City of El Paso Employees Retirement Trust

Actuarial Experience Study for the Period

September 1, 2014 to August 31, 2018

July 2020

BUCK

July 10, 2020

Retirement Board
City of El Paso Employees Retirement Trust
1039 Chelsea St.
El Paso, TX 79903

Dear Members of the Board:

We were engaged by the Retirement Board (Board) to study the economic and demographic experience of active and retired members of the City of El Paso Employees Retirement Trust (Plan) for the period September 1, 2014 to August 31, 2018.

The experience study was prepared in accordance with generally accepted actuarial practices and best practices, which suggest that the actuary periodically undertake an experience study of the economic and demographic experience of active and retired members of the Plan, and that these studies generally take place every 4 years. The results of the experience study provide information to assist the Board in assessing whether to adopt new assumptions for determining the Plan's liabilities and contribution rates.

The effects as of September 1, 2018 (the date of the most recent valuation) of the proposed assumptions are shown below (in $000's):

	Current Assumptions[1]	Proposed Assumptions
Actuarial Accrued Liability	$ 1,024,379	$ 1,023,192
Actuarial Value of Assets	$ 822,926	$ 822,926
Unfunded Actuarial Accrued Liability (UAAL)	$ 201,453	$ 200,266
Normal Cost	$ 19,967	$ 20,452
City's Actuarially Determined Contribution (ADC)		
- Amount	$ 17,642	$ 18,378
- Percent of Pay	10.55%	10.99%
Excess of City's Fixed Contribution Rate Over ADC	3.50%	3.06%
Years to Fund UAAL	14	16

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[1] Same as the September 1, 2018 actuarial valuation except the period for amortizing the UAAL is 25 years (based on the funding policy adopted by the Board in 2019).

The Board and staff of the City of El Paso Employees Retirement Trust may use this report for the review of the experience of the Plan. Use of this report for any other purposes or by anyone else may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods or inapplicability of the report for that purpose. Because of the risk of misinterpretation of results, you should ask us to review any statement you wish to make on the results contained in this report. We will not accept any liability for any such statement made without review by us.

Where presented, references to "funded ratio" and "unfunded actuarial accrued liability" typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded actuarial accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the Plan if the Plan were to settle (i.e., purchase annuities) for all or a portion of its liabilities.

The experience study was performed under the overall direction of David Kershner, who meets the Qualifications of the American Academy of Actuaries to render the actuarial opinions herein. He is a Fellow of the Society of Actuaries, an Enrolled Actuary, a Member of the American Academy of Actuaries, and a Fellow of the Conference of Consulting Actuaries.

We would be pleased to discuss the results shown in this report at your convenience. I can be reached at (602) 803-6174 to answer any questions about the report.

Sincerely,

David J. Kershner, FSA, EA, MAAA, FCA
Principal
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Contents

Introduction

Assumptions are a key element in an actuarial valuation. In order to perform an actuarial valuation of the assets and liabilities of the Plan, the actuary uses assumptions with respect to each of the following:

1. Investment return on the Plan's funds over the period benefits to current members will be paid, including inflation during the same period.
2. The relative increases in the salary of a member from the date of the valuation to the date of separation from active service.
3. The expected mortality rates among retired persons (healthy and disabled).
4. The probabilities of members separating from active service on account of withdrawal, death and disability.
5. The ages at which members will retire.

The actuarial valuation is the method by which the annual funding requirement is determined. Actuarial assumptions do not directly impact the total cost of a retirement program, but they are a key variable in determining the timing of that cost and the allocation of the cost between current and future contributions. The proposed changes in actuarial assumptions reflect the most recent experience as well as future expected experience. Each assumption should reflect the actuary's best estimate of anticipated long-term experience of the Plan.

The objectives of this study are to:

- Determine appropriate rates to anticipate the following events among active members:
    - termination from employment
    - mortality during active service
    - disability retirement
    - normal retirement
    - early retirement
    - salary increases
- Determine appropriate rates to anticipate mortality among healthy and disabled retirees and their dependents.

Methodology

Data is supplied every two years to the actuary by the staff of the City of El Paso Employees Retirement Trust for purposes of the biennial actuarial valuations of the Plan. This data includes demographic characteristics of current and past members, and salaries for current members. These valuation data files are the basis for the experience study.

