



HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

**Full Scope Actuarial Audit of the Valuation
for the Year Beginning July 1, 2013**



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September 12, 2014

Rhonda Smith, Executive Director
Houston Municipal Employees Pension System
1201 Louisiana, Suite 900
Houston, Texas 77002

Re: Full Scope Audit of the July 1, 2013 Actuarial Valuations

Dear Ms. Smith:

Segal Consulting is pleased to present the results of our audit of the July 1, 2013 actuarial valuation for the Houston Municipal Employees Pension System (HMEPS). The purpose of this audit is to conduct a review of the actuarial methods, assumptions, and procedures employed by HMEPS and their retained actuary, Gabriel Roeder Smith & Company (GRS).

The audit includes the following:

1. **Valuation replication:** An evaluation of the participant data processing and the calculation of the actuarial accrued liabilities and normal cost. This includes reproducing the July 1, 2013 valuation results.
2. **Methods and assumptions review:** An analysis of the actuarial assumptions and a review of the actuarial methods utilized in determining the City's contribution rate and the System's funded status, for compliance with generally accepted actuarial principles.
3. **Report review:** A review of the valuation report for completeness and clarity, and to evaluate how it complies with actuarial standards.

This review was conducted under the supervision of Deborah K. Brigham, a Fellow of the Conference of Consulting Actuaries, and Associate of the Society of Actuaries, a member of the American Academy of Actuaries and an Enrolled Actuary under ERISA, and was peer reviewed by Eric J. Atwater, a Fellow of the Conference of Consulting Actuaries, a Fellow of the Society of Actuaries, a member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. This review was conducted in accordance with the standards of practice prescribed by the Actuarial Standards Board.

The assistance and cooperation of the HMEPS' staff and GRS is gratefully acknowledged.

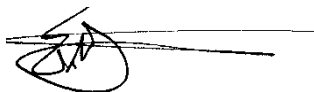
Rhonda Smith
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We appreciate the opportunity to serve as an independent actuarial advisor for HMEPS and we are available to answer any questions you may have on this report. We look forward to discussing the results with the Board, at their convenience.

Sincerely,

Deborah K. Brigham

Deborah K. Brigham, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary

A handwritten signature in black ink, appearing to read "E. Atwater", with a horizontal line extending to the right across the signature.

Eric J. Atwater, FCA, FSA, MAAA, EA
Vice President and Consulting Actuary

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Executive Summary

The Houston Municipal Employees Pension System (HMEPS) retained Segal Consulting (Segal) to conduct an independent review of the System's current actuarial calculations, process, assumptions and methodology. The System's retained actuary is Gabriel Roeder Smith & Company (GRS). The main objectives for this engagement included:

- A valuation replication;
- A determination of the validity of the data review procedures;
- A detailed review of several individual calculations;
- A review of the actuarial cost methods and assumptions; and
- An assessment of the clarity and completeness of the reports.

The objective of an actuarial review of any valuation is to provide validation that the liabilities and costs of the System are reasonable and being calculated as intended. This peer review includes a full replication of the actuarial valuation results, plus a review of the key components in the valuation process that encompass the derivation of the liabilities and costs for HMEPS. These key components include the data, the benefits valued, the actuarial assumptions and funding method used, and the asset valuation method employed. The valuation report and the valuation output for a select group of sample lives provide the detail necessary to validate each of these key components.

We reviewed all information supplied to us. We also requested and reviewed additional information provided by GRS. Finally, we considered the reasonableness of the actuarial assumptions and methods in the context of our own experience, and those of other state and local pension systems.

Summary of Findings

This peer review validates the findings of the July 1, 2013 actuarial valuation. Segal was able to match all valuation results and the individual sample lives calculations within an acceptable range. The data appears complete and we were able to closely match the participant counts reported by GRS. We concluded that GRS followed and adhered to reasonable quality control procedures, and that the valuations were performed in accordance with the actuarial standards of practice promulgated by the Actuarial Standards Board (ASB).

We offer the following primary recommendations for improvement:

1. Terminated vested participants - The deferred retirement ages for terminated vested employees should be recalculated to ensure that the assumption of 100% retirement at first eligibility for unreduced benefits is properly implemented. We discovered that the assumed retirement age for many of the current terminated vested participants was set at an age later than first eligibility. According to our calculations, correcting these ages reduces the average expected retirement age for this group from 61.5 to 60.8, and increases the liability by approximately \$12.5 million. This amount is a little over 7% of the liability for




terminated vested members, which is significant for this group alone. However, it is a small fraction of the overall System liability, and the increase is only 0.3% in total.

2. Liability for Group B members who switched to Group A - We recommend that the HMEPS data be enhanced so that GRS can discern which former Group B members paid the contributions necessary to convert their Group B service to Group A service, and that GRS update the liability calculations to reflect the Group A provisions for all service for these members. Currently, the liabilities calculated by GRS assume that benefits based on service prior to the switch date remains on Group B provisions.
3. Investment rate of return, or discount rate - The investment return assumption of 8.50% is at the uppermost end of rates currently in use by public sector plans in the United States. Furthermore, the assumed rate is net of both investment expenses and administrative expenses. This results in an effective investment return assumption greater than 8.50%. According to the experience review GRS completed for HMEPS, the System has less than a 40% probability of achieving 8.50%. We recommend that the assumption be lowered to 7.75% or 8.00%. We further recommend that the new assumption be net of investment expenses only, and that an explicit assumption for administrative expenses be established.
4. Percent married - Since the spousal continuance benefit is dependent upon marital status at the time of the participant's death, we suggest that GRS consider a post-retirement marriage percentage assumption that decreases with age, rather than a flat 70% for all ages.
5. DROP utilization - The DROP assumptions should be reviewed in detail as part of the next experience review.

These recommendations for improvement are discussed in detail in the following sections of this audit report. In addition, throughout the report we offer ideas to improve the quality and understanding of the valuation. We classify our suggestions or recommendations as:

1. **Suggestions to enhance the valuation process or report;**
2. **An assumption to be examined during the next experience review;** and
3. **A change that may affect the cost of the System.**

Where we make a comment in this regard in this report, we have identified them with the following colors and icons:

 Enhancement to valuation process or report
 Examine during next experience review
 May affect the cost of the System

Section I: Valuation Replication

Data Review

Actuarial Standard of Practice (ASOP) No. 23, *Data Quality*, is the guiding standard used by actuaries to ensure that the information upon which actuarial calculations are based is sufficient for its intended purpose. The ASOP does not require the actuary to audit the data; the accuracy and comprehensiveness of the data is the responsibility of those supplying it. However, the actuary should review the data for reasonableness and consistency. If the actuary believes that there are questionable or inconsistent data values that could have a material impact on the analysis, the actuary should consider further steps, when practical, to improve the quality of the data.

The actuary should also comply with the requirements of ASOP No. 41, *Actuarial Communications*, to indicate the source of the data, to describe (at a high level) the process used to evaluate the data, and to disclose any adjustments or modifications made to it.

Segal Consulting was provided with the data file that HMEPS sent to GRS for purposes of the July 1, 2013 actuarial valuation, and we also received the fully reconciled data that GRS used to calculate the System's liabilities. GRS provided a brief synopsis of their process for filling in missing or incomplete data, and documentation of the follow-up questions that they asked HMEPS' staff during their valuation process.

