year study period based on the current and new assumptions. We also show the "experience ratio", which is the ratio of actual to expected deaths. That ratio indicates how well the current and proposed assumptions predict actual plan experience.

Plan Year Ending 6/30	Actual Deaths	Expected Deaths	Actual/ Expected Ratio	Expected Deaths Using New Table	Revised Actual/ Expected Ratio
20vv	383	406	94%	388	99%
20ww	370	397	93%	377	98%
20xx	372	409	91%	385	97%
Total	1,125	1,212	93%	1,150	98%

The mortality assumption is often set to produce an experience ratio close to 100% if generational mortality improvement is reflected. The proposed assumptions improved the experience ratio from 93% to 98%. With generational mortality improvement, the intention is that the experience ratio will remain close to 100% in each future year, even as mortality improves.

For disabled members, there is not enough credible data. Using judgment we recommend an 8-year age setforward to the tables used for healthy retirees.

For active members, we recommend the same mortality as used for healthy retirees.

For beneficiaries, we recommend the same mortality as used for healthy retirees.

Recommendations:

We recommend the RP-2000 Combined Healthy Mortality tables (without collar adjustment) for males and females with generational mortality improvement projected using Scale AA.

Withdrawal

Review Findings:

We recommend lowering the withdrawal rates. This is consistent with the retained actuary's recommendation, although our proposed rates are slightly lower than theirs. However, the retained actuary's proposed assumptions are not unreasonable.

Comments:

The withdrawal assumption used in the June 30, 20ww Actuarial Valuation is a graded set of rates that vary by age and service. Service-based rates apply to members with less than five years, starting at 8.25% and decreasing gradually to 6.25%. Age-based rates apply to members with at least five years of service, starting at 6.25% at age 20 and decreasing gradually to 1.00% at age 64.

Actual withdrawal during the study period was generally lower than assumed. Therefore, we recommend lowering most of the withdrawal rates. The basis of our proposed assumption is to move midway between the current rates and the observed rates, and then smoothing out those rates gradually.

We recommend service-based rates for members with less than five years, starting at 8.75% and decreasing gradually to 4.50%. For age-based rates, we recommend starting at 4.25% at age 20 and decreasing gradually to 1.25% at age 64. Most, but not all, proposed rates are lower than the June 30, 20ww assumption.

The following table compares actual withdrawals to expected withdrawals during the three-year study period based on the current and new assumptions. We also show the "experience ratio", which is the ratio of actual to expected withdrawals. That ratio indicates how well the current and proposed assumptions predict actual plan experience.

Actual Withdrawals	Expected Withdrawals	Actual/ Expected Ratio	Expected Withdrawals Using New Table	Revised Actual/ Expected Ratio
2,432	2,944	83%	2,587	94%

The withdrawal assumption is often set to produce an experience ratio slightly over 100%. In that case, the actuary is slightly underestimating the number of withdrawals to be conservative. The proposed assumptions improved the experience ratio from 83% to 94%. By proposing rates that are between the observed rates and the current assumption, we intend to approximate a 100% experience ratio over the time period that includes the years analyzed in the previous experience studies.

Recommendations:

We recommend lowering the withdrawal rates.

Retirement

Review Findings:

For active members, we recommend increasing the retirement rates for ages 50-54, and lowering the rates for ages 55-69. This is consistent with the retained actuary's recommendation, although our proposed rates are slightly different. However, the retained actuary's proposed assumptions are not unreasonable.

For vested terminated members, we agree with the retained actuary's recommendation to lower their assumed retirement age to 58.

Comments:

For active members, the retirement assumption used in the June 30, 20ww Actuarial Valuation is a graded set of rates that vary by age, starting at 1% to 2% between age 50 to 54, increasing from 9% to 23% from age 55 to 69, and reaching 100% at age 70.

Actual retirement during the study period was higher than assumed for ages 50-54, so we recommend increasing those rates. Actual retirement was lower than assumed for ages 55-69, so we recommend lowering those rates. The basis of our proposed assumption is to move midway between the current rates and the observed rates.

We recommend a graded set of rates that vary by age, starting at 5% to 10% between ages 50 to 54, increasing from 10% to 20% from age 55 to 69, and reaching 100% at age 70. We reviewed the impact of service on retirement, such as retirement with 30 years, and it does not seem to have a significant impact.