Tabulations were compiled that show the distribution by age and/or service of the number of members who were exposed during the 4-year period to the events of termination from employment, retirement, death and disability. A member is considered exposed to an event if he or she meets the age and/or service requirements for that event. The assumed rates of occurrence for each event, which are currently used in the actuarial valuations, were then applied to the members exposed to determine the number of members expected to separate from service for each category.

The number of members who actually separated from service due to termination from employment, retirement, death or disability were then compared to the expected number. Data may be grouped by age and/or service increments to provide statistically significant results[2].

The expected and actual salaries as of the end of each period were also compared to actual salaries as of the end of each previous period. The comparisons show an average annual increase in both expected and actual salaries for the 4-year period.

The results of the experience study are the basis for the actuary's proposed assumption changes. The actuary must also take into account benefit changes that occurred during the experience period. If a change in benefit levels or benefit eligibility was made during the experience period, the actuary should consider the impact the change may have on the data used in the analysis. There have been no significant changes in Plan benefits during the 4-year period ending August 31, 2018.

In addition to comparing actual to expected experience and adjusting the results for special plan benefits and economic conditions, the actuary must consider future expectations of experience due to future plan changes or expected changes in the economy.

To summarize, the actuary's proposed assumptions are based on the following:
• comparison of actual to expected experience
• adjustment for special plan benefits and past economic conditions
• adjustment for future plan changes and economic conditions

Each assumption should be the actuary's best estimate of reasonable long-term expectations.

Actuarial Standards of Practice

The Actuarial Standards Board issues Actuarial Standards of Practice that all actuaries must follow. The Actuarial Standards of Practice that are applicable to this experience study include No. 4 (Measuring Pension Obligations and Determining Pension Plan Costs or Contributions), No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations), and No. 35 (Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations).

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[2] For assumptions with experience data that was not statistically credible (e.g., disability), we are proposing no changes to the current assumption.

Section 1: Demographic Assumptions

This section compares the actual demographic experience during the 4-year period ending August 31, 2018 with the expected experience (which is based on the current demographic assumptions that have been used since the September 1, 2016 actuarial valuation).

A. Mortality

1. Healthy Pensioners

The table below shows the actual and expected number of deaths of healthy pensioners during the 4-year period ending August 31, 2018. "Current expected" means the expected number of deaths during the 4-year period based on the current assumptions. "New expected" means the expected number of deaths during the 4-year period using the new proposed assumptions. "Actual" means the actual number of deaths that occurred during the 4-year period.

	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE
Male	187	235	126%	253	93%
Female	132	185	140%	183	101%

The Society of Actuaries published the results of a major mortality study in October 2014. The standard base table and most recent generational mortality improvement scale based on that study are called "RP-2014" and "MP-2019", respectively.

The study completed in 2014 excluded experience from public-sector plans. In August 2018, the Society of Actuaries published the results of a study of mortality experience of public-sector plans only. The standard base table from that study, which was finalized in January 2019, is called "Pub-2010". We evaluated both RP-2014 and Pub-2010 and concluded that RP-2014 was a better fit when compared to Plan experience.

Because the experience during the 4-year period was not fully credible, we applied the procedure published by the Society of Actuaries[3] for situations with less than full credibility. We propose the following mortality assumption for healthy pensioners[4]:

- Male: 92% of RP-2014 healthy annuitant Blue Collar table with MP-2019 generational improvement
- Female: 100% of RP-2014 healthy annuitant Blue Collar table with MP-2019 enerational improvement

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[3] Society of Actuaries August 2017 publication titled *Credibility Educational Resources for Pension Actuaries: Application of Credibility Theory to Mortality Assumption.*

[4] All proposed mortality assumptions in this report are based on the headcount-weighted version of RP-2014, rolled back to 2006 using MP-2014 and projected forward using MP-2019.

