

CITY OF AUSTIN EMPLOYEES' RETIREMENT SYSTEM

**Limited Scope Audit of the December 31, 2008
through December 31, 2012 Actuarial Valuations**

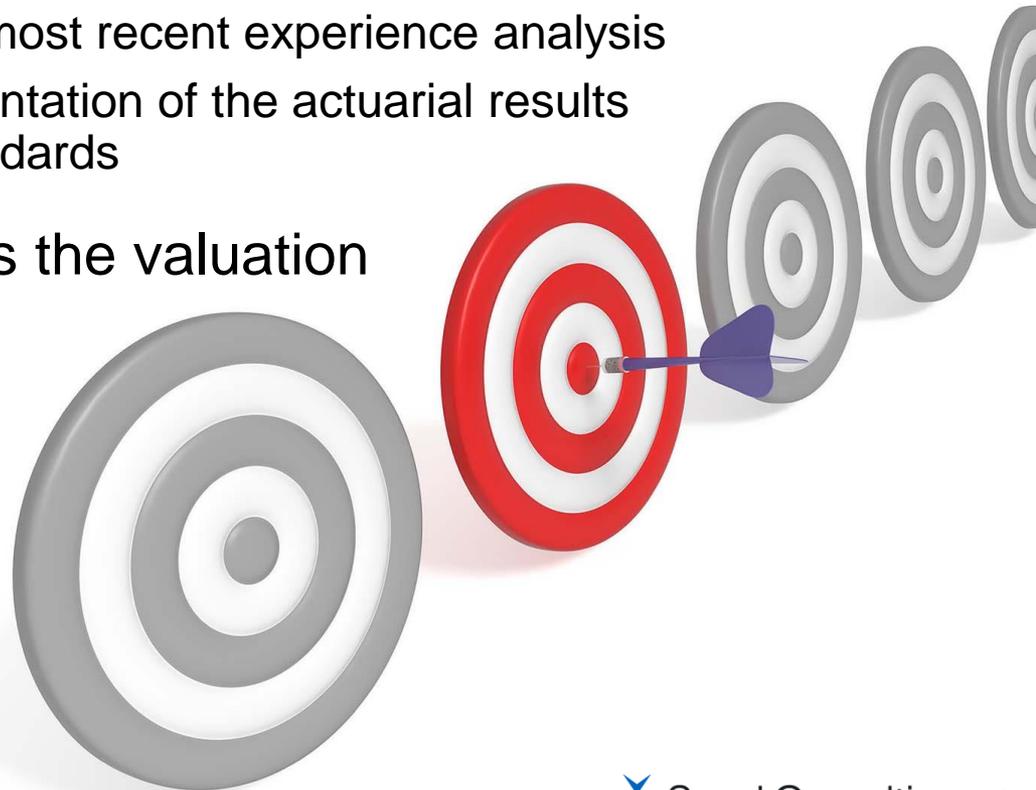
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Presented by:

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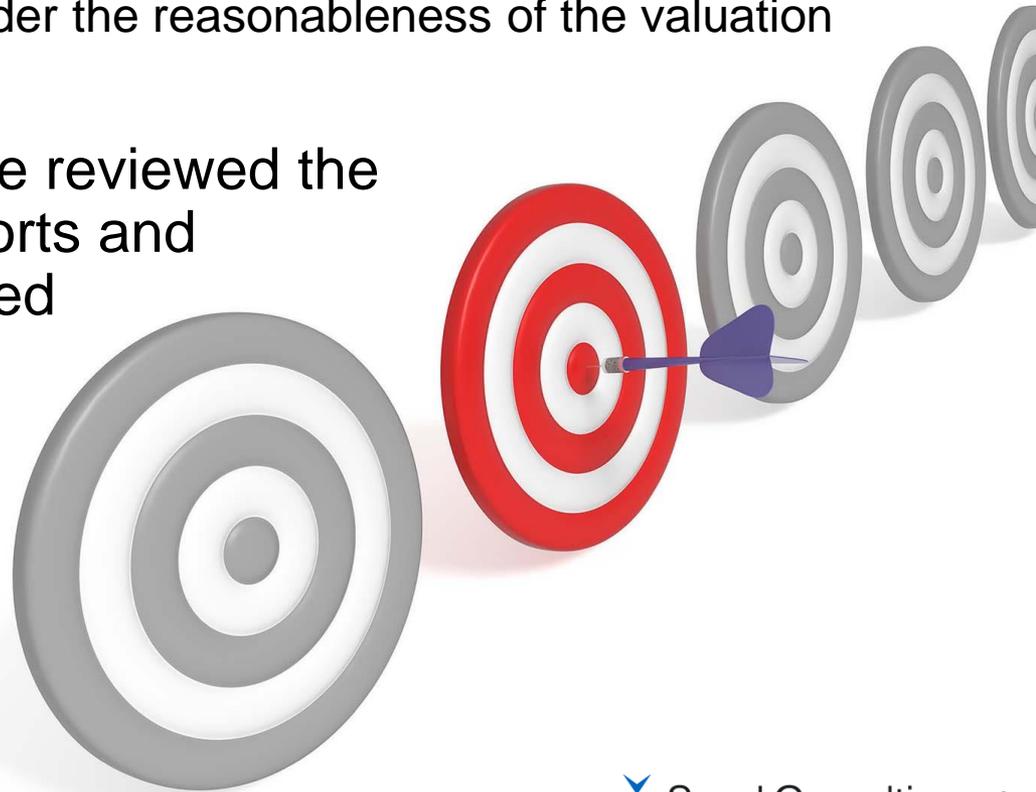
Purpose, Scope and Methodology of the Audit

- The City of Austin retained Segal Consulting to conduct an independent review of ERS's actuarial valuations from 2008 to 2012
- The City requested:
 - a review of the appropriateness of the current funding method and procedures
 - an evaluation of both economic and non-economic assumptions
 - a review of the actuarial report and most recent experience analysis
 - an assessment of whether the presentation of the actuarial results are consistent with professional standards
- This limited scope audit reviews the valuation already performed, through reviewing reports, assumptions and methods, without a full replication of results



Purpose, Scope and Methodology of the Audit

- With respect to the assumptions, Segal:
 - Reviewed the Five-Year Experience Study report for the period covering January 1, 2007 to December 31, 2011
 - Benchmarked the economic assumptions against a survey of state and local employee retirement systems, and
 - Compared other assumptions with the plan benefits being valued, utilizing our experience with other plans to consider the reasonableness of the valuation assumptions
- With respect to the methods, we reviewed the description in the valuation reports and compared to methodologies used by similar plans



Review of Reports

- ASOP No. 4 *Measuring Pension Obligations and Determining Pension Plan Costs* and ASOP No. 41 *Actuarial Communications* are the key publications used to develop actuarial reports
- GRS generally complies with these statements but we suggest the following enhancements to the valuation report:
 - include a 10-year projection of key valuation results
 - improve the presentation of the Annual Required Contribution (ARC) by adding explanation similar to that found in the CAFR
 - include additional demographic information, such as average age for annuitants and terminated vested employees
 - improve section on development of actuarial value of assets to make easier to follow (the 2013 valuation has an improved format)
 - rename page 18 from development of actuarial gains or losses to changes in plan liability since the impact of plan and assumption changes are included here
 - disclose assumptions for the purchase of permissive time and conversion of sick leave

Analysis of Actuarial Assumptions Employed

- ASOP No. 27 *Selection of Economic Assumptions for Measuring Pension Obligations* provides guidance to actuaries on developing economic assumptions
- The primary economic assumptions that affect the System's funding are:
 - Inflation
 - Investment rate of return (or discount rate)
 - Payroll growth rate
 - Salary scale
 - Sick leave and service purchases