In compliance with the ASOPs, GRS provides the source of the data used in the valuation in the cover letter and discussion section of their report, and discloses that reasonableness checks were completed as part of the valuation process. Furthermore, in Appendix A of the valuation report, a section entitled "Participant Data" describes the data received and the assumptions made.

Overall, we have found no reason to doubt the substantial accuracy of the information on which the valuation was based. The data was comprehensive and largely complete as provided by HMEPS, and the follow-up communications between the actuary and System staff were reasonable. We confirmed, wherever possible, that the HMEPS responses were incorporated into the valuation data file. We acknowledge that HMEPS has protected the City employees' personal information by using a unique identifying number other than Social Security number, and by excluding participant names from the actuarial file.

We were able to match the participant counts, average age and service, and average retirement benefits with those shown in GRS's valuation report. These statistics are detailed in the chart at the end of this section.

Areas in which we had a concern with respect to the participant data are described below.

Salaries

The salary information used for valuation purposes was not the same as what was described in Appendix A, although we were able to match the active salaries in the valuation report.

- GRS states that the salary was based on earnings for the year preceding the valuation date. They further indicate that the salary was annualized to 1,900 hours for members

who worked less than 1,900 hours but were not new entrants, and that salary is adjusted by a ratio of 26/27 for years in which there are 27 pay periods. Segal determined that for 99% of the active participants, valuation salary actually was set equal to the hourly pay rate provided by HMEPS for each individual, times 2,080 hours (52 weeks times 40 hours). Assuming that most employees are salaried rather than hourly, and that the hourly rate was developed based on 2,080 hours per year, this is not an unreasonable calculation of salary for valuation purposes. However, it does not match the description in the report.

- The remaining 1% includes 91 employees without a pay rate provided in the HMEPS data file. It appears that the majority of these employees had a valuation salary generated by GRS based on the prior year’s pay rate, and others were based on employee contributions for the year, divided by the 5% contribution rate. These are reasonable approximations of salary for this small subset of the group who were missing data.
- Lastly, there were four individuals for whom the actual salary paid in the 2012-2013 year was used for valuation purposes. In these four cases, actual earnings differed by more than \$200,000 from the salary calculated as pay rate times 2,080 hours. We surmise that the hourly rate provided was missing the hundredths place in the HMEPS data received from the City. For example, one rate was \$0.55 rather than \$100.55. Adding \$100 to the rate adds \$208,000 to the salary. We find GRS’s use of the actual salary to be reasonable. (Employee identification numbers for these individuals can be provided upon request.)

In the course of checking the salary data, we found that incorrect information was stated in two age/service cells of Tables 19c and 19d of GRS’s valuation report. In the Under 25 row, for 0 and 1 years of service, the participant counts and average salaries should be updated as follows:

Age	0 Years of Service	1 Year of Service
Under 25 (Report)	113 \$28,936	45 \$28,386
Under 25 (Corrected)	119 \$28,854	50 \$28,599

The totals of the Under 25 row also should be updated accordingly. The column sums are correct as is. (The numbers in the report do not currently sum to the column totals.) Also, all four charts under Table 19 refer to Attained Age, but Rounded Age is actually used. Finally, we suggest adding a footnote to Table 19a to indicate that the chart includes four employees who were formerly members of Group C. While not essential, the note could also reflect a similar comment for those who elected to switch from Group B to Group A.

Inactive Vested Benefits

Segal was unable to confirm the accrued benefits for the inactive vested participants, because we did not have access to prior years’ data. The bulk of these benefits are not in the data provided by HMEPS; GRS uses a historical database to supplement the annual data, and adds the newly terminated employees to it. If HMEPS provides the benefit for a new addition, then GRS uses it.

If not, then they calculate an amount based on estimated service and average monthly salary from the data file. We have no reason to doubt this process, and would likely use it ourselves. However, as part of the experience review process we suggest that GRS examine actual retirements from inactive vested status and compare them with the pre-retirement valuation data, to ensure that no material experience gains and losses are occurring as a result of changes in benefit when these members actually enter pay status.

Data Extremes

In the course of our data review, we checked the highest and lowest item in each data field. In the vast majority of cases, these were reasonable. There is, however, one retiree with a 25-cent monthly benefit. This record was included in a listing provided by GRS to HMEPS for verification, and the entire listing was confirmed as correct by HMEPS' staff.

There are 53 retirees with a base amount for COLA purposes in the data that is greater than the actual monthly benefit in pay status. We thought this was unusual, as we would have expected the benefits to continually increase from the base amount at retirement. It is possible that these individuals have Alternate Payees under QDROs, and thus a portion of the actual monthly benefit may be going to an ex-spouse, but we suggest that these amounts be confirmed.

Recommendations

We offer the following comments and suggestions with respect to improving the data process and the presentation of data information in the valuation report:

1. * Edit the Participant Data section of Appendix A to correctly capture the salary information used in the valuation, as described above. Include pay rate as an item received from HMEPS. Indicate that a historical database is maintained by GRS for inactive vested benefits.
2. * Consider adding graphical displays of the active members by age and service, and of the retirees by age and benefit amount. The historical participant counts for the active, inactive and retired groups could also be graphed. While all of this information is included in the report, for some readers, graphs convey results in a manner that is more readily interpreted.
3. * HMEPS should verify that the data they provide accommodates hourly pay rates of \$100 or more.

Liability Replication

In replicating the results of the HMEPS valuation as of July 1, 2013, we found that, overall, GRS has a sound valuation process. We successfully matched liabilities reported in the valuation. A comparison of the valuation results is displayed on the following page. Differences less than 5% are generally considered to be a reasonable match. The results are well within that tolerance.

Replication of Valuation Results

	GRS	Segal*	Ratio of Segal/GRS
Members			
Active members	11,781	11,781	100.0%
Average age	46.9	46.9	100.0%
Average credited service	11.1	11.1	100.0%
Average earnings in prior year	\$46,683	\$46,683	100.0%
Terminated vested members	3,298	3,298	100.0%
Average annual pension	\$6,906	\$6,906	100.0%
Terminated non-vesteds with account balances	2,257	2,257	100.0%
Service retirees	7,258	7,258	100.0%
Average annual pension	23,458	23,458	100.0%
Average age	68.3	68.3	100.0%
Disabled retirees	387	387	100.0%
Average annual pension	9,827	9,827	100.0%
Average age	64.3	64.3	100.0%
Beneficiaries and spouses	1,782	1,782	100.0%
Average annual pension	13,452	13,452	100.0%
Average age	69.6	69.6	100.0%
Normal Cost	32,002	32,201	100.6%
Accrued Liability (\$000s)			
Active Members			
Present value of future benefits	2,017,982	2,014,761	99.8%
Less: Present value of future normal costs	205,568	207,061	100.7%
<u>Less: Present value of future employee contributions</u>	<u>114,781</u>	<u>117,483</u>	102.3%
Accrued Liability	1,697,633	1,690,217	99.6%
Terminated vested members	174,355	167,789	96.2%
Terminated non-vesteds with account balances	4,012	4,012	100.0%
Service retirees	2,007,808	2,006,986	100.0%
Disabled retirees	38,642	38,996	100.9%
Beneficiaries and spouses	207,133	208,606	100.7%
Total	4,129,583	4,116,604	99.6%
Assets and Funding (\$000s)			
Actuarial Value of Assets	2,382,585	2,382,585	100.0%
Unfunded Accrued Liability	1,746,988	1,734,019	99.3%
Funded Ratio	57.7%	57.9%	100.3%

*Segal's results shown above do not include the effect of any data edits or the programming recommendations presented later in this section. These results represent the closest match of GRS results based on our reading of their valuation report and their responses to our follow-up questions.