2. Active Members

The experience during the 4-year period was not credible for active members. Therefore, we propose the following mortality assumption for active members (and members who terminate with a deferred vested benefit):

- •   Male: 100% of RP-2014 employee Blue Collar table with MP-2019 generational improvement
- •   Female: 100% of RP-2014 employee Blue Collar table with MP-2019 generational improvement

3. Disabled Members

The experience during the 4-year period was not credible for disabled members. Therefore, we propose the following mortality assumption for disabled members:

- •   Male: 100% of RP-2014 disabled annuitant table with MP-2019 generational improvement
- •   Female: 100% of RP-2014 disabled annuitant table with MP-2019 generational improvement

B. Termination of Employment (Withdrawal)

The current withdrawal assumption uses a "select and ultimate" table. The withdrawal assumption is higher during the select period (the first five years of a member's career). For all service periods, the withdrawal rates vary based on age.

The table below shows the actual and expected number of terminations of active members during the 4-year period ending August 31, 2018. "Current expected" means the expected number of terminations during the 4-year period based on the current assumptions. "New expected" means the expected number of terminations during the 4-year period using the new proposed assumptions. "Actual" means the actual number of terminations that occurred during the 4-year period.

	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE
Less than 3 years of service	338	450	133%	427	105%
3 years of service	92	96	104%	96	100%
4 years of service	72	79	110%	79	100%
5 years of service	50	64	128%	60	107%
More than 5 years of service	113	161	142%	160	101%

Based on the above experience, we propose certain changes to the withdrawal assumption as shown in Section 3 of this report.

C. Retirement[5]

The tables below show the actual and expected number of retirements of active members during the 4-year period ending August 31, 2018. "Current expected" means the expected number of retirements during the 4-year period based on the current assumptions. "New expected" means the expected number of retirements during the 4-year period using the new proposed assumptions. "Actual" means the actual number of retirements that occurred during the 4-year period.

1. Unreduced Retirement

	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE
Male	417	367	88%	395	93%
Female	188	178	95%	186	96%

2. Reduced Retirement

	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE
Male	67	132	197%	111	119%
Female	38	62	163%	57	109%

Based on the above experience, we propose certain changes to the retirement assumption as shown in Section 3 of this report.

D. Overtime

Overtime as a percentage of actual pay for all years included in the study was reasonably close to the current overtime assumption of 4% of base pay. Therefore, we recommend no changes to this assumption.

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[5] Due to a lack of credible experience for the Second Tier (those who entered the Plan after August 31, 2011), retirement experience was studied only for the First Tier.

Section 2: Economic Assumptions

A. Inflation

Inflation is a core component of several of the economic assumptions, including the investment return assumption, salary increases and payroll growth rate. The current inflation assumption is 3.0% per year.

We performed a projection of expected inflation rates using the GEMS economic scenario generator, developed by Conning and Company. GEMS is an econometric model that incorporates historical data and forecasts future values for inflation and all relevant asset classes.

Our projections were done under two approaches:

- Approach #1 – The propensity for asset returns and inflation to revert (eventually) to historical norms occurs, recognizing the inherent difficulty in forecasting current conditions to persist for 30+ years. Under this approach, the expectation is that asset returns and inflation rates will center around historical averages.
- Approach #2 – Emerging demographic trends (such as aging workforce, increasing longevity, globalization of economy, and technological innovation transforming the workforce) that contribute to the "new normal" of low GDP, low inflation, and a low asset return environment will persist well beyond the current business cycle. Under this approach, expectations around returns for "return generating" assets such as equities and real estate are approximately 150 to 200 basis points below that expected under Approach #1.

We also considered the long-term forecast of the Social Security administration (which was 2.6% in 2019).

The projected inflation rates for the next 15 and 30 years are as follows:

- Approach #1
  - 15 years: 2.6%
  - 30 years: 3.0%
- Approach #2
  - 15 years: 2.3%
  - 30 years: 2.6%

Based on our analysis, we propose lowering the inflation rate to 2.5%.

B. Investment Return

The investment return assumption is used to discount the projected benefits expected to be paid from the Plan. It is the assumption that has the largest impact on the Actuarial Accrued Liability and contribution rates.

This assumption should be a best estimate of long-term expectations. In setting this assumption, we consider recent history, but recognize that the last few years of very low returns may not be the best predictor of long-term expectations.