Analysis of Actuarial Assumptions Employed

Inflation

- Either the 3.00% recommended or the 3.25% chosen as the assumption are reasonable and meet the guidelines of the ASOP

Investment Rate of Return

- The 7.75% assumption, composed of the assumptions for inflation of 3.25% and real rate of return (net of investment expenses) of 4.50%, appears reasonable
- The next slide shows a comparison to investment return rates used for similar plans in Texas



Analysis of Actuarial Assumptions Employed

Entity	Investment Rate of Return	Inflation Rate	“Real Rate of Return”
Dallas Police and Fire	8.50%	4.00%	4.50%
Houston Municipal Employees	8.50%	3.00%	5.50%
Houston Police	8.50%	3.00%	5.50%
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%

Analysis of Actuarial Assumptions Employed

Salary Scale

➤ The service-based tables including components for:

- Promotion ranging from 0.0% to 1.5%
- Productivity of 1.25%
- 3.25% inflation

are reasonable based on the experience review



Analysis of Actuarial Assumptions Employed

- ASOP 35 **Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations** provides guidance to actuaries on developing demographic assumptions
- The types of demographic assumptions used to measure pension obligations include:
 - Mortality
 - Disability
 - Termination of Employment (withdrawal)
 - Retirement
 - Others, including:
 - percentage married
 - spousal age difference
 - sick leave recognition
 - service purchases



Analysis of Actuarial Assumptions Employed

Mortality Rates

- “Credibility Theory” states 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 on the next slide shows the number of deaths required to have various levels of confidence that the underlying ratio falls within a certain range
- There were 253 actual male annuitants in the five-year study period, and therefore we can say with nearly 90% confidence that the true underlying mortality ratio is within 90% – 110% of the observed experience
- The 139 female annuitant deaths in the period provide about 80% confidence.
- The active and disabled experience totals provide much less confidence as the numbers are not sufficient for statistical viability

Analysis of Actuarial Assumptions Employed

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

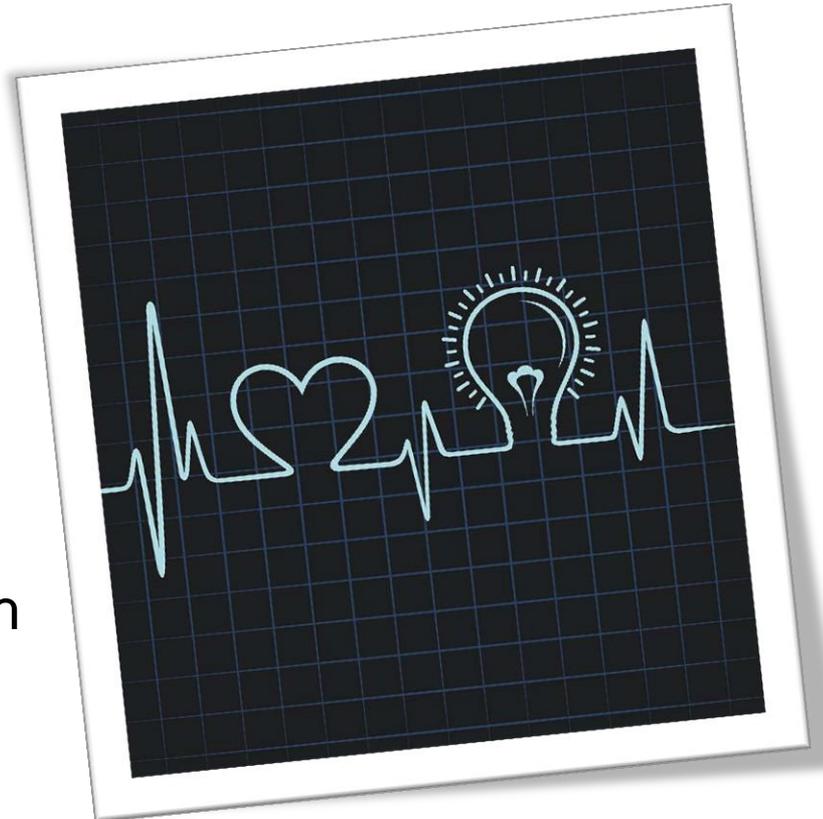
* With 1.082 observed deaths, there is 90% confidence that the actual experience of the group is fully credible (defined as being within $\pm 5\%$ of the underlying characteristics of the group).

