AGENDA

Date: May 8, 2020

A meeting of the Supplemental Police and Fire Pension Fund Board of Trustees will be held at 8:30 a.m. on Thursday, May 14, 2020, via telephone conference for audio at 214-271-5080 access code 588694 or Toll-Free (US & CAN): 1-800-201-5203 and Zoom meeting for visual https://us02web.zoom.us/j/83191137970?pwd=ZDJMbVdydUNxbnR0WUJ0ZDIHOXg3UT09. Password: 960272. Items of the following agenda will be presented to the Board:

A. CONSENT AGENDA

1. Approval of Minutes

   Regular meeting of April 9, 2020

2. Approval of Service Retirements
B. DISCUSSION AND POSSIBLE ACTION REGARDING ITEMS FOR
INDIVIDUAL CONSIDERATION

Actuarial Review and Actuarial Valuation Assumptions

a. Actuarial Experience Study
b. January 1, 2020 Actuarial Valuation Assumptions
Dallas Police and Fire Pension System  
Thursday, April 9, 2020  
8:30 a.m.  
Via telephone conference.

Supplemental meeting, William F. Quinn, Chairman, presiding:

ROLL CALL

Board Members

Present at 8:34 a.m.  William F. Quinn, Nicholas A. Merrick, Joseph P. Schutz, Susan M. Byrne, Steve Idoux, Gilbert A. Garcia, Mark Malveaux, Armando Garza, Allen R. Vaught, Tina Hernandez Patterson

Absent:  Robert B. French

Staff  
Kelly Gottschalk, Josh Mond, Kent Custer, Brenda Barnes, John Holt, Damion Hervey, Milissa Romero

Others  None

The meeting was called to order and recessed at 8:34 a.m.

The meeting was reconvened at 11:50 a.m.

CONSENT AGENDA

Approval of Minutes

Regular meeting of March 12, 2020

After discussion, Mr. Garcia made a motion to approve the minutes of the meeting of March 12, 2020.  Mr. Vaught seconded the motion, which was unanimously approved by the Board.
Ms. Gottschalk stated that there was no further business to come before the Board. On a motion by Ms. Byrne and a second by Ms. Hernandez Patterson, the meeting was adjourned at 11:51 a.m.

_______________________
William F. Quinn
Chairman

ATTEST:

_____________________
Kelly Gottschalk
Secretary
ITEM #B

Topic: Actuarial Review and Actuarial Valuation Assumptions

Discussion:

a. Actuarial Experience Study
b. January 1, 2020 Actuarial Valuation Assumptions

Attendees: Jeff Williams, Vice President and Actuary, Segal Consulting
Caitlin Grice, Consulting Actuary, Segal Consulting

Discussion:

a. Segal has completed an actuarial experience study for DFPF as of January 1, 2020. The primary purpose of an experience study is to compare the reasonableness of the demographic and economic assumptions used in preparing the Actuarial Valuation to the actual historical experience as well as expectations for the future. Segal will present the results of their study and may recommend the Board consider modifying certain assumptions.

b. An actuarial valuation is performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and it is an important part of the annual financial audit. Segal Consulting is preparing the January 1, 2020 actuarial valuation reports for the Regular Plan.
ITEM #B
(continued)

(Combined Plan) and the Supplemental Plan. Many economic and demographic assumptions are required to prepare the valuation.

Pursuant to Article 16, Section 67 (f)(3) of the Texas Constitution, the Board determines the assumptions used in the valuation.

**Recommendation:**

a. **Accept** the Review of Actuarial Experience and **submit** the document to the Pension Review Board.

b. **Provide** direction to Segal on the assumptions to be used in preparing the January 1, 2020 actuarial valuation reports for the Regular Plan (Combined Plan) and the Supplemental Plan.
Dallas Police and Fire Pension System

Review of Actuarial Experience

For the Period January 1, 2015 to December 31, 2019

May 14, 2020

Jeffrey S. Williams
Vice President and Actuary

Caitlin Grice
Consulting Actuary

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Agenda

Overview
Changes in Recent Years
Experience Gains and Losses in Study Period
Summary of Findings
Summary of Proposed Assumption Changes
Impact on Proposed Assumption Changes
Demographic Assumptions
Economic Assumptions
Actuarial Methods
Overview: Purpose of an Experience Study

*Why Conduct an Experience Study?*

- Review funding and asset methods
- Review recent experience and trends; compare against current actuarial assumptions and methods
- Develop information to establish recommended assumptions and methods for use in future valuations
- Avoid unnecessary contribution and accounting volatility
- Mitigate chances of inadequate funding
- Meet current industry standards
- Fiduciary responsibilities
Overview: Purpose of an Experience Study

- An experience study provides the basis for developing recommended assumptions to be used in the annual actuarial valuation
  - Performed on a periodic basis
  - Last full experience study was conducted in 2016 for the five-year period ended December 31, 2014
  - Current study is based on the period January 1, 2015 through December 31, 2019

- Actuarial Standards of Practice Statements 27 and 35 provide guidance on best practices for performing assumption-setting analysis
  - Each assumption should be the actuary’s best estimate

- Segal’s role is to make appropriate “best estimate” recommendations to the Board for each assumption

- The assumptions that are adopted will apply to both the Combined and Supplemental Plans

The assumptions are the Board’s assumptions, and the Board can adopt all, none or some of the recommendations of the actuary.
Overview: How Assumptions Are Set

- Review past experience
- Compare past experience ("actual") with assumptions ("expected")
- Determine trends – make judgments about future
- Develop component parts of each assumption
  - Maintain linkage with investments
  - Maintain internal consistency
- Keep in mind
  - No “right” answer – best estimate
  - Assumptions are long-term
Overview: Actuarial Assumptions and Methods