Actuarial firms each have their own software programs for calculating normal costs and liabilities, and while actuaries have a common understanding of actuarial assumptions and cost methods, it is unlikely that any two firms will perform calculations in exactly the same way. In the course of this audit, we determined that while GRS and Segal both assumed mid-year decrements, the calculation of the present value of salaries was somewhat different between the two firms. This had a direct impact on the normal cost, the present value of future normal costs and the present value of expected employee contributions. Pointing out software differences should not be construed as an indication that one firm or the other is “correct.” We do so only to provide complete disclosure. As can be seen in the chart on the prior page, the replication was a close match despite the modest methodology differences.

Test Life Output

At Segal’s request, GRS provided results for 12 test lives, including six active members in various groups, two terminated vested members, two service retirees, one disabled retiree and one beneficiary. A review of test lives generally permits the auditing actuary to understand the retained actuary’s valuation programming on a micro basis. Unfortunately, the level of detail provided by GRS was not as complete as Segal would have liked to have had, due to a recent GRS corporate mandate limiting the release of test output because of proprietary concerns. However, GRS did provide pieces of additional information when we asked for them, and they were responsive to our follow-up questions.

We were able to replicate the test results within a reasonable tolerance. As a result, we conclude that GRS has appropriately reflected the benefits available to HMEPS members. Since we could not cross-check the calculations in detail for the individual members, it was difficult to determine where our differences might be that prevented a precise match.

That said, Segal’s review of these test lives did lead us to determine that the assumed retirement age for terminated vested members was not implemented as desired. The stated assumption is that these members are assumed to retire at first eligibility for unreduced benefits. GRS calculates an expected deferral/retirement age for inactive vested members and includes this in their valuation data. We would have expected these to be no greater than 62, which is the Normal Retirement Age for all groups. Instead, 222 expected retirement ages were older than 62. In further exploration, we discovered that many were set equal to 62 when the member is eligible earlier under a Rule of 70 or Rule of 75, and still others, while set to be less than 62, were not the same as what Segal calculated based on the age of the individual and the service in the HMEPS data. Finally, 136 deferral ages were equal to 0 in the data.

According to our calculations, GRS’s programs assume an average age of retirement for the terminated vested group of 61.5, and corrected data would generate an average of 60.8. The terminated vested liability would increase by approximately \$12.6 million with a correction. While this amount is a little over 7% of the liability for terminated vested members, which is significant for this group alone, it is a small fraction of the overall System liability, and the increase is only 0.3% in total.

Verification of Actual Retirement Calculations

As part of the audit process, we requested from HMEPS’ staff five actual calculations for individuals who retired in the months after the July 1, 2013 valuation date. We were provided with two who retired from Group A (one in DROP and one not), two who retired from Group B (again, one in DROP and one not), and one who retired with a disability pension.

Segal then asked GRS to provide the accrued benefit amounts calculated in their liability programs for these five retirees. We found that GRS's calculations were accurate, and that any differences could be explained by accounting for changes in salary and service after the valuation date.

This review of benefit calculations did reveal one item in need of further review by HMEPS and GRS. One of the actual service retirees we examined had a "switch date" in the data of April 20, 2002. This retiree had previously entered DROP during 2011, so his accrued benefit as of the DROP entry date was provided directly in the data supplied by HMEPS. For valuation purposes, only the COLA on the benefit needed to be modeled, which GRS handled correctly. However, if the individual had not been in DROP, and GRS had calculated the benefit as they normally would have for a non-DROP participant, we are not convinced that it would have been correct.

According to Sections 2.2, 2.5 and 2.6 of the Plan Document as Amended and Restated July 1, 2011, prior to January 1, 2006 Group B members were permitted to make an irrevocable election to switch to Group A. The change could be prospective only, or retroactive as well if the required employee contributions were paid. (After January 1, 2006, changes from Group B to Group A are allowed for future service only.)

Approximately 1,700 active members have a "switch date" in the data. We confirmed with GRS that they assume that service prior to the switch date is based on the Group B plan provisions, and after that date it is based on Group A. (Segal's liability match for this audit was on that basis.) However, the actual retirement calculation for the member noted above, who switched groups in 2002, was based entirely on Group A provisions. Thus, we have reason to question the presumption that all service prior to the switch date provided should remain on the Group B provisions.

In response to this concern, HMEPS' staff researched the 1,700 participants with a switch date, and informed Segal that approximately 420 both completed a switch and converted their service from B to A. Of these, about 235 are in DROP, and therefore are valued correctly by the actuary based on the benefit provided in the client data. The remaining 185 were studied further by GRS as part of this audit process.

When the 185 conversion participants were revalued by GRS using all Group A service, it was determined that they added \$9.7 million in liability not previously recognized. In this process, GRS uncovered about 50 participants whose service was recognized as all Group A and should have been split between A and B. This resulted in a liability reduction of \$3.6 million. Thus the net impact is additional liability of about \$6.1 million, or 0.1% of the System's total liability.

Recommendations

In summary, with respect to improving the liability calculations, we offer the following comments and suggestions:

1. \$ GRS should recalculate the expected retirement ages for terminated vested members, taking into account the age and service of members in the data and recognizing an expected retirement age no greater than 62.
2. \$ GRS should update the liabilities in the next valuation for the active employees who converted Group B service to Group A service, based on the findings noted above.

Section II: Analysis of Actuarial Assumptions

As part of our audit, we have reviewed the principal assumptions used in the July 1, 2013 actuarial valuation and the experience study report for the five-year period ending June 30, 2009. An in-depth review of the procedures involved for setting the assumptions in the experience study was outside of the scope of this project, and was not completed. Rather, we reviewed the assumptions for reasonableness based on our review of the valuation. We also compared the current set of economic assumptions to those used by a peer group covering large state and local employees. We offer the following opinions.

Economic Assumptions

Economic assumptions have a significant impact on the development of plan liabilities. Changes to these assumptions can substantially alter the results determined by the actuary. The goal is to have a consistent set of economic assumptions that appropriately reflect expected future economic trends.

The primary economic assumptions that affect the System's funding are:

- Inflation;
- Investment rate of return (or discount rate);
- Payroll growth rate;
- Salary scale; and
- Administrative expenses.

ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides actuaries guidance in developing economic assumptions. A key feature of the ASB's guidance is the "building block" approach in developing economic assumptions.

The "building block" approach uses the actuary's best estimate for key components of economic assumptions. The actuary begins with a reasonable range of each component then selects a specific point within the range based on historical data, plan specific data and the future economic environment. While the new ASOP 27 does not use a "best estimate range", the concept remains useful in approaching assumption setting.

A. Inflation

In developing the recommendation for the assumed inflation component, actuarial standards of practice suggest the actuary review appropriate inflation data. This data may include consumer price indexes, the implicit price deflator, forecasts of inflation, and yields on government securities of various maturities. GRS analyzed multiple sources in developing the inflation assumption. Their analysis reflected a reasonable range of 2.50% to 3.50% for inflation. GRS recommended no change in the inflation assumption of 3.00%. Based on the information contained in the GRS experience review as well as Segal's experience with public plans, 3.00% is reasonable and meets the guidelines of the Actuarial Standards Board.