The following table compares actual retirements to expected retirements during the three-year study period based on the current and new assumptions. (This comparison excludes retirements age 70 and older.)

Ages	Actual Retirements	Expected Retirements	Actual/ Expected Ratio	Expected Retirements Using New Table	Revised Actual/ Expected Ratio
50-54	259	21	1,233%	161	161%
55-69	1,172	1,472	80%	1,327	88%
Total	1,431	1,493	96%	1,488	96%

The retirement assumption is often set to produce an experience ratio slightly under 100%. In that case, the actuary is slightly overestimating the number of retirements to be conservative. The proposed assumptions produce an overall experience ratio similar to the current ratio, but the ratios for ages 50-54 and 55-69 are significantly improved.

For vested terminated members, the assumed retirement age is 60 in the June 30, 20ww Actuarial Valuation. During the study period there were 154 retirements from vested terminated status with an average retirement age of 57. Therefore, we recommend lowering their assumed retirement age to 58.

Recommendations:

We recommend increasing the retirement rates for ages 50-54, lowering the rates for ages 55-69, and lowering the assumed retirement age for vested terminated members.

Disability

Review Findings:

We recommend increasing the disability rates. This is consistent with the retained actuary's recommendation, although our proposed rates are slightly lower than theirs. However, the retained actuary's proposed assumptions are not unreasonable.

Comments:

The disability assumption used in the June 30, 20ww Actuarial Valuation is a graded set of rates that vary by age, starting at 0.01% at age 25 and increasing gradually to 0.24% at age 59.

Actual disability during the study period was generally higher than assumed. Therefore, we recommend increasing the disability rates. The basis of our proposed assumption is to move midway between the current rates and the observed rates, and then smoothing out those rates gradually.

We recommend a graded set of rates that vary by age, starting at 0.03% at age 25 and increasing gradually to 0.24% at age 59.

The following table compares actual disabilities to expected disabilities during the three-year study period based on the current and new assumptions.

Actual Disabilities	Expected Disabilities	Actual/ Expected Ratio	Expected Disabilities Using New Table	Revised Actual/ Expected Ratio
94	72	130%	79	118%

The disability assumption is often set to produce an experience ratio slightly under 100%. In that case, the actuary is slightly overestimating the number of disabilities to be conservative. The proposed assumptions improved the experience ratio from 130% to 118%.

Recommendations:

We recommend increasing the disability rates.

Service Accrual

Review Findings:

We agree with the retained actuary's recommendation.

Comments:

The service accrual assumption used in the June 30, 20ww Actuarial Valuation is that all members earn a full year of service each year.

The following table shows average service accruals during the three-year study period.

Plan Year Ending	Average Service Accrual
6/30/03	0.97
6/30/04	0.95
6/30/05	0.95
Total	0.96

We recommend assuming that all members earn a full year of service each year, since the average over the last three years was fairly close to one.

Recommendations:

We recommend retaining the assumption that all members earn a full year of service each year.

Reciprocity

Review Findings:

We agree with the retained actuary's recommendation that some members should be assumed to earn reciprocal service for CLIENT XYZ after termination. The retained actuary has assumed 10% earn reciprocal service. This seems a reasonable starting point, and we recommend that this assumption be monitored with CLIENT XYZ over time.

Comments:

The assumption used in the June 30, 20ww Actuarial Valuation is that no terminated vested members will earn reciprocal service for CLIENT XYZ after termination.

We feel that it is reasonable to assume that some members will earn reciprocal service, but we are unable to determine an estimate of the proportion with the data available.

Recommendations:

We recommend adopting an assumption that some members earn reciprocal service after termination.

Withdrawal of Member Account at Termination

Review Findings:

We understand that 100% of non-vested members are assumed to withdraw their account at termination. We think it is reasonable to also assume that some percentage of vested members will withdraw their member account at termination, forfeiting their city-provided benefit. However, we cannot determine the appropriate percentage based on the data provided. In some public plans the percentage can be 25% or more. The retained actuary should monitor the incidence of vested participants taking a refund of contributions at termination.

Probability of Spouse or Domestic Partner

Review Findings:

It is assumed that 76% of males and 50% of females are married or have a domestic partner. We did not have data to verify this assumption, but it does not seem generally unreasonable.