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Economic</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death in active service</td>
<td>Inflation</td>
<td>Cost method</td>
</tr>
<tr>
<td>Death after retirement</td>
<td>Discount rate (Investment rate of return)</td>
<td>Amortization method</td>
</tr>
<tr>
<td>- Non-disabled</td>
<td>Salary increases</td>
<td>Asset method</td>
</tr>
<tr>
<td>- Disabled</td>
<td>Payroll growth rate</td>
<td></td>
</tr>
<tr>
<td>- Contingent survivor</td>
<td>Administrative expenses</td>
<td></td>
</tr>
<tr>
<td>Withdrawal</td>
<td>COLA</td>
<td></td>
</tr>
<tr>
<td>Disability</td>
<td>DROP annuitization rate</td>
<td></td>
</tr>
<tr>
<td>Retirement</td>
<td>Non-DROP</td>
<td></td>
</tr>
<tr>
<td>- DROP</td>
<td>Non-DROP</td>
<td></td>
</tr>
<tr>
<td>Percent Married/Spouse Age</td>
<td>Percent Married/Spouse Age</td>
<td></td>
</tr>
</tbody>
</table>
Changes With Last Experience Study

The last experience study was completed for the period January 1, 2010 to December 31, 2014; changes were implemented in the January 1, 2016 valuation.

<table>
<thead>
<tr>
<th>Valuation</th>
<th>Assumption/Method Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 2016</td>
<td>Updated mortality tables and added generational projection</td>
</tr>
<tr>
<td></td>
<td>Changed to service-based turnover rates</td>
</tr>
<tr>
<td></td>
<td>Revised disability rates, changed to one set for all</td>
</tr>
<tr>
<td></td>
<td>Revised retirement rates, changed to separate rates for Police &amp; Fire</td>
</tr>
<tr>
<td></td>
<td>Percent married lowered from 80% to 75%</td>
</tr>
<tr>
<td></td>
<td>Youngest child age raised from 1 to 10 years old</td>
</tr>
<tr>
<td></td>
<td>Revised salary scale; changed to separate rates for Police &amp; Fire</td>
</tr>
<tr>
<td></td>
<td>Payroll growth assumption lowered from 4% to 2.75%</td>
</tr>
<tr>
<td></td>
<td>Added explicit assumption for administrative expenses of $10 million per year</td>
</tr>
<tr>
<td></td>
<td>Asset smoothing period transitioned from 10 years to 5 years</td>
</tr>
</tbody>
</table>

### Changes In Recent Years

**Changes Since Last Experience Study**

- The following summarizes the assumption, plan, and method changes implemented since January 1, 2017.

<table>
<thead>
<tr>
<th>Valuation</th>
<th>Assumption/Method Changes</th>
<th>Plan Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 2017</td>
<td>Revision to retirement rates, change to separate rates for DROP and non-DROP&lt;br&gt;DROP utilization assumed to be 0% for future retirees&lt;br&gt;Separate retirement age added for new terminated vested participants&lt;br&gt;Revision to salary scale&lt;br&gt;Administrative expenses updated to be the greater of $10 million per year or 1% of computation pay</td>
<td>NRA increased to age 58&lt;br&gt;ERA increased to age 53&lt;br&gt;Benefit multiplier for future service lowered from 3% to 2.5%&lt;br&gt;Benefit multiplier retroactively increased to 2.5% for members hired on or after March 1, 2011&lt;br&gt;Benefit multipliers for 20 &amp; Out benefit lowered and begin at later ages</td>
</tr>
<tr>
<td></td>
<td>Interest on DROP account balances as of September 1, 2017 decreased from 6% to 2.75%&lt;br&gt;COLA assumed to begin October 1, 2049</td>
<td>Maximum benefit reduced from 96% of computation pay to 90%&lt;br&gt;Average computation pay changed from 36 months to 60 months for future service&lt;br&gt;COLA discontinued for all members&lt;br&gt;Restructured DROP benefit&lt;br&gt;Member contribution rate increased to 13.5%&lt;br&gt;City’s contribution rate increased to minimum of 34.5%</td>
</tr>
<tr>
<td>January 1, 2018</td>
<td>Administrative expenses lowered to the greater of $8.5 million per year or 1% of computation pay&lt;br&gt;Interest on DROP account balances as of September 1, 2017 increased from 2.75% to 3%&lt;br&gt;COLA beginning date moved back to October 1, 2053</td>
<td>DROP revocation window opened from September 1, 2017 through February 28, 2018</td>
</tr>
<tr>
<td>January 1, 2019</td>
<td>Revision to salary scale&lt;br&gt;COLA beginning date moved forward to October 1, 2050</td>
<td>None</td>
</tr>
</tbody>
</table>
Experience Gains and Losses in Study Period

Gain/(Loss) Experience for Years Ending December 31, 2015 to 2019

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td>-9.02%</td>
<td>-0.04%</td>
<td>-0.29%</td>
<td>-0.82%</td>
<td>-0.99%</td>
</tr>
<tr>
<td>Non-Investment</td>
<td>-1.00%</td>
<td>-0.94%</td>
<td>-1.15%</td>
<td>1.31%</td>
<td>-1.40%</td>
</tr>
<tr>
<td>Total</td>
<td>-10.02%</td>
<td>-0.98%</td>
<td>-1.44%</td>
<td>0.49%</td>
<td>-2.39%</td>
</tr>
</tbody>
</table>

*2015 investment results reflect one-time write-downs in asset values
**2019 results based on preliminary financial statements
Summary of Findings

- Preliminary December 31, 2019 market value of assets were used for purposes of the study; results will change once assets are finalized.

- Due to the plan changes implemented in 2017 and the run-up to those changes in 2016 and 2017, turnover and retirement experience during that timeframe was greater than normal.

- Over the five-year period, DROP retirement experience was close to expected, with DROP retirements in 2016 and 2017 much greater than expected, and DROP retirements in 2018 and 2019 much less than expected.

- Mortality experience in total was close to expected.

- Prior to any assumption or method changes, preliminary January 1, 2020 actuarial valuation results show a 2.85% increase in the actuarial accrued liability (AAL), a 9.58% increase in the total normal cost (NC), and a 5.64% ($8.6M) increase in the actuarially determined contribution (ADC).