B. Investment Rate of Return

The System has an 8.50% investment rate of return assumption, net of both investment and administrative expenses. When compared to a peer group of large public sector plans in Texas, as well as a broader peer group of 126 plans around the country, this assumption is quite high. The real rate of return of 5.50% (8.50% gross investment return minus 3.00% inflation) is high relative to state and national averages.

Texas Peer Group

The Texas State Pension Review Board (PRB) releases a *Guide to Public Retirement Systems in Texas* every two years. The most recent release date was February 2013. The guide provides background on the statewide and municipal public retirement systems in Texas, and includes plan provision summaries as well as key numbers from the most recent valuations for each.

The guide reveals that 97% of the public retirement systems in Texas have return assumptions between 7.00% and 8.50%. However, none are higher than 8.50%, and only 6% are at the 8.50% level. Other than Houston Municipal Employees, Houston Firefighters and Houston Police, the only municipal plan in the state with an 8.50% assumption is Dallas Police and Fire. None of the plans outside of Houston have an assumed real rate of return of 5.50%.

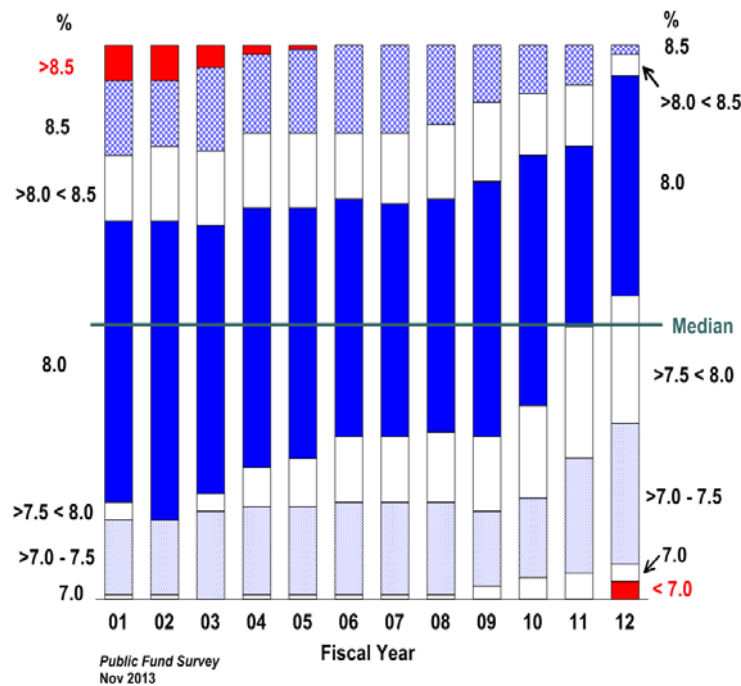
Entity	Investment Rate of Return	Inflation Rate	“Real Rate of Return”
Houston Municipal Employees	8.50%	3.00%	5.50%
Houston Firefighters	8.50%	3.00%	5.50%
Houston Police	8.50%	3.00%	5.50%
Dallas Police and Fire	8.50%	4.00%	4.50%
Dallas Employees	8.25%	3.00%	5.25%
Fort Worth Employees	8.00%	3.00%	5.00%
Austin Police	8.00%	3.75%	4.25%
El Paso City Employees	8.00%	4.00%	4.00%
Galveston Employees	8.00%	3.25%	4.75%
Austin Employees	7.75%	3.25%	4.50%
Austin Firefighters	7.75%	3.50%	4.25%
El Paso Firemen	7.75%	3.50%	4.25%
El Paso Police	7.75%	3.50%	4.25%
Galveston Police	7.50%	4.00%	3.50%
San Antonio Fire and Police	7.50%	3.50%	4.00%
Texas Municipal (TMRS)	7.00%	3.00%	4.00%

National Benchmarks

The National Association of State Retirement Administrators (NASRA) sponsors the Public Fund Survey, an online compendium of key characteristics of 99 public retirement systems. Represented in this survey are 126 plans (provided by the 99 systems) covering almost 13 million active members and 9 million annuitants. In total, these plan hold \$2.6 trillion in assets. The membership and assets of systems included in the survey comprise approximately 85% of the entire state and local government retirement system community.

As of the latest survey update, the median investment return assumption was 7.9% and the median assumed real rate of return was 4.5%. The survey found that, while the most common assumption used by public plans was 8.0%, since 2009 an unprecedented number of plans have reduced their investment return assumption. Rates above 8.5% have been abandoned, and the number above 8.0% has shrunk considerably, as illustrated by the chart below.

**Public Fund Survey
Investment Assumptions**



HMEPS’ Investment Return

Each plan’s investment structure and philosophy is unique, and therefore simply comparing one plan’s investment return assumption to another plan’s assumption does not always produce an “apples to apples” outlook. Even so, the data detailed above provides a persuasive argument that the HMEPS Board should consider lowering the assumption. In addition, the latest experience study completed for the System provides evidence that a lower assumption is in order.

GRS used the building block method to arrive at a recommended assumption, as appropriate under ASOP No. 27. Included are capital market assumptions from the HMEPS investment consultant as well as seven independent investment consulting firms.

In the 2010 experience study, GRS arrived at a conclusion that the System had only a 39% likelihood of exceeding 8.50%. Included in this result are the capital market assumptions of one investment consultant which appears to be a clear outlier, with expected returns far exceeding the others. If that consultant is removed from the mix, there is only a 34% likelihood of the System's net asset returns exceeding 8.50%. However, GRS did not recommend a change in rate.

HMEPS' Investment Policy

The investment policy was recently changed, with new target allocations. We note that annual contribution income is equal to roughly half of the benefit payments, and the System currently relies on investment income for over \$100 million in annual payouts. Cash flow is an important consideration for the System's investments, and it is our understanding from Fund staff that cash flow was one of the factors that the System considered when developing the asset allocation policy. Often, investments that provide liquidity result in lower returns than those that are less liquid.

Summary

Based on the preceding information, Segal Consulting would have recommended that the investment return assumption be reduced to 7.75% or 8.00%. Although an argument could be made that HMEPS has shown above-average returns historically, past performance is no guarantee of future results. We believe that the 8.50% assumption is too high. By our calculations, if the assumption were changed to 8.00% the unfunded actuarial accrued liability would increase by approximately \$237 million, and the normal cost would increase by about \$3.6 million. The employer contribution requirement, based on a 30-year amortization of the unfunded liabilities, would increase by about 3.6% of pay.

A pension plan's liabilities should be in balance with the resources available to pay for them. Consideration could be given to reinstating contributions for all employees. Currently contributions are paid only by Group A members. HMEPS has the lowest average employee contribution rate of any municipal system in Texas.

C. Salary Scale and Payroll Growth Rate

Based on the results shown in the experience review, we believe that the System's assumed service-based salary scale assumptions are appropriate. Also, the payroll growth rate of 3.00%, which is equal to the inflation assumption, is reasonable.

D. Administrative Expenses

As mentioned in the discussion of investment return, the 8.50% assumed return is net of both investment and administrative expenses. Thus, there is an implicit assumption for expenses.