Analysis of Actuarial Assumptions Employed

Mortality Rates *continued*

- We concur with the GRS choice of tables as summarized below:
 - **Healthy Annuitants:** RP-2000 Mortality Table with white collar adjustment projected using the AA projection table with a multiplier of 110% for males and 120% for females
 - **Active Members:** RP-2000 Mortality Table projected using the AA projection table with a multiplier of 70%
 - **Disabled:** RP-2000 Mortality Table for Disabled lives projected using the AA projection table multiplied by 150% for males and 120% for females

- However, given the sample size for disabled deaths, we would have used the same multipliers for disabled death as for healthy annuitants



Analysis of Actuarial Assumptions Employed

Withdrawal Rates

- We support the use of a select and ultimate approach for separation from active service, based on select rates that apply during a member's first five years of service
- The new termination rates generally produce fewer expected terminations relative to actual experience. We believe this to be reasonably related to expected future plan experience

Disability Rates

- GRS observed that disability experience was inconsistent with the current assumptions but recommended no change in the assumption due to the low incidence of disability in total
- We concur and suggest that, in the next experience study, the review of disability experience be expanded to a 15-year period to determine if expected patterns may be gleaned from the increase in the experience period

Analysis of Actuarial Assumptions Employed

Retirement Rates

- As a result of the last experience review study, retirement rates were adjusted to assume longer working careers including new retirement rates for age 70 to 74
- The rates for Group A male employees are a constant 25% per year that a participant is eligible. Rates for Group A female employees decline gradually from 27% to 20% over the period
- The same rates are applied to Group B employees except that at first eligibility for an unreduced benefit, the rate is doubled and at age 65 the rate is set at 50%
- The experience review supports the assumptions chosen by GRS for Group A participants. As noted by GRS, Group B retirement assumptions have no experience on which to rely
- In future experience reviews, we suggest that the plan actuary watch for emerging patterns for Group A participants that might support “bump-ups” at earliest eligibility, i.e., age 62 and age 65
- The benefit commencement age assumption for inactive members with a deferred vested benefit should be separately identified in the valuation report

Analysis of Actuarial Assumptions Employed

Benefit Election

- Currently, all retirement benefits are valued assuming members elect the single life annuity form of benefit payment with a guaranteed return of accumulated employee contributions
- The factors used to develop alternative payment forms should be reviewed with the experience study to assure that the factors remain actuarially equivalent
- For future cash flow purposes, it would be helpful to study recent benefit election forms

Marriage

- The valuation assumes all active members are married and males are assumed to be three years older than females
- We recommend the actual marital status and spouse age difference of relatively new retirees (as a proxy for active members) be examined in the next experience review, even if use of a 100% marriage assumption for death-in-service benefits continues in future valuations

Analysis of Actuarial Assumptions Employed

DROP Participation

- The 2012 valuation assumes that 15% of retiring members with at least 20 years of service will elect a “Backward DROP” which has the greatest actuarial value to the member. This is a change from the prior assumption of 20%
- DROP participation is not included in the experience review, so there is no explanation of the change
- We suggest including an explanation when an assumption is changed

Sick Leave and Service Purchases

- The valuation report does not include an assumption for these service enhancements nor does the experience review indicate where their impact may have been studied
- In Segal’s experience, these service enhancements can have an impact on emerging plan liabilities
- We encourage future experience reviews to examine this potential impact

Analysis of Actuarial Assumptions Employed

Cost-of-Living-Adjustment (COLA) and Lump-Sum Additional Benefit Payment

- We recommend additional descriptive language be included in the valuation report to describe the agreement between the Board and the City as to when a COLA may actually be adopted
- The actuary may also be able to project when such circumstances are most likely to occur in the future