- If all assumption and method changes recommended in this experience review are adopted, prior to any discount rate changes, the AAL increases by 1.69% and the NC increases by 3.97%. With the current 2.75% payroll growth assumption, the ADC increases by 4.15% ($6.7M); once the payroll growth assumption drops to 2.50%, the ADC increases by an additional 2.54% ($4.2M).

- The 2019 ADC was $152.1M, the preliminary 2020 ADC is $160.7M, and the ADC with all recommended assumption changes, prior to any discount rate changes, is $171.6M.

- Each 25 basis point drop in the discount rate equates to approximately a $124 - $136 Million increase in AAL, a $4.1 - $4.8 Million increase in Total Normal Cost, and a $7.4 - $8.1 Million increase in the ADC.
<table>
<thead>
<tr>
<th>Assumption</th>
<th>Current Assumption</th>
<th>Proposed Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Retiree &amp; Dependent Spouse Mortality</td>
<td>RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward two years for females</td>
<td>Pub-2010 Public Safety Retiree Amount-weighted Mortality Table, set back one year for females</td>
</tr>
<tr>
<td>Contingent Beneficiary Mortality</td>
<td>RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward two years for females</td>
<td>Pub-2010 Public Safety Contingent Survivor Amount-weighted Mortality Table, set back one year for females</td>
</tr>
<tr>
<td>Disabled Life Mortality</td>
<td>RP-2014 Disabled Retiree Mortality Table, set back three years for males and females</td>
<td>Pub-2010 Public Safety Disabled Retiree Amount-weighted Mortality Table, set forward four years for males and females</td>
</tr>
<tr>
<td>Pre-Retirement Mortality</td>
<td>RP-2014 Employee Mortality Table, set back two years for males</td>
<td>Pub-2010 Public Safety Employee Amount-weighted Mortality Table, set forward five years for males</td>
</tr>
<tr>
<td>Mortality Improvement</td>
<td>Projected generationally with Scale M-2015</td>
<td>Projected generationally with Scale M-2019</td>
</tr>
<tr>
<td>Turnover</td>
<td>Separate service-based rates for Fire and Police; rates zero out after 37 years of service</td>
<td>Modify existing service-based rates for both Fire and Police; new rates zero out after 24 years of service</td>
</tr>
<tr>
<td>Disability</td>
<td>Age-based rates; rates zero out after age 54</td>
<td>No change</td>
</tr>
<tr>
<td>Service-Related Disability</td>
<td>100% of disabilities assumed service-related</td>
<td>No change</td>
</tr>
<tr>
<td>DROP Retirement</td>
<td>Separate age-based rates for Fire and Police, with 100% retirement at age 67 or after eight years in DROP</td>
<td>Increase existing age-based rates for most ages, move up 100% retirement to age 65 and move back 100% retirement to ten years in DROP</td>
</tr>
<tr>
<td>DROP Utilization</td>
<td>No members are assumed to elect to enter the DROP</td>
<td>No change</td>
</tr>
<tr>
<td>Assumption</td>
<td>Current Assumption</td>
<td>Proposed Assumption</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DROP Annuitization Interest</td>
<td>3.00% on account balances as of September 1, 2017, payable upon retirement</td>
<td>2.75% on account balances as of September 1, 2017, payable upon retirement</td>
</tr>
<tr>
<td>Non-DROP Retirement</td>
<td>Three separate age-based rates based on hire date and service, with 100% retirement at age 62 or after benefit multiplier hits 90% maximum</td>
<td>Decrease the existing age-based rates for most ages; simplify rates from three separate rates to two</td>
</tr>
<tr>
<td>Terminated Vested Retirement</td>
<td>Age 50 if terminate pre-September 1, 2017; Age 58 if terminate on or after September 1, 2017</td>
<td>No change to retirement ages; in addition, an assumption has been added that 75% of those who terminate with a vested benefit prior to age 40 will take a cash out at age 40</td>
</tr>
<tr>
<td>Percent Married</td>
<td>75% for Males and Females</td>
<td>No change</td>
</tr>
<tr>
<td>Spousal Age Difference</td>
<td>Females three years younger than males</td>
<td>No change</td>
</tr>
<tr>
<td>Inflation</td>
<td>2.75%</td>
<td>2.50%</td>
</tr>
<tr>
<td>Investment Return</td>
<td>7.25%</td>
<td>Between 6.50% - 7.25%</td>
</tr>
<tr>
<td>Payroll Growth</td>
<td>2.75%</td>
<td>2.50%</td>
</tr>
<tr>
<td>Salary Scale</td>
<td>Separate service-based salary scales based on rank, with rates ranging from 0.00% to 5.00% with an ultimate rate of 2.00%</td>
<td>Separate salary scales based on rank as stated in the 2019 Meet and Confer agreement with an ultimate rate of 2.50%</td>
</tr>
<tr>
<td>Administrative Expenses</td>
<td>Greater of $8,500,000 per year or 1% of computation pay</td>
<td>No change</td>
</tr>
<tr>
<td>Cost-of-Living Adjustment (COLA)</td>
<td>2.00% per year beginning the year System is projected to be 70% funded on a market value basis (currently, October 1, 2050)</td>
<td>No change; Segal will revisit once financials are finalized and funding projections are updated</td>
</tr>
</tbody>
</table>
Impact of Proposed Assumption Changes
Impact of Proposed Assumption Changes

The following chart provides the estimated impact of the assumption and method changes, based on the preliminary January 1, 2020 valuation results; results will change once final assets are available.