Expected investment return assumptions almost always include investment expenses, but frequently there is a separate, explicit assumption for administrative expense. This assumed expense is added to the normal cost for the upcoming year, and directly included in the recommended contribution for the employer.

GRS and the HMEPS Board may want to consider establishing an explicit assumption. The administrative expenses for HMEPS have been approximately 0.30% of investments, meaning that the System has to generate an additional 30 basis points above the 8.50% assumption to cover these expenses.

It should be noted that the long-term expected rate of return for GASB Statement 67 purposes is to be net of investment expense only. This is an accounting standard and does not apply directly to funding, so the assumptions could differ. However, using a consistent rate for the two purposes might eliminate some confusion regarding the difference between the two rates.

Recommendations

In summary, with respect to the economic assumptions, we offer the following comments and suggestions. These are identified as experience study recommendations, but they directly impact the cost as well.

1.  We recommend that the net investment return assumption be lowered by 0.50% to 0.75%. While this is noted as a recommendation for the next experience study, which is due in 2015 if HMEPS remains on a five-year cycle of study, we would suggest that the change be implemented sooner if possible.
2.  We recommend that an explicit administrative expense assumption be added. Again, this could be implemented with the next experience review, or sooner, in conjunction with the initial disclosures under GASB 67.

Demographic Assumptions

The demographic assumptions used to value the System reflect the expected occurrences of various events among participants of the plan. The assumptions should reflect specific characteristics of the plan and produce reasonable results. A reasonable assumption is one that is expected to model the contingency being measured and not expected to produce significant gains and losses. The types of demographic assumptions used to measure pension obligations include, but are not limited to the following:

- Mortality;
- Disability;
- Termination of employment (withdrawal);
- Retirement; and
- Others, including DROP utilization, percentage married, and spousal age difference.

ASOP No. 35, *Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations*, provides actuaries guidance in developing demographic assumptions. The standard recommends the actuary follow a general process for selecting demographic assumptions. The first step of the general procedure is to identify the types of assumptions to use. The actuary should consider relevant plan provisions that will affect timing and value of any potential benefit payments, all contingencies that give rise to benefits or loss of benefits and the characteristics of the covered group. The next step is to identify the relevant assumption universe. The assumption universe may include prior experience studies or general studies of trends relevant to the type of demographic assumption in addition to plan experience to the extent that it is credible. The third step is to consider the assumption format. The format may include different tables for different segments of the covered population (i.e., different turnover rates for municipal employees versus public safety). The final step is to select the specific assumption and evaluate the reasonableness of each assumption. The specific experience of the

plan should be incorporated but not given undue weight if recent experience is attributable to a phenomenon that is unlikely to continue. For example, if recent rates of termination were due to a one-time reduction in workforce it may be unreasonable to assume that such rates will continue.

A. Mortality Rates

One of the most basic actuarial assumptions is the probability of death. The mortality assumption takes the form of a mortality table, which contains, for each age in the table, a probability of a person dying between that age and the next. There are several sets of mortality tables currently in use for the Plan. The following mortality tables are in use for HMEPS:

- **Non-Disabled (Active and Retired):** RP-2000 Combined Mortality Table with a multiplier of 110% for males and 95% for females
- **Disabled:** 1965 Railroad Retirement Board Disabled Life Table, with a two-year setback for males and an eight-year setback for females

“Credibility Theory” says that, based on the number of deaths and a desired level of confidence, the true underlying ratio of actual to expected deaths lies within a resulting range of the plan-specific ratio. The chart below shows the number of deaths required to have various levels of confidence that the underlying ratio falls within a certain range. For example, the highlighted entry on the table shows that the actual experience being used must have at least 1,082 actual deaths in order to be confident that 90% of the time the true underlying ratio is within a +/- 5% range (95% - 105%) of the observed plan-specific ratio during the study period.

Number of observed deaths to be within indicated range with associated confidence

Confidence		99-101%	98-102%	97-103%	96-104%	95-105%	90-110%	80-120%	75-125%
0.674	75%	4,543	1,136	505	284	182	45	11	7
1.282	80%	16,435	4,109	1,826	1,027	657	164	41	26
1.645	90%	27,060	6,765	3,007	1,691	1,082	271	68	43
1.96	95%	38,416	9,604	4,268	2,401	1,537	384	96	61
2.576	99%	66,358	16,589	7,373	4,147	2,654	664	166	106

* with 1,082 observed deaths, there is 90% confidence that the actual experience of the group is fully credible (defined as being within ±5% of the underlying characteristics of the group)

There were 494 actual male annuitant deaths in the four-year study period, and therefore we can say with about 97% confidence that the true underlying mortality ratio for the System’s population is within 90% – 110% of the observed experience. The 194 female annuitant deaths in the period provide more than 80% confidence of falling within that range. The active and disabled experience totals provide less confidence as the numbers are not sufficient for statistical viability.

We agree with the methodology behind GRS's analysis of mortality experience. In setting the current assumption they reflected margin to account for expected future improvements in life expectancy, as required by actuarial standards. We do suggest that the next experience study include consideration of an updated table for disabled mortality. GRS may also want to consider generational projection to reflect longevity improvements rather than using margin on a static table, although either method is acceptable.

B. Retirement Rates

The valuation employs retirement rates from eligibility for a normal retirement to age 75. As a result of the last experience review study, the retirement rates were lowered, to assume longer working careers. We have observed a trend toward later ages for retirement in recent experience studies completed for other public employers.

The rates for Groups A and B (which also includes the handful of Group C members who are considered part of Group A) project that 3.5% - 4.5% of the active population will remain by age 65. This ties nicely with the current active group, of which 4.2% are age 65 and over. The Group D rates will expect 16%-17% of the actives to remain by 65. As GRS notes in the experience review, there were no Group D members eligible to retire at the time of their study, and they developed forward-looking expectations. These should be monitored in future years, as Group D members age.

We note that the old retirement rates for Groups A & B had a spike at age 62, which is a Normal Retirement eligibility for the System, and another spike at 65, when many employees would be eligible for Social Security. The new rates do not have an age 65 spike, even though actual experience might have indicated that one might be appropriate. We suggest that this be taken into consideration with the next experience review. A spike at the later Social Security retirement age of 67 might be more appropriate for Group D members.

C. Withdrawal Rates

The assumed withdrawal rates used in annual actuarial valuations project the percentage of employees at each age or service duration who will terminate employment before retirement. These rates take into account possible terminations for all causes other than retirement, death, or disability. They include both voluntary and involuntary withdrawals from service.