Validation of Funding and Asset Valuation Methods

Funding Method for Liabilities

- The funding method used in the 2012 valuation is the Ultimate Entry Age Normal Cost Method
- Under this method, the normal cost is developed using the Group B 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 B benefits
- It is our understanding that the Board has adopted the Traditional Entry Age Normal Cost Method for the 2013 valuation to comply with the new GASB rules
- Both methods are reasonable

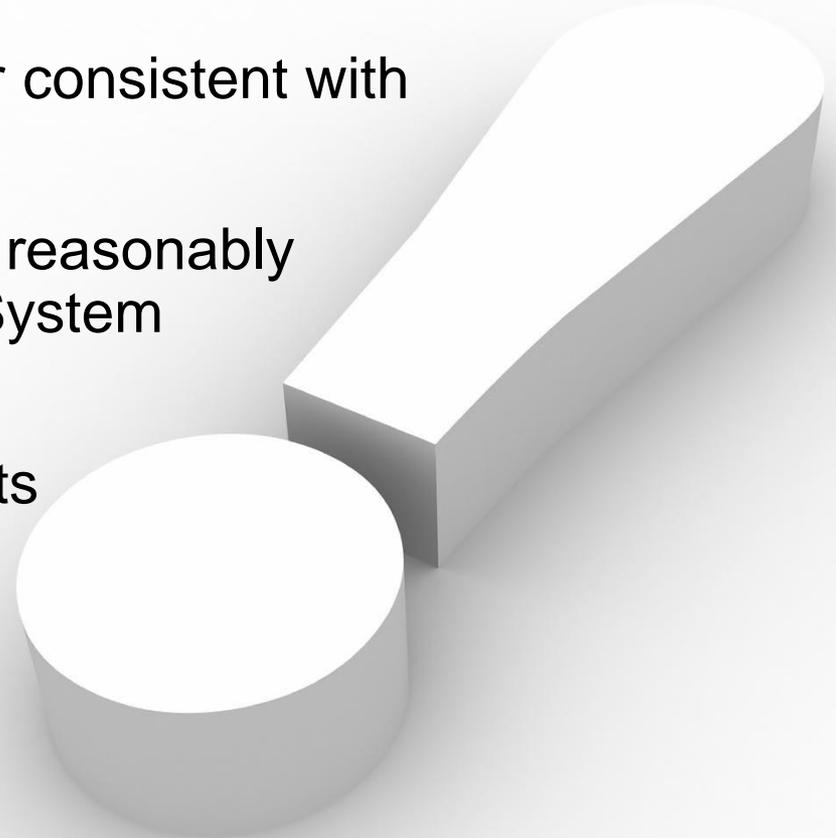
Validation of Funding and Asset Valuation Methods

Asset Valuation Method

- ASOP 44 *Selection and Use of Asset Valuation Methods for Pension Valuations* provides guidance to actuaries on the reasonableness of asset smoothing methods
- Under the current method, each year's gain or loss base is written down by 20% except for years when the following year change has an opposite sign from the prior year. In that case, the new base offsets the older base to the amount possible
- There is a 20% corridor for the assets but it is not a hard corridor. Rather, if the resultant smoothed asset value is greater than 20% away from the market value then the smoothed value is adjusted by 1/3 of the amount outside the corridor
- The 5-year asset smoothing period is sufficiently short to qualify as a reasonable method under ASOP 44
- In our opinion, the corridor, the offsetting of prior bases and the gradual move to the corridor limits could be eliminated and the asset smoothing reduced to a simple 5-year smoothing with no corridor
- We suggest that GRS model the current asset smoothing method under various economic conditions and compare the results to the simple 5-year method described above