<table>
<thead>
<tr>
<th>Description</th>
<th>January 1, 2019 Valuation Results</th>
<th>January 1, 2020 Preliminary Valuation Results</th>
<th>Recommended Demographic, Salary Scale, and Inflation/Payroll Growth Changes</th>
<th>Recommended Changes with Discount Rate Change to 7.00%</th>
<th>Recommended Changes with Discount Rate Change to 6.75%</th>
<th>Recommended Changes with Discount Rate Change to 6.50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Actuarial Accrued Liability (AAL)</td>
<td>$4,494,822,503</td>
<td>$4,622,977,965</td>
<td>$4,700,999,452</td>
<td>$4,825,477,065</td>
<td>$4,955,810,580</td>
<td>$5,092,348,320</td>
</tr>
<tr>
<td>3 Unfunded Actuarial Accrued Liability (UAAL)</td>
<td>$2,332,922,841</td>
<td>$2,462,204,635</td>
<td>$2,540,226,122</td>
<td>$2,664,703,735</td>
<td>$2,795,037,250</td>
<td>$2,931,574,990</td>
</tr>
<tr>
<td>4 Employer Normal Cost</td>
<td>11,579,396</td>
<td>12,369,896</td>
<td>14,280,748</td>
<td>18,353,799</td>
<td>22,774,772</td>
<td>27,577,091</td>
</tr>
<tr>
<td>5 Payment on UAAL</td>
<td>135,274,585</td>
<td>142,770,993</td>
<td>147,295,070</td>
<td>151,402,406</td>
<td>154,692,797</td>
<td>157,971,527</td>
</tr>
<tr>
<td>6 Total Recommended Contribution adjusted for Timing [(4) + (5) + Interest]</td>
<td>$152,084,297</td>
<td>$160,666,349</td>
<td>$167,330,464</td>
<td>$171,584,085</td>
<td>$179,000,791</td>
<td>$186,746,881</td>
</tr>
<tr>
<td>7 Recommended Contribution as a % of Projected Payroll</td>
<td>41.88%</td>
<td>40.73%</td>
<td>42.13%</td>
<td>43.20%</td>
<td>45.07%</td>
<td>47.02%</td>
</tr>
<tr>
<td>8 Projected Payroll</td>
<td>$363,117,415</td>
<td>$394,431,301</td>
<td>$397,161,078</td>
<td>$397,161,078</td>
<td>$397,161,078</td>
<td>$397,161,078</td>
</tr>
<tr>
<td>9 Funded Ratio – AWA Basis</td>
<td>48.10%</td>
<td>46.74%</td>
<td>45.96%</td>
<td>45.96%</td>
<td>44.78%</td>
<td>43.60%</td>
</tr>
<tr>
<td>10 Funded Ratio – MVA Basis</td>
<td>45.43%</td>
<td>44.58%</td>
<td>43.84%</td>
<td>43.84%</td>
<td>42.71%</td>
<td>41.59%</td>
</tr>
</tbody>
</table>

*Based on market value of assets of $2,041,914,130 for 2019 and $2,060,965,120 for 2020
Demographic Assumptions
Demographic Assumptions

*Mortality*

- **Current Assumptions**
  - **Healthy Pre-Retirement**: RP-2014 Employee Mortality Table, set back two years for males
  - **Healthy Post-Retirement**: RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward two years for females
  - **Disabled Lives**: RP-2014 Disabled Retiree Mortality Table, set back three years for males and females
Demographic Assumptions

*Mortality*

- **Findings**
  - **Post-Retirement Mortality**
    - Most important component of mortality assumptions; determines duration over which retirement benefits are paid
    - 368 retiree deaths compared to 368 expected deaths; actual deaths were 100% of the expected count
    - 168 beneficiary deaths compared to 215 expected deaths; actual deaths were 78% of the expected count
  - **Disabled Life Mortality**
    - 38 deaths compared to 29 expected deaths; actual deaths were 131% of the expected count
  - **Pre-Retirement Mortality**
    - 40 deaths compared to 25 expected deaths; actual deaths were 160% of the expected count
Demographic Assumptions

*Mortality*

- In January 2019, the Society of Actuaries released new mortality tables for public sector employees. This Pub-2010 family of tables includes separate mortality rates for General Employees, Teachers, and Public Safety.
- Within each Pub-2010 subgroup, there are separate tables for employees, retirees, disabled retirees, and contingent beneficiaries.
Demographic Assumptions

*Mortality*

➢ **Recommendations** – Updates to base mortality tables and generational projection scales

• **Healthy Pre-Retirement:** Pub-2010 Public Safety Employee Amount-weighted Mortality Table, set forward five years for males

• **Healthy Post-Retirement**
  – Retiree & Dependent Spouse: Pub-2010 Public Safety Retiree Amount-weighted Mortality Table, set back one year for females
  – Contingent Beneficiary: Pub-2010 Public Safety Contingent Survivor Amount-weighted Mortality Table, set back one year for females

• **Disabled Lives:** Pub-2010 Public Safety Disabled Retiree Amount-weighted Mortality Table, set forward four years for males and females

➢ **Methodology for Setting Assumption**

• Based on a Public Policy Practice Note released by the American Academy of Actuaries entitled “Selecting and Documenting Mortality Assumptions for Pensions,” Segal used the Pub-2010 Headcount-Weighted tables to establish a reasonable match of proposed mortality rates to actual death rates.

• The corresponding Amount-Weighted tables are set as the assumptions upon which the liabilities are based.
Demographic Assumptions

*Mortality – Illustration of current and proposed post-retirement assumptions*

As noted previously, the post-retirement mortality assumption is the most crucial of the mortality assumptions, and for Dallas Police and Fire, most of the retirees are male. The new assumption for retirees takes the most current published tables into account, but does not differ significantly from the assumption already in use, which accurately predicted the number of deaths during the study period. The new retiree rates are lower at younger ages, and higher at later ages. The new beneficiary tables assume lower death rates, to better align with experience.
Demographic Assumptions

*Mortality Improvement*

▶ **Current Assumptions**
– Actuarial Standards of Practice require a provision to allow for improvements in mortality
– All assumed mortality tables for Dallas Police and Fire are projected generationally the MP-2015 projection scale
– Generational projection adjusts the mortality rates each year, so that participants with later birth dates are expected to live longer

▶ **Findings**
– The Society of Actuaries has updated the MP scales annually, based on updated national experience
– In general, the expectation for longevity improvement has declined over the last five years