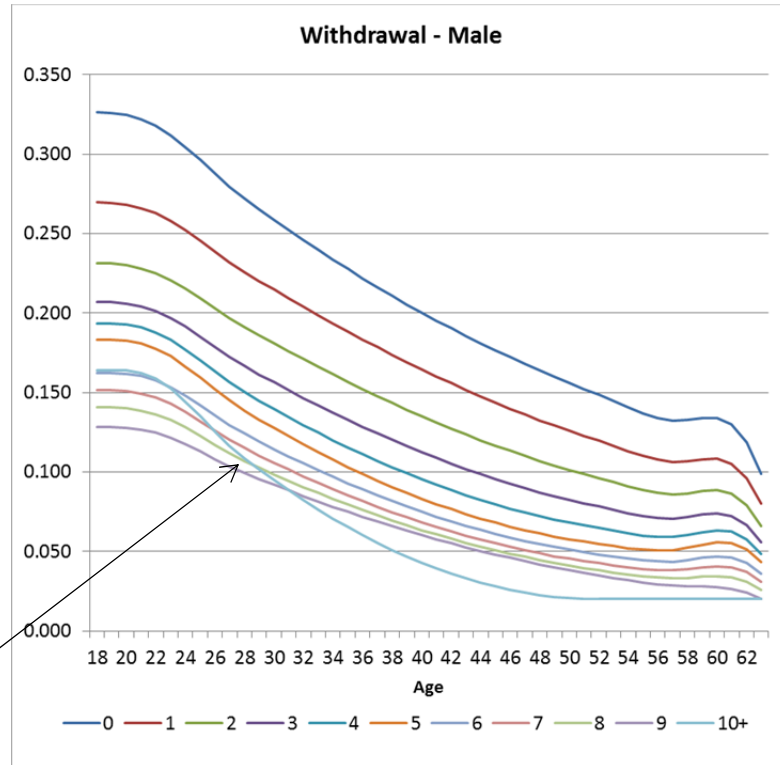
Terminations before retirement give rise to some benefit rights, but may also involve the forfeiture of a portion of previously accrued benefits. Forfeitures resulting from turnover are anticipated in advance and help finance benefits which become payable to other employees.

GRS has used a select and ultimate approach for separation from active service, based on select rates that apply during a member's first ten years of service. Often a select period is set equal to the vesting requirement for a plan, which would be five years for HMEPS. However, there is no reason not to use a longer period when the experience demonstrates that it is reasonable. We support the use of this select-and-ultimate format for turnover rates, and suggest that GRS continue this approach for as long as experience review data suggests that it is appropriate.

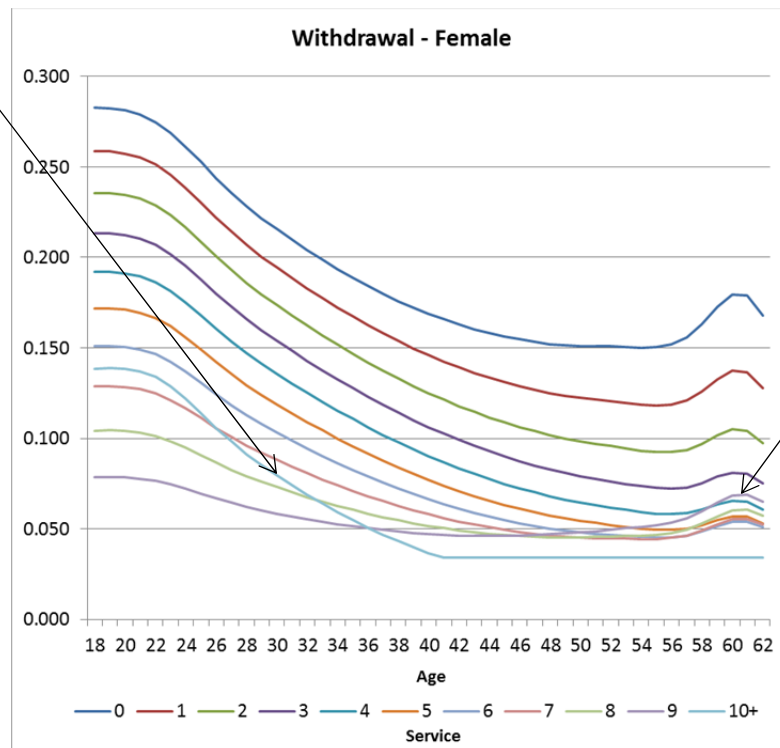
Withdrawal rates developed in the experience review were set such that the rates generally produce fewer expected terminations relative to the actual experience over the review period.

This concurs with recent patterns we have observed in other experience reviews. We believe the new assumptions to be reasonably related to expected future plan experience.

We do note a couple of small anomalies in the withdrawal rates. The ultimate rates are higher than the select rates at younger ages. It is unlikely that there will be many employees reaching ten years of service while they are still in their 20s, but in the early 30s it is possible under the current assumption set that there could be a small spike in assumed turnover when an employee reaches ten years. Also, there is some crossover in the female select rates at later ages.



The rates for 10+ years of service are greater than the shorter-service rates at young ages.



At later ages the rates for 9 years of service are higher than the shorter service rates.

We do not believe these issues to be material, but we note them for examination in the next experience review.

D. Disability Rates

Disability rate tables function in the same way as mortality tables. The rate at each age indicates the probability of becoming disabled before the next age. Disability rates add liability for the value of the disability benefits, but lessen the value of retirement benefits ultimately payable, since anyone who becomes disabled is not projected to receive retirement benefits other than the disability benefit.

This is a minor assumption, and the lower rates implemented by the HMEPS Board based on GRS's recommendation appear to us to be reasonable.

E. DROP Election/Utilization

GRS recommended maintaining the assumption that 90% of eligible members enter DROP at first eligibility. Furthermore, it is assumed that members with DROP balances will take that balance in six equal annual installments beginning the year after retirement. Current retired members with DROP balances are assumed to take six equal installments from the valuation date.

The experience review does not provide any back-up for these assumptions. It is recommended that the next experience review include an analysis of DROP usage to assure that the valuation assumption matches observed experience.

F. Percent Married

Marriage rates are used in actuarial valuations to estimate the number of participants eligible for survivor benefits. Typically an actuary will use this assumption for pre-retirement lives to estimate how many individuals will be married upon death or retirement. For those already in pay status, a form of payment generally is used to establish whether or not an individual has an eligible beneficiary.

No form of benefit is provided in the actuarial data from HMEPS, nor is there spousal information. For those retirees with survivors, the 100% Joint-and-Survivor (J&S) form of benefit is automatic; there is no reduction in the life annuity form of benefit to account for the J&S. (Group D benefits will be actuarially adjusted for optional form of payment, but all of the current retirees are from Groups A and B.)

The current "percent married" assumption is a flat 70% for all participants, regardless of age. However, in actuality it is more likely for a 55 year-old retiree to have a surviving spouse than for a 90 year-old to have one. If actual spouse information cannot be provided by the System, we suggest that the flat 70% assumption be adjusted to reflect a declining marriage rate over time. It may be appropriate to assume a higher rate of marriage at retirement, such as 75%-80%, but then decrease to an ultimate rate as low as 20% by age 90.

Segal implemented this type of assumption for a municipal client about five years ago. It had become evident that, over time, the plan was experiencing gains following the death of retirees for whom no ongoing survivor benefits were paid. We based our new assumption on current

census statistics for the metropolitan area, as well as a study of the actual percentage of survivors following the death of retirees. Applying these rates appreciably decreased the retiree liability.

Recommendations

Overall, the demographic actuarial assumptions adopted by the System are reasonable and consistent with generally accepted actuarial standards and practices contained in Actuarial Standard of Practice No. 35 covering demographic and non-economic assumptions.