V. CONCLUSIONS

Conclusions

Based on the census data, actuarial reports, sample lives, and plan documents we received, the actuarial work seems to generally be prepared correctly and in a manner consistent with accepted actuarial practice, and the results seem reasonable. In our review the only issue we found that could potentially rise to a serious level of concern is the programming of the retiree medical benefits. For the remaining areas, we have some suggestions that the actuary may consider and review with CLIENT XYZ that may improve the actuarial estimates and increase the value and understanding of the work.

Possible Other Areas for Review

The following are possible other areas to review which may improve the actuarial services and overall Client performance:

- Independently review the changes made to the retiree medical programming for the June 30, 20zz valuation
- Independently replicate the actuarial valuation
- Independently review the financial impact of proposed changes to CLIENT XYZ
- Independently review funding or contribution projections
- Review the census data
- Review the fees charged by service providers to the Client
- Review the administrative procedures, such as benefit determinations
- Monitor GASB activity for possible changes to reporting requirements (i.e., convergence with other accounting standards like FASB)

Please tell us if you would like assistance with these or other areas.

APPENDIX A – DEVELOPMENT OF INTEREST RATE ASSUMPTION

The approach we employ to establish a specific interest rate assumption is generally referred to as the "building block" approach. This approach considers the following factors in "building" an investment return assumption for each asset category under consideration. The investment returns developed for each asset category are then weighted by the relative allocation targets for the Pension Fund as established by its investment policies.

1) Specific components of return based on current expectations for each asset category, i.e., inflation, risk-free rate of return, and risk premium,

2) Adjustments for expenses charged against investment return,

3) Adjustments, if needed, for future expectation regarding inflation, risk-free rates of return, and risk premiums,

4) Adjustments, if needed, for historical plan investment performance, and

5) Adjustments, if needed, to reflect increased liquidity needs, e.g., plan benefit outflows increasing relative to contribution and investment income.

The inflation assumption component of investment return that we are assuming is 3.0%. This is close to the average historic rate of inflation in the U.S. since 1926 of 3.1%.

The risk-free rate of return component, as measured by the difference between average U.S. Treasury Bill rates (3.8%) and the average historic rate of inflation (3.1%), is assumed to be .7%.

The risk premiums for holding longer term U.S. Treasury obligations, i.e., intermediate and long-term Government Bonds we have assumed to be 1.8%. The historic difference between average U.S. T-Bill rates of return and returns in intermediate/long-term Government Bonds (after removing the impact on total returns due to changing levels of Government Bond yields) has been about 1.6% since 1926 and about 2.3% since 1985.

The risk premium (default premium) for holding long-term corporate bonds we have assumed to be 0.5%, which is close to the difference between long-term corporate bonds and long-term government securities total return rates since 1926.

We are assuming a risk premium of 4.3% for holding large cap equities. The 4.3% risk premium compares to an approximate 4.5% difference in total annual returns between large-cap equities and long-term corporate bonds since 1926. Opinions regarding the risk premium for large-cap equities will vary among investment consultants. Since this assumption has a significant impact on the total investment return assumption our analysis also derives a range of investment return rates assuming the equity risk premium varies from a low of 3.5% to a high of 5.0%.

An adjustment in the interest rate is required for investment expenses, since the valuation interest rate is assumed to be net of investment expense. This expense adjustment is assumed to be .40%.

We have not made any adjustments in the recommended interest rate assumption to reflect possible future needs to adjust asset category allocation targets resulting from increasing liquidity requirements to meet potential expanding differences between income and expenditures. We do, however, recommend that this matter be carefully

studied in the near future to determine whether any changes in asset allocation targets/ranges are required.