▶ **Recommendation**
• We recommend that the MP-2019 projection scale be applied to the new Pub-2010 tables
Demographic Assumptions

*Turnover Rates*

- **Current Assumptions**
  - Service-based rates with rates decreasing with longer service
  - Rates differ for Fire and Police
  - Rates for Police higher than for Fire
  - No termination assumed for active participants in DROP
  - Rates do not apply once eligible for normal retirement
  - Terminating participants are assumed to take a deferred annuity if they are eligible unless their contribution refund has greater actuarial value

- **Findings**
  - **Fire:** 229 terminations compared to 102 expected
  - **Police:** 593 terminations compared to 346 expected
  - Data continues to support a purely service-based assumption
  - High turnover during 2016-2017 skews overall results
  - The refund assumption has limited impact, due to the low level of turnover
Demographic Assumptions

*Turnover Rates*

- **Recommendations**
  - Maintain service-based format for the assumption
  - For both groups, lower ultimate year turnover assumed from 38 years of service to 25 years of service
  - For Fire, increase the rates for the first 24 years
  - For Police, increase the rates for the first 15 years, with a slight decrease for participants with one year of service
  - Maintain the current assumption that all terminated participants elect an annuity or refund based on which has the greater actuarial value
  - The following graphs show current expected rates, actual rates during the study period, and the proposed rates for the Fund for both Fire and Police

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5.50%</td>
<td>10.00%</td>
<td>14.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>1</td>
<td>4.50%</td>
<td>5.50%</td>
<td>6.00%</td>
<td>5.50%</td>
</tr>
<tr>
<td>2</td>
<td>4.00%</td>
<td>5.50%</td>
<td>5.50%</td>
<td>5.50%</td>
</tr>
<tr>
<td>3</td>
<td>3.50%</td>
<td>5.50%</td>
<td>5.00%</td>
<td>5.50%</td>
</tr>
<tr>
<td>4</td>
<td>3.00%</td>
<td>5.50%</td>
<td>4.50%</td>
<td>5.50%</td>
</tr>
<tr>
<td>5</td>
<td>1.50%</td>
<td>5.50%</td>
<td>4.00%</td>
<td>5.50%</td>
</tr>
<tr>
<td>6</td>
<td>1.00%</td>
<td>5.50%</td>
<td>3.50%</td>
<td>3.50%</td>
</tr>
<tr>
<td>7</td>
<td>0.75%</td>
<td>1.00%</td>
<td>3.00%</td>
<td>3.50%</td>
</tr>
<tr>
<td>8</td>
<td>0.50%</td>
<td>1.00%</td>
<td>2.50%</td>
<td>3.50%</td>
</tr>
<tr>
<td>9</td>
<td>0.50%</td>
<td>1.00%</td>
<td>2.00%</td>
<td>3.50%</td>
</tr>
<tr>
<td>10</td>
<td>0.50%</td>
<td>1.00%</td>
<td>1.00%</td>
<td>3.50%</td>
</tr>
<tr>
<td>11 – 14</td>
<td>0.50%</td>
<td>1.00%</td>
<td>1.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>15 – 24</td>
<td>0.50%</td>
<td>1.00%</td>
<td>1.00%</td>
<td>1.00%</td>
</tr>
<tr>
<td>25 – 37</td>
<td>0.50%</td>
<td>0.00%</td>
<td>1.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>38 &amp; over</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>
Demographic Assumptions

Turnover Rates by Service – Fire

Although turnover rates extend beyond 19 years of service, the number of exposures during the period was quite small for 20 years and over, thus those rates are excluded from the chart.
Demographic Assumptions

**Turnover Rates by Service - Police**

Although turnover rates extend beyond 19 years of service, the number of exposures during the period was quite small for 20 years and over, thus those rates are excluded from the chart.
Demographic Assumptions

**Disability Rates**

- **Current Assumptions**
  - The current rates are age-based
  - 100% of disabilities are assumed to be service-related

- **Findings**
  - The actual disability awards have been the same as expected
  - 7 actual disabilities compared to 7 expected; actual 100% of expected

- **Recommendations**
  - Maintain current disability rates and service-related percentage
  - A summary of the current rates are listed
  - These rates are in line with disability rates for other Texas public safety plans, including San Antonio and Fort Worth

<table>
<thead>
<tr>
<th>Age</th>
<th>Current Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.010%</td>
</tr>
<tr>
<td>25</td>
<td>0.015%</td>
</tr>
<tr>
<td>30</td>
<td>0.020%</td>
</tr>
<tr>
<td>35</td>
<td>0.025%</td>
</tr>
<tr>
<td>40</td>
<td>0.030%</td>
</tr>
<tr>
<td>45</td>
<td>0.035%</td>
</tr>
<tr>
<td>50</td>
<td>0.040%</td>
</tr>
</tbody>
</table>
Demographic Assumptions

*Retirement Rates*

- **Current Assumptions**
  - Five separate sets of retirement rates; separate rates for DROP and non-DROP participants
  - Currently, applicable rates are age-based
  - For DROP participants:
    - Separate rates for Fire and Police
    - The retirement rate is set to 100% after eight years in DROP
  - For non-DROP participants:
    - Same rates for Fire and Police
    - The retirement rate is set to 100% once benefit multiplier hits 90% maximum
Demographic Assumptions

*Retirement Rates*

- **Findings for DROP participants**
  - Retirement experience lower than expected for Fire but greater than expected for Police
    - Fire: 346 actual retirements compared to 392 expected
    - Police: 555 actual retirements compared to 494 expected
  - Much greater than expected retirement in 2017 followed by much lower than expected retirement during 2018 and 2019 skewed overall results
  - 35% of retirements during the five year period occurred during 2017
  - Heavier emphasis placed on experience in 2018 and 2019 when setting rates

- **Findings for non-DROP participants**
  - Retirement experience lower than expected
    - 228 actual retirements compared to 282 expected
  - Much greater than expected retirement in 2016 skewed overall results
  - 45% of retirements during the five-year period occurred during 2016
Demographic Assumptions