The following summarizes our comments and suggestions for demographic assumptions:

1. ✍ GRS may consider recommending an update of the disabled mortality table, currently the 1965 Railroad Retirement Board Disabled Life Table.
2. ✍ For both non-disabled and disabled lives, GRS may want to consider eliminating the margin from the mortality tables, and using generational projection instead. A generational mortality table provides dynamic projections of mortality experience for each cohort. For example, the life expectancy for someone who is 65 this year will be slightly less than someone who is 65 next year. While either method is acceptable, a generational table should require less frequent updating.
3. ✍ The Group D retirement rates should be monitored, as members of that group become eligible for retirement. Also, consideration could be given to Social Security eligibility when setting prospective retirement rates.
4. ✍ We recommend that GRS check the ultimate withdrawal rates, to ensure that there are no sudden increases in rate when an active employee reaches 10 years of service.
5. ✍ Detail backing up the choice of DROP assumptions should be provided in the next experience study report.
6. ✍ We suggest a decreasing post-retirement marriage assumption, if actual spousal information for annuitants is unavailable.

Appendix A of the actuarial valuation report provides detail on the actuarial assumptions. This section is very thorough and complete. However, we do suggest the following edits:

1. ✨ Refer to the mortality tables simply as the RP-2000 Healthy Combined Tables. The report currently refers to them as the Retired Pensioners 2000 Tables, but we could find no professional documentation that RP stands for Retired Pensioners. RP-2000 is well understood in actuarial circles, and does not need to be expanded.
2. ✨ Move the retirement assumption for terminated vested employees from “Other Assumptions” to “Demographic Assumptions” following the active member retirement rates.

Section III: Validation of Funding and Asset Valuation Methods

Funding Method for Liabilities

The funding method used in the valuation is the Ultimate Entry Age Normal (EAN) Cost Method. Under this method the normal cost is developed using the Group D benefit provisions and the actuarial accrued liability is the present value of future benefits less the present value of future normal costs using the Group D benefits. We find the current method to be reasonable, and one that we employ for many of our clients as well. A defense of the method follows.

An essential part of the public sector budgeting process is that large budget items, including pensions, should have a level cost pattern from year to year to the extent possible. The Ultimate EAN Method recognizes the importance of this requirement and allocates pension contributions to time periods so that, if the actuarial assumptions are exactly realized, the calculated contribution will remain a level percent of pay from year to year.

Fundamentally, the contribution requirement has two components:

- Normal Cost – The allocation to the coming year of pension costs for active employees in that year.
- Amortization of the Unfunded Actuarial Accrued Liability (UAAL) – The coming year’s payment toward pension costs allocated to prior years for which assets are not yet on hand.

Traditionally, the Entry Age Normal (EAN) actuarial cost method determines the Normal Cost for an individual by calculating the level percent of pay that, if contributed each year over that person’s career, would accumulate with interest to the amount projected to be needed to pay that person’s pension benefits, and multiplying that “Normal Cost rate” times the person’s current pay. Clearly, that produces the desired outcome with respect to each individual – a level percent of pay Normal Cost from year to year. Where there is a single plan of benefits applicable to all service for all employees, the total Normal Cost – the summation of the individual Normal Costs – will also remain essentially level for the group, if the distribution of hire ages and retirement ages is stable. Further, each time there is a termination of employment (due to retirement, death, disability, or other termination), there will be no change in the total Normal Cost rate if the replacement employee is hired at the same age as the age at hire of the terminating employee.

A complication arises if the plan of benefits is not the same for all service for all employees, as is true for HMEPS. In that circumstance, the Traditional Entry Age Normal Cost rate will change if the terminating employee is in Group A or Group B and the new hire is in Group D. Since the Group A and Group B plans are more generous, there will be a tendency for the Normal Cost rate to decline as a percent of pay over time, as Group A and B employees terminate and are replaced by Group D employees. This no longer meets the level funding objective.

Ultimate EAN addresses this problem by determining the Normal Cost as though the Group D plan covers everyone. This produces a lower Normal Cost than reflecting each person’s actual plan. With this variation of EAN, there is once again a level Normal Cost.

Of course, an essential requirement of any actuarial cost method is that the present value of all future benefits for existing participants must be matched by the value of assets on hand plus the present value of future contributions. The reduction in the current and future Normal Cost for Group A and B members who are assigned a Group D Normal Cost must therefore be offset by an increase in the UAAL that has the same present value. For a plan where the UAAL is routinely amortized as a level percent of pay, the end result is exactly what is desired. Each of the two components of the calculated contribution is a level percent of pay, so the total is as well. The short-term recommended contributions will often be lower using Ultimate EAN. Eventually, however, all benefits need to be funded, so this is a timing effect only.

EAN, in one form or another, is the most common method in use by public sector retirement systems, both nationally and in the state of Texas. It complies with actuarial standards.

One item we would point out is that public pension accounting as required by the Governmental Accounting Standards Board (GASB) is changing. Ultimate EAN is not an allowable method for determining the net pension liabilities under the new GASB Statements 67 and 68, which the System and the City will need to reflect in their financial statements in the next year. Traditional EAN is required for this purpose. If the HMEPS funding policy remains as it currently stands, the System will need to have two sets of liabilities calculated in future years. It is our understanding that GRS has conveyed this information to the Board.

For GASB reporting purposes, GRS will also need to adjust the calculation of normal cost so that the DROP benefits are funded until DROP entry rather than the assumed DROP exit.

Asset Valuation Method

As stated previously, an essential part of the public sector budgeting process is that material budget items, including pension contributions, should have a level cost pattern from year to year to the extent possible. One way to approach this is to establish reasonable methodologies for recognizing investment gains and losses and limiting the potential volatility that may result in increased contributions due to investment results.

The actuary's guide for determining the reasonableness of an asset smoothing method is ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*. The following is an excerpt from this ASOP that establishes the qualities a reasonable asset smoothing method must exhibit.

From the Actuarial Standard of Practice No. 44

3.3 *Selecting Methods Other Than Market Value:* *If the considerations in section 3.2 have led the actuary to conclude that an asset valuation method other than market value may be appropriate, 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 asset valuation method include the following:*

- a. The asset valuation method is likely to produce actuarial values of assets that are sometimes greater than and sometimes less than the corresponding market values.*

- b. *The asset valuation method is likely to produce actuarial values of assets that, in the actuary's professional judgment, satisfy both of the following:*
- 1. The asset values fall within a reasonable range around the corresponding market values. For example, there might be a corridor centered at market value, outside of which the actuarial value of assets may not fall, in order to assure that the difference from market value is not greater than the actuary deems reasonable.*
 - 2. Any differences between the actuarial value of assets and the market value are recognized within a reasonable period of time. For example, the actuary might use a method where the actuarial value of assets converges toward market value at a pace that the actuary deems reasonable, if the investment return assumption is realized in future periods.*

In lieu of satisfying both (1) and (2) above, an asset valuation method could satisfy section 3.3(b) if, in the actuary's professional judgment, the asset valuation method either (i) produces values within a sufficiently narrow range around market value or (ii) recognizes differences from market value in a sufficiently short period.

The System's asset valuation method is not one that is in common use, and its operation is more complex than many methods. In our opinion, a more typical method that recognizes market gains and losses at 20% per year over a five-year period, such as the method that the System employed prior to the latest experience study, would simplify understanding for most users of the actuarial valuation reports.

That said, HMEPS' asset method does qualify as a reasonable method under ASOP No. 44. The actuarial value of assets is tied to market value, and the method treats gains and losses the same. There is no systematic bias that would consistently produce an actuarial value of assets that is greater than or less than market value. And it uses a five-year smoothing period, which is sufficiently short.