The following asset allocation policy for the Plan was used in our analysis of expected rates of return:

Asset Class	Allocation
Domestic Equity	22%
International Equity	22%
Fixed Income	19%
Absolute Return	15%
Real Estate	9%
Private Equity	8%
MLP[6]	5%
Total	100%

The table below shows the GEMS geometric results under the two approaches described above in Section 2(A)[7]:

	Approach #1			Approach #2		
	10-year	20-year	30-year	10-year	20-year	30-year
Nominal Rate of Return	7.32%	8.03%	8.63%	5.97%	6.53%	6.72%
Inflation Rate	2.32%	2.77%	3.01%	2.16%	2.43%	2.56%
Real Rate of Return	4.97%	5.21%	5.57%	3.80%	4.08%	4.14%

Based on our analysis, we propose lowering the current investment return assumption of 7.5% to 7.25%.

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[6] MLP was allocated to the Domestic Equity category.
[7] The nominal and real rates of return shown in this table are before reduction for expenses.

C. Salary Increases

We reviewed the salary increases that active members of the Plan received during the 4-year period ending August 31, 2018. The average annual increases by years of service are shown in the graph below. Based on this experience, we propose certain changes to the salary increase assumption as shown in Section 3 of this report.
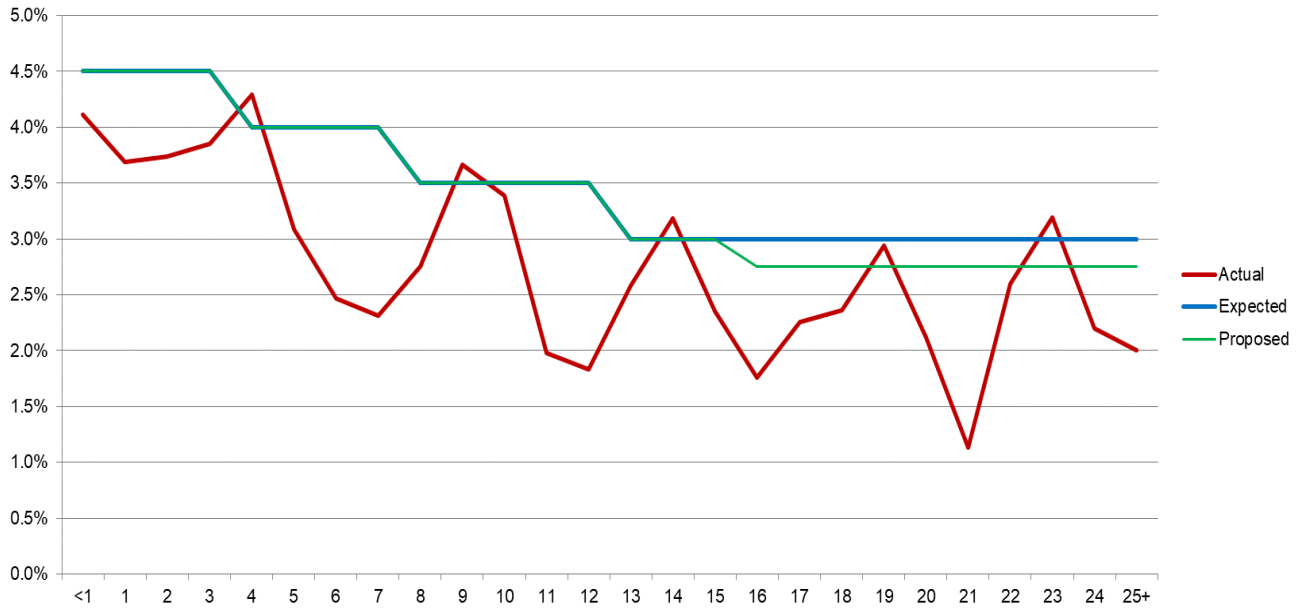
Section 3: Current & Proposed Assumptions[8]

Mortality

	Current	Proposed
Active Members	RP-2014 employee Blue Collar table projected to 2030 using Scale BB	RP-2014 employee Blue Collar table projected with Scale MP-2019 on a fully generational basis
Deferred Vested	RP-2014 employee Blue Collar table projected to 2030 using Scale BB	RP-2014 employee Blue Collar table projected with Scale MP-2019 on a fully generational basis
Healthy Retirees and Survivors	RP-2014 healthy annuitant Blue Collar table projected to 2030 using Scale BB	RP-2014 healthy annuitant Blue Collar table (92% of male rates and 100% of female rates) projected with Scale MP-2019 on a fully generational basis
Disabled Retirees	RP-2014 Disabled Annuitant Table	RP-2014 Disabled Annuitant Table projected with Scale MP-2019 on a fully generational basis