Retirement Rates

- **Recommendations for DROP participants**
  - Increase retirement rates for most ages and move up 100% retirement to age 65
  - Move back 100% retirement rate from eight years in DROP to ten years in DROP
  - The current and proposed assumed retirement rates for active participants in DROP are provided below

<table>
<thead>
<tr>
<th>Age</th>
<th>Current Fire Rates</th>
<th>Proposed Fire Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 50</td>
<td>0.75%</td>
<td>0.75%</td>
</tr>
<tr>
<td>50 – 51</td>
<td>2.50%</td>
<td>0.75%</td>
</tr>
<tr>
<td>52 – 54</td>
<td>2.50%</td>
<td>10.00%</td>
</tr>
<tr>
<td>55 – 57</td>
<td>12.00%</td>
<td>15.00%</td>
</tr>
<tr>
<td>58</td>
<td>12.00%</td>
<td>40.00%</td>
</tr>
<tr>
<td>59 – 62</td>
<td>25.00%</td>
<td>40.00%</td>
</tr>
<tr>
<td>63 – 64</td>
<td>25.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>65 – 66</td>
<td>30.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>67</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Current Police Rates</th>
<th>Proposed Police Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 50</td>
<td>1.00%</td>
<td>1.00%</td>
</tr>
<tr>
<td>50</td>
<td>3.00%</td>
<td>10.00%</td>
</tr>
<tr>
<td>51 – 52</td>
<td>3.00%</td>
<td>15.00%</td>
</tr>
<tr>
<td>53</td>
<td>7.00%</td>
<td>15.00%</td>
</tr>
<tr>
<td>54</td>
<td>7.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>55</td>
<td>15.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>56 – 57</td>
<td>20.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>58 – 62</td>
<td>25.00%</td>
<td>30.00%</td>
</tr>
<tr>
<td>63</td>
<td>25.00%</td>
<td>40.00%</td>
</tr>
<tr>
<td>64</td>
<td>25.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>65-66</td>
<td>50.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>67</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Demographic Assumptions

Retirement Rates – Fire in DROP

- Expected Rate
- Actual Rate
- Proposed Rate

Graph showing retirement rates for different age groups.
Demographic Assumptions

Retirement Rates – Police in DROP

- Expected Rate
- Actual Rate
- Proposed Rate

Under 50, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67+

0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%
Demographic Assumptions

**DROP Utilization and Annuitization Interest**

- **DROP Utilization**
  - Current Assumption: No members are assumed to elect to enter the DROP
  - In 2018 and 2019, new DROP entrants were primarily participants who have already reached their maximum years of pensionable service
  - Recommendation: Maintain current assumption

- **DROP Annuitization Interest**
  - Current Assumption: 3.00% on account balances as of September 1, 2017, payable upon retirement
  - Recommendation: Change to 2.75%; assumption reviewed annually and changed as necessary based on feedback from the Fund Office
Demographic Assumptions

*Retirement Rates*

- **Recommendations for non-DROP participants**
  - Decrease retirement rates for most ages
  - The current and proposed assumed retirement rates for active participants *not* in the DROP are provided below; no one hired on or after March 1, 2011 retired during the study period

<table>
<thead>
<tr>
<th>Age</th>
<th>Hired prior to March 1, 2011 Current Rates</th>
<th>Hired on or after March 1, 2011 Current Rates</th>
<th>Proposed Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 50</td>
<td>0.00%</td>
<td>1.00%</td>
<td>1.00%</td>
</tr>
<tr>
<td>50</td>
<td>10.00%</td>
<td>5.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>51 – 53</td>
<td>5.00%</td>
<td>5.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>54</td>
<td>5.00%</td>
<td>10.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>55</td>
<td>15.00%</td>
<td>20.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>56</td>
<td>10.00%</td>
<td>30.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>57</td>
<td>5.00%</td>
<td>40.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>58</td>
<td>60.00%</td>
<td>50.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>59 – 60</td>
<td>50.00%</td>
<td>50.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>61</td>
<td>50.00%</td>
<td>50.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>62</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Demographic Assumptions

Retirement Rates – Members hired prior to March 1, 2011 with at least 20 years of service as of September 1, 2017
Demographic Assumptions

*Retirement Rates – Members hired prior to March 1, 2011 with less than 20 years of service as of September 1, 2017*
Demographic Assumptions

Retirement Rates – Terminated Vested Participants

• Current Assumptions
  – Members who terminated prior to September 1, 2017 retire at age 50
  – Members who terminated on or after September 1, 2017 retire at age 58

• Findings
  – 147 terminated vested participants either retired or cashed out during the study period
    • 39, or 26.5%, retired at average age 50
    • 108, or 73.5%, cashed out at average age 38

• Recommendations
  – Maintain same age 50 and 58 retirement assumptions
  – As participants begin to terminate with a vested benefit with most of their service earned beginning on or after September 1, 2017, it is believed they will retire at a later age in accordance with the plan provisions that were effective September 1, 2017
  – Add an assumption that 75% of those who terminate with a vested benefit prior to age 40 take a lump sum cash out at age 40
Demographic Assumptions

Spousal Assumptions

• Current Assumptions
  – 75% of participants, regardless of sex, are assumed to have a spouse upon retirement or death from active status
  – Males are assumed to be three years older than their spouses at retirement

• Findings
  – Approximately 78% of participants were married at the time of retirement
  – The beneficiaries of male participants were approximately 2.6 years younger, while the beneficiaries of female participants were approximately 0.5 years older
  – The 2017 results appear to be an anomaly; the beneficiaries of female participants were 2.3 years older, on average, for the other four years
  – The number of female exposures is significantly lower than male exposures

• Recommendations
  – Maintain the percent married assumption of 75%
  – Maintain the assumption males are three years older than their spouses at retirement
Economic Assumptions
Economic Assumptions

Building Blocks

These economic assumptions have two or three components (or building blocks).