The method actually accelerates the recognition of the oldest gains and losses by offsetting them with current gains and losses wherever possible. In the experience review, GRS states that the current method will produce results that are similar to the prior method during periods of extreme investment performance, but moves more consistently with market value during periods of more "ordinary" investment returns. We agree with this statement.

Segal was able to follow the operation of the asset method by reviewing Table 10 of the report. This table is an improvement, in our opinion, over Tables 10a and 10b in the 2012 valuation report. However, the written description of the method in Appendix A could be improved. At a minimum, we suggest that GRS clarify that the offsetting of the bases dollar for dollar begins with the earliest base, and moves toward the present.

Amortization of Unfunded Actuarial Accrued Liabilities

The annual contribution for HMEPS is based on an open ("rolling") 30-year, level percent-of-payroll amortization. We recommend closure of the amortization period, but we acknowledge that the Board has plans to close the period once the City's contributions (which are scheduled to

increase under the Meet & Confer Agreement) have reached the level that is calculated based on a 30-year period.

Until the City's contributions are funding the System on the basis of an amortization period that is 30 years or less, we suggest that GRS show the effective amortization period based on the scheduled contributions for the coming year. We calculate that, based on the current actuarial assumptions, the 23.36% contribution level for fiscal year 2014 produces a 72-year effective amortization period, and the 25.36% contribution level for fiscal 2015 shortens the effective period to 46 years. Both exceed the Texas PRB Guidelines for Actuarial Soundness, which indicates that funding should amortize the UAAL over a period not to exceed 40 years. However, we note that in the PRB's "Study of the Financial Health of Texas Public Retirement Systems" dated August 2014, the PRB recognizes an ultimate contribution rate of 26.32% of pay. This results in a 35-year amortization period, which is within the guidelines.

The Board should be aware that even if all assumptions are met and contributions are made at the calculated level after the 30-year period is closed, the UAAL will continue to increase until the closed period reaches 17 or 18 years. In the early years of a level percent-of-pay contribution stream over a 30-year period, the payments do not cover the interest on the UAAL, resulting in negative amortization. This increasing UAAL is shown in the 10-year projection included in GRS's valuation as Table 7.

Recommendations

The actuarial funding method and the asset valuation method are reasonable and consistent with generally accepted actuarial standards and practices. We have the following comments regarding methodology and funding:

1. ★ The description of the asset valuation method in Appendix A of the valuation could be enhanced to provide a clearer understanding of its operation.
2. ★ An open 30-year level percent-of-pay amortization period will never amortize the System's unfunded actuarial accrued liabilities. The period should be closed, and contributions made at a sufficient level to cover the calculated contributions, so as to adequately fund the System's future benefits.
3. ★ We suggest details regarding the effective amortization period for plan funding be included in the valuation report.

Section IV: Review of Valuation Report

ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*, and ASOP No. 41, *Actuarial Communications*, are the key publications actuaries use in developing reports and disclosures for measuring pension obligations. GRS generally complies with these statements and provides a comprehensive actuarial valuation report, which includes sufficient information for an individual to gain a clear understanding of the financial picture of the System.

Segal has described several potential enhancements to the July 1, 2013 valuation report earlier in this audit, regarding the data presentation and the description of assumptions and methods. We offer the following additional comments and suggestions with respect to increasing the usefulness and understanding of the report:

1. ✦ The overall format of the report has all of the text discussion up front, and all of the numeric tables towards the back. The text frequently refers to the tables, which requires the reader to flip back and forth. This is a matter of style and presentation, but Segal's preference is to include the key tables as part of the discussion, so that the reader can see the numeric results and the actuary's interpretation of the results at the same time.
2. ✦ In the discussion of financing objectives, we suggest that GRS include the funded ratio on a market value basis as well as an actuarial basis. Since the smoothed actuarial value of assets is 108.5% of market value as of July 1, 2013, it creates a higher ratio. While we acknowledge that the GASB disclosures historically have required the ratio only on actuarial value, it is important for the Board to recognize that the ratio would be 53.2% rather than 57.7% if the deferred investment losses were fully recognized.
3. ✦ In Table 2, we note that the projected payroll for the coming year is less than the covered payroll. Based on the valuations available on the HMEPS website, dating back to 2005, this was the first time that projected payroll was not higher than the actual covered payroll. Covered payroll is based on the annualized pay rate of the active members included in the valuation, while projected payroll is the sum of the actual earnings for the prior year of everyone who received pay from the City, regardless of status at the end of the year. GRS confirmed that these figures are correct for 2013; Segal was able to match the covered payroll amount, but we did not have 2012-2013 salary data on retirees to verify the projected payroll.

When an unexpected result such as this occurs, we recommend that the actuary provide additional commentary to explain it. It may be that there are a significant number of part-timers included in the employee population for whom the covered payroll should not equal a full 2,080 hours times the hourly rate.

For clarity, we also suggest rearranging the words in the existing footnote to this table as follows: "The projected payroll is the pay received for the just completed fiscal year, increased by the payroll growth rate. This figure includes pay for any member who received pay during the year, i.e. active, terminated, retired, etc."

4. ★ On Table 16, GRS could comment on the overall trend of an aging active population. Over the last 20 years, the average age of the active group has increased by six years, while the average service has remained between 9 and 11 years. In combination, these statistics indicate that the entry age of the employees is increasing, which generally increases the calculated normal cost under the Entry Age Normal Cost Method.
5. ★ In the Summary of Plan Provisions in Appendix B, the Early Retirement provision for Group D members should be added, as laid out in Section 5.2(c)(ii) of the Plan Document.
6. ★ In Item 15 of the Summary of Plan Provisions, the description of the Post-Retirement DROP benefit could be expanded to indicate that the benefit is based on Average Monthly Salary as of January 1, 2005, or the DROP Entry Date, if later.

Section V: Conclusion

Based on our review of the HMEPS' July 1, 2013 actuarial valuation, it is evident that steps have been taken to resolve the imbalance between the System's benefit levels and the resources available to pay for them. The benefits for recent and future hires are less generous than those previously provided to the City's employees, and the City has agreed to a schedule of increasing contributions until the level of funding covers an actuarially calculated contribution with a reasonable amortization period for the unfunded liabilities.

Segal Consulting did not review any actuarial communications between GRS and HMEPS aside from the actuarial valuation report and the latest five-year experience study. Therefore, we were not privy to any discussions surrounding the System's assumed net investment return rate. However, we strongly encourage the System's Board to consider lowering the assumed return rate. While doing so will increase the System's costs and therefore directly impact the City's Funding Commitment under the Meet and Confer Agreement with HMEPS in the short term, we believe that a lower rate will provide both the Board and the City with a more reasonable picture of the System's liabilities on a long-term basis.

Final Comments

To reiterate our comments in the Executive Summary, the System's actuary appears to have reasonably valued the expected liability of the System based on their stated assumptions and methods. GRS has applied the funding methodology appropriately to develop a contribution recommendation for the System, and the valuation report generally conforms to accepted actuarial principles and practices.

In this audit, we have noted areas that we believe will refine the liability calculations and will improve the usefulness and clarity of the System's annual actuarial valuation. We are available to discuss any aspect of our review with the HMEPS Board of Trustees, HMEPS Staff, or the System's actuary.

Segal Consulting is independent of Gabriel Roeder Smith & Company, and we are not aware of any conflict of interest that would impair the objectivity of our actuarial audit of their work.