Conclusion

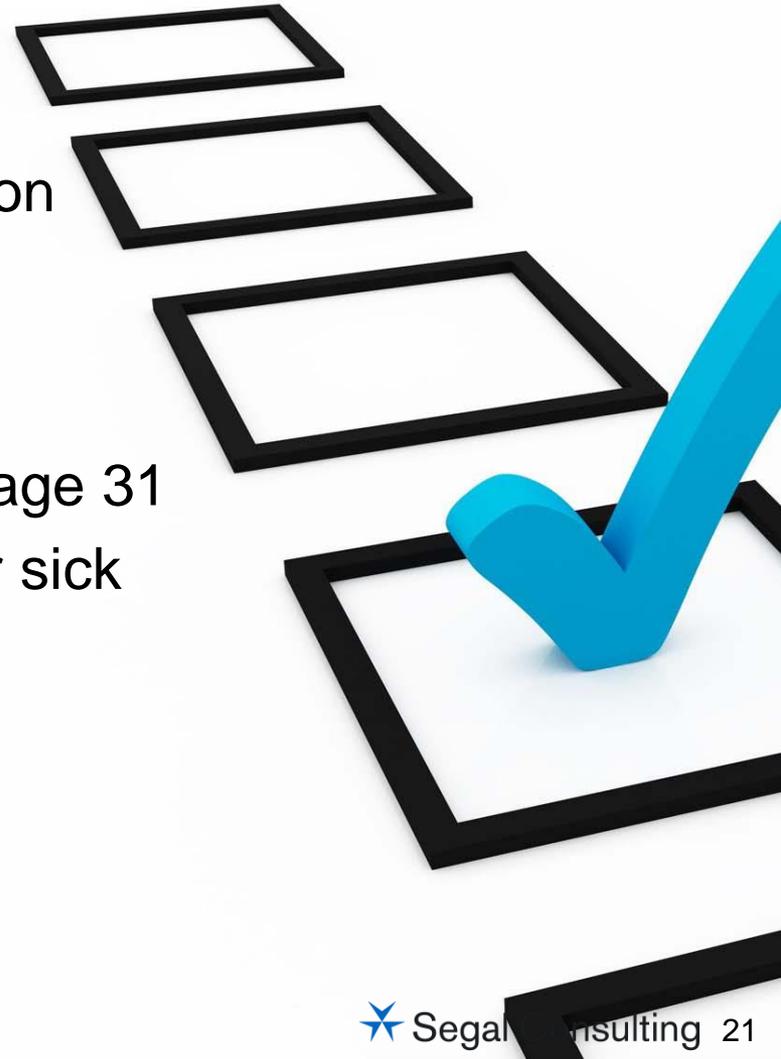
- Based on our review of the actuarial valuations from 2008 to 2012, the actuarial assumptions, methods, and procedures are reasonable and reflect the benefit promises made to plan participants
- All parameters and methods appear consistent with GASB 25 as well
- The plan's actuary appears to have reasonably valued the expected liability of the System
- GRS has applied the methodology consistently and the valuation reports generally conform to accepted actuarial principles and practices



Summary of Recommendations

Valuation Report

- Include a ten-year projection of valuation results
- Included the CAFR explanation for the derivation of the ARC
- Include additional demographic information in the statistical section
- Delineate gains and losses from other changes in plan liability
- Correct the productivity assumption on page 31
- Provide an assumption or explanation for sick leave and/or service purchases



Summary of Recommendations

Assumptions

- More credence should be given to the mortality patterns emerging from the healthy male annuitants rather than the smaller groups to improve statistical viability
- Review of disability experience should be expanded in the next assumption review to include 15 years to determine if better expectations could be developed
- Key retirement ages (earliest eligibility, age 62 and 65) should be monitored for potential emerging patterns for Group A participants
- The derivation of the assumption for DROP participation should be documented and reviewed as part of future experience studies
- Expand on the sick leave and service purchase impact on plan liabilities
- Expand on how and when a COLA and/or lump-sum adjustment could be expected

Summary of Recommendations

Methods

- We suggest that the asset smoothing method be modeled under various economic conditions and compared to a simpler and easier to follow method