INVESTMENT RATE OF RETURN (Discount Rate)

Real Rate of Return

Inflation

SALARY INCREASES

Merit/Promotion

Productivity

Inflation

PAYROLL GROWTH

Productivity

Inflation

Building blocks must be consistent across all economic assumptions.
Economic Assumptions

**Inflation**

- **Current Assumption:** 2.75%
- **2019 OASDI Trustees Report:** 2.0% for high-cost projection and 3.2% for low-cost projection
- **Historical (through December 2019):**

<table>
<thead>
<tr>
<th>Average Annual Change in CPI-U</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Last 5 Years</td>
<td>1.82%</td>
</tr>
<tr>
<td>Last 10 Years</td>
<td>1.75%</td>
</tr>
<tr>
<td>Last 20 Years</td>
<td>2.14%</td>
</tr>
<tr>
<td>Last 30 Years</td>
<td>2.40%</td>
</tr>
<tr>
<td>Last 100 Years</td>
<td>2.64%</td>
</tr>
</tbody>
</table>

  – Reasonable Range Based on OASDI Study and Other Public Sector Plans: 2.00% – 2.75%

- **Recommendation**
  - Lower to 2.50%
Economic Assumptions

*Investment Return*

- **Current Assumption:** 7.25%
- NASRA Survey, February 2020
  - Less than 35% now have assumptions at 7.50% or above (was 50% two years ago)
  - Median has decreased to 7.25% (was 7.50% two years ago and 8.00% in 2010)
  - Average assumption is 7.22%

Source: Compiled by NASRA based on Public Fund Survey, February 2020
Economic Assumptions

*Investment Return*

NASRA Public Fund Survey: Summary of Findings for FY 2018
Updated December 2019

Change in Average Asset Allocations, FY 04 to FY 18

- **Equities**: 48.4%
- **Fixed Income**: 23.3%
- **RE**: 7.3%
- **Alts**: 18.9%
- **Cash/Other**: 2.0%

**FY18 Average**

Source: Compiled by NASRA based on Public Fund Survey, December 2019
Economic Assumptions

**Investment Return**

- The chart below shows actuarial value and market value investment returns over the five-year period ending December 31, 2019.

- As shown below, the Fund’s returns as recognized under the asset smoothing method have generally fallen short of return expectations over the prior five years.

<table>
<thead>
<tr>
<th>Year Ended</th>
<th>Actuarial Value Investment Return</th>
<th>Market Value Investment Return</th>
<th>Assumed Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 31, 2015</td>
<td>-24.03%*</td>
<td>-8.47%</td>
<td>7.25%</td>
</tr>
<tr>
<td>December 31, 2016</td>
<td>7.16%</td>
<td>6.82%</td>
<td>7.25%</td>
</tr>
<tr>
<td>December 31, 2017</td>
<td>6.63%</td>
<td>4.74%</td>
<td>7.25%</td>
</tr>
<tr>
<td>December 31, 2018</td>
<td>5.48%</td>
<td>2.09%</td>
<td>7.25%</td>
</tr>
<tr>
<td>December 31, 2019</td>
<td>5.08%</td>
<td>6.41%</td>
<td>7.25%</td>
</tr>
<tr>
<td>Average</td>
<td>-7.17%</td>
<td>1.51%</td>
<td></td>
</tr>
</tbody>
</table>

*Includes re-setting of actuarial value of assets to market value of assets as of December 31, 2015; prior to the re-set, the actuarial value investment return was -9.24%.
Economic Assumptions

**Investment Return**

- Reasonable range based on inflation assumption of 2.00% to 2.75% and target asset allocation is 6.50% to 7.25%
- There is currently a 4.50% point spread between the inflation assumption of 2.75% and the return assumption of 7.25%
- This spread does not have to be maintained; however, note that if the spread increases this implies the real rate of return on assets has increased

**Recommendation**
- Based on target asset allocation and projected future earnings, we recommend a discount rate between 6.50% and 7.25%
Economic Assumptions

*Payroll Growth*

- **Current Assumption:** 2.75% overall payroll growth

- **Comments**
  - Used to determine the amortization payment on the Unfunded Actuarial Accrued Liability (UAAL)
  - Payment on UAAL expected to increase at payroll growth rate
  - Usually equivalent to inflation assumption or inflation plus productivity

- **Recommendation**
  - Decrease long-term payroll growth assumption to 2.50% alongside reduction in inflation assumption
## Economic Assumptions

### Payroll Growth

<table>
<thead>
<tr>
<th>Valuation Date</th>
<th>City’s Hiring Plan Payroll</th>
<th>Percent Change in Hiring Plan Payroll</th>
<th>Projected Valuation Payroll</th>
<th>Percent Change in Valuation Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 2015</td>
<td></td>
<td></td>
<td>$383,006,330</td>
<td></td>
</tr>
<tr>
<td>January 1, 2016</td>
<td></td>
<td></td>
<td>365,210,426</td>
<td>-4.65%</td>
</tr>
<tr>
<td>January 1, 2017</td>
<td>$372,000,000</td>
<td>-2.15%</td>
<td>357,414,472</td>
<td>-2.13%</td>
</tr>
<tr>
<td>January 1, 2018</td>
<td>364,000,000</td>
<td>346,036,690</td>
<td>-3.18%</td>
<td></td>
</tr>
<tr>
<td>January 1, 2019</td>
<td>383,000,000</td>
<td>363,117,415</td>
<td>4.94%</td>
<td></td>
</tr>
<tr>
<td>January 1, 2020</td>
<td>396,000,000</td>
<td>397,161,078</td>
<td>9.38%</td>
<td></td>
</tr>
<tr>
<td>Average growth over past five years</td>
<td></td>
<td></td>
<td></td>
<td>0.73%</td>
</tr>
</tbody>
</table>
Economic Assumptions

**Salary Scale**

- **Current Assumptions**
  - Service-based table with rates ranging from 0.00% to 5.00% with an ultimate rate of 2.00%
  - Separate rates for each rank
  - Based on 2016 Meet and Confer Agreement, as amended in 2018