APPENDIX B – SUMMARY OF RECOMMENDED ASSUMPTIONS

Assumption	6/30/ww	Actuary 6/30/xx	Deloitte Review
Inflation	4.00%	3.75%	3.00%
Wage Growth	4.00%	4.00%	4.00%
Investment Return			
Employer Assets	8.00%	8.00%	8.00%
Member Accounts	6.50%	6.50%	5.50%
Mortality			
Healthy Members	1994 Uninsured Pensioner Mortality for males, setback 3 years for females	1994 Group Annuity Mortality for males and females	RP-2000 Combined Healthy Mortality for males and females, with generational mortality projected with Scale AA
Disabled Members	1981 Disabled Mortality (General), setback 5 years for females	Same as Healthy Members, set forward 8 years	Same as Healthy Members, set forward 8 years
Beneficiaries	Same as Healthy Members	Same as Healthy Members	Same as Healthy Members
Withdrawal			
Service-based rates (less than 5 years)	Years	Years	Years
	< 1: 8.25%	< 1: 8.75%	< 1: 8.75%
	1-2: 7.25%	1-2: 7.00%	1-2: 6.75%
	2-3: 6.75%	2-3: 5.75%	2-3: 5.75%
	3-4: 6.50%	3-4: 5.25%	3-4: 5.00%
	4-5: 6.25%	4-5: 4.75%	4-5: 4.50%
Withdrawal			
Age-based rates (at least 5 years)	Age	Age	Age
	25: 5.75%	25: 4.45%	25: 4.25%
	30: 5.25%	30: 3.80%	30: 3.75%
	35: 3.75%	35: 3.05%	35: 3.25%
	40: 2.75%	40: 2.45%	40: 2.50%
	45: 2.25%	45: 2.10%	45: 2.00%
	50: 1.70%	50: 1.70%	50: 1.25%
	55: 1.45%	55: 1.35%	55: 1.25%
	60: 1.20%	60: 0.00%	60: 1.25%

Assumption	6/30/ww	Actuary 6/30/xx	Deloitte Review
Retirement	Age	Age	Age
	50: 1%	50: 10%	50: 5%
	51: 1%	51: 5%	51: 15%
	52: 1%	52: 5%	52: 10%
	53: 1%	53: 5%	53: 10%
	54: 2%	54: 5%	54: 10%
	55: 9%	55: 10%	55: 10%
	56: 10%	56: 11%	56: 10%
	57: 10%	57: 12%	57: 10%
	58: 12%	58: 13%	58: 10%
	59: 12%	59: 14%	59: 10%
	60: 20%	60: 15%	60: 15%
	61: 15%	61: 16%	61: 15%
	62: 25%	62: 17%	62: 20%
	63: 10%	63: 18%	63: 10%
	64: 15%	64: 19%	64: 15%
	65: 26%	65: 20%	65: 20%
	66: 23%	66: 20%	66: 20%
	67: 23%	67: 20%	67: 20%
	68: 23%	68: 20%	68: 20%
	69: 23%	69: 20%	69: 20%
	70: 100%	70: 100%	70: 100%
Disability	Age	Age	Age
	25: .01%	25: .01%	25: .03%
	30: .02%	30: .04%	30: .05%
	35: .07%	35: .11%	35: .09%
	40: .12%	40: .18%	40: .14%
	45: .17%	45: .21%	45: .18%
	50: .20%	50: .24%	50: .21%
	55: .20%	55: .23%	55: .23%
	60: .00%	60: .00%	60: .24%
Merit Salary Increases Service-based rates (less than 5 years)	Years	Years	Years
	< 1: 5.00%	< 1: 6.00%	< 1: 8.25%
	1-2: 4.50%	1-2: 5.00%	1-2: 7.00%
	2-3: 4.00%	2-3: 4.50%	2-3: 5.75%
	3-4: 3.00%	3-4: 3.50%	3-4: 4.25%
	4-5: 2.50%	4-5: 2.75%	4-5: 3.00%

Assumption	6/30/ww	Actuary 6/30/xx	Deloitte Review
Merit Salary Increases Age-based rates (at least 5 years)	Age	Age	Age
	20: 1.00% 25: 1.00% 30: 1.00% 35: 1.00% 40: 1.00% 45: 1.00% 50: 1.00% 55: 1.00% 60: 1.00%	20: 2.75% 25: 2.00% 30: 1.50% 35: 1.25% 40: 1.00% 45: 1.00% 50: 0.75% 55: 0.75% 60: 0.75%	20: 3.00% 25: 2.50% 30: 2.00% 35: 1.75% 40: 1.50% 45: 1.50% 50: 1.25% 55: 1.25% 60: 1.25%
Service Accrual	1 Year Annually	1 Year Annually	1 Year Annually
Reciprocity	None	10% of Terminated Vested Members	10% of Terminated Vested Members
Withdrawal of Member Account at Termination	100% of Non-vested Members 0% of Vested Members	100% of Non-vested Members 0% of Vested Members	100% of Non-vested Members 25% of Vested Members??
Probability of Spouse or Domestic Partner	76% of Males 50% of Females	76% of Males 50% of Females	76% of Males 50% of Females