- **Recommendation**
  - Updated rates based on 2019 Meet and Confer agreement
  - Tables on the next page show the current assumption and the proposed assumption
  - Bargaining assumed to occur again after three years, and the long-term rates are assumed to be lower than the current agreement for some members
### Economic Assumptions

**Salary Scale**

<table>
<thead>
<tr>
<th>Years of Service</th>
<th>Officers &amp; Officer Trainees</th>
<th>Corporals, Drivers &amp; Senior Officers</th>
<th>Sergeants, Lieutenants, Captains &amp; Majors</th>
<th>Deputy Chiefs</th>
<th>Assistant Chiefs</th>
<th>Chiefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.00%</td>
<td>0.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>2</td>
<td>0.00%</td>
<td>2.75%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>3</td>
<td>2.75%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>4 – 6</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>7</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>2.00%</td>
<td>5.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>8</td>
<td>2.00%</td>
<td>5.00%</td>
<td>5.00%</td>
<td>2.00%</td>
<td>5.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>9 – 11</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>5.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>12 – 14</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>15+</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>2.00%</td>
</tr>
</tbody>
</table>

### Proposed Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Officers</th>
<th>Corporals, Drivers, Senior Officers &amp; Chiefs</th>
<th>Sergeants, Lieutenants, Captains, Majors, Deputy Chiefs &amp; Assistant Chiefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 – 2022</td>
<td>3.25%</td>
<td>3.00%</td>
<td>2.50%</td>
</tr>
<tr>
<td>2023+</td>
<td>2.50%</td>
<td>2.50%</td>
<td>2.50%</td>
</tr>
</tbody>
</table>
Economic Assumptions

*Administrative Expenses*

- **Current Assumption:** Greater of $8,500,000 per year or 1% of computation pay
- **Comments**
  - GASB Statements 67 and 68 require an explicit assumption for accounting purposes
  - Administrative expenses have been lower than assumed over the past four years
- **Recommendation**
  - Maintain the current assumption, based on feedback from the Fund Office

<table>
<thead>
<tr>
<th>Year Ended</th>
<th>Administrative Expenses</th>
<th>Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 31, 2016</td>
<td>$9,492,445</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>December 31, 2017</td>
<td>8,089,584</td>
<td>Greater of $10M or 1% comp. pay</td>
</tr>
<tr>
<td>December 31, 2018</td>
<td>5,861,410</td>
<td>Greater of $8.5M or 1% comp. pay</td>
</tr>
<tr>
<td>December 31, 2019</td>
<td>6,413,696</td>
<td>Greater of $8.5M or 1% of comp. pay</td>
</tr>
</tbody>
</table>
Economic Assumptions

**Cost-of-Living Adjustment (COLA)**

- **Current Assumption**
  - 2.00% increase per year beginning in the year the System is projected to be 70% funded on a market value basis after the COLA is reflected (currently, October 1, 2050)
  - Updated annually

- **Recommendation**
  - Current assumption maintained for purposes of the experience study
  - Will update once financials are finalized and funding projections are updated
Actuarial Methods
Actuarial Methods

_Funding Method_

- **Current Method**
  - Current method is Traditional Entry Age
  - Traditional Entry Age is the most common method used for public sector plans in the U.S., and is required for GASB 67 and 68 calculations

- **Recommendation**
  - Maintain current method
Actuarial Methods

Asset Smoothing Method

• Current Method
  – 5-year straight-line amortization of each year’s market investment gain or loss
  – 20% corridor around market
  – Treats realized and unrealized losses equally
    • Sale of assets does not affect actuarial value

• GFOA funding policy guidelines recommend a recognition period of five years or less with recognition occurring over fixed periods.

• A corridor is recommended by GFOA if the period is greater than five years.

• Actuarial Standard of Practice No. 44 requires the use of a method that is “rational, systematic, and produces an actuarial value of assets that is expected to converge toward market value…assuming constant asset returns in future periods.”

• The current asset method follows these recommendations.

• Recommendation
  – Maintain current method
Actuarial Methods

**Amortization Method**

- **Current Method**
  - The Pension System is funded based on statutory contributions, rather than the results of the actuarial valuation.
  - However, Texas Code Section 802.101 requires actuarial valuations of public sector retirement systems to include a recommended contribution rate based on an amortization period not to exceed 30 years.
  - The actuarially determined contribution (ADC) shown in the valuation is calculated based on a 30-year amortization period using the level percent-of-payroll method.

- GFOA funding policy guidelines recommend that amortization periods should not exceed 25 years and ideally fall in the 15-20 year range.

- GFOA funding policy guidelines recommend a “layered” amortization approach with different periods for changes in liability incurred in different years.

- **Recommendation**
  - Maintain current method for purposes of satisfying Texas Code Section 802.101
  - If the City chooses to fund the System based on the ADC, or the System’s effective amortization period based on the statutory contributions drops below 30 years, a change in method will be considered.
Thank You!

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Actuarial Certification

We are pleased to submit this presentation on the actuarial experience of the Dallas Police and Fire Pension System for the period January 1, 2015 through December 31, 2019. This investigation is the basis for our recommendation of the assumptions and methods to be used for the January 1, 2020 actuarial valuation. The experience review was completed under our supervision, with the assistance of Caitlin Grice.

All current actuarial assumptions and methods were reviewed as part of this study. The study was based on data provided by the System for the last six actuarial valuations. Our analysis was conducted in accordance with generally accepted actuarial principles as prescribed by the Actuarial Standards Board (ASB) and the American Academy of Actuaries. Additionally, the development of all assumptions contained herein is in accordance with ASB Actuarial Standard of Practice (ASOP) No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations) and ASOP No. 35 (Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations).

The undersigned actuaries are experienced with performing experience studies for large public-sector pension plans and are qualified to render the opinions contained in this report.

Sincerely,

Jeffrey S. Williams, FCA, ASA, MAAA, EA
Vice President and Actuary

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