Inflation Rate

Current	Proposed
3.00%	2.50%

Investment Return (net of all expenses)

Current	Proposed
7.50%	7.25%

Salary Increases

Service	Current	Proposed
<3	4.50%	4.50%
3-6	4.00%	4.00%
7-11	3.50%	3.50%
12-15	3.00%	3.00%
16+	3.00%	2.75%

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[8] The assumptions that were not studied or have no proposed changes are not shown in this report.

Retirement Rates - Current

Age	First Tier			
	Early		Normal	
	Male	Female	Male	Female
40	0.040	0.040	0.000	0.000
41	0.040	0.040	0.000	0.000
42	0.040	0.040	0.000	0.000
43	0.040	0.040	0.000	0.000
44	0.040	0.040	0.000	0.000
45	0.025	0.025	0.100	0.090
46	0.025	0.025	0.100	0.090
47	0.025	0.025	0.100	0.090
48	0.025	0.025	0.100	0.090
49	0.025	0.025	0.100	0.090
50	0.015	0.015	0.100	0.090
51	0.015	0.015	0.100	0.090
52	0.015	0.015	0.100	0.090
53	0.015	0.015	0.100	0.090
54	0.015	0.015	0.100	0.090
55	0.015	0.015	0.120	0.100
56	0.015	0.015	0.120	0.100
57	0.015	0.015	0.120	0.100
58	0.015	0.015	0.120	0.100
59	0.015	0.015	0.120	0.100
60	0.000	0.000	0.120	0.100
61	0.000	0.000	0.120	0.100
62	0.000	0.000	0.200	0.100
63	0.000	0.000	0.200	0.200
64	0.000	0.000	0.200	0.200
65	0.000	0.000	0.200	0.200
66	0.000	0.000	0.400	0.200
67	0.000	0.000	0.500	0.200
68	0.000	0.000	0.250	0.250
69	0.000	0.000	0.250	0.250
70	0.000	0.000	0.400	0.250
71	0.000	0.000	0.400	1.000
72	0.000	0.000	0.400	1.000
73	0.000	0.000	0.600	1.000
74	0.000	0.000	0.600	1.000
75+	0.000	0.000	1.000	1.000

Retirement Rates - Proposed

Age	First Tier			
	Early		Normal	
	Male	Female	Male	Female
40	0.030	0.030	0.000	0.000
41	0.030	0.030	0.000	0.000
42	0.030	0.030	0.000	0.000
43	0.030	0.030	0.000	0.000
44	0.030	0.030	0.000	0.000
45	0.030	0.035	0.060	0.090
46	0.030	0.035	0.060	0.090
47	0.030	0.035	0.060	0.090
48	0.030	0.035	0.060	0.090
49	0.030	0.035	0.060	0.090
50	0.040	0.035	0.060	0.090
51	0.040	0.035	0.060	0.090
52	0.040	0.035	0.060	0.090
53	0.040	0.035	0.120	0.090
54	0.040	0.035	0.120	0.090
55	0.040	0.040	0.120	0.100
56	0.040	0.040	0.120	0.100
57	0.040	0.040	0.120	0.100
58	0.040	0.040	0.120	0.100
59	0.040	0.040	0.120	0.100
60	0.000	0.000	0.120	0.100
61	0.000	0.000	0.120	0.100
62	0.000	0.000	0.175	0.150
63	0.000	0.000	0.175	0.150
64	0.000	0.000	0.175	0.150
65	0.000	0.000	0.250	0.200
66	0.000	0.000	0.250	0.200
67	0.000	0.000	0.250	0.200
68	0.000	0.000	0.400	0.250
69	0.000	0.000	0.400	0.250
70	0.000	0.000	0.400	0.250
71	0.000	0.000	0.400	1.000
72	0.000	0.000	0.400	1.000
73	0.000	0.000	0.600	1.000
74	0.000	0.000	0.600	1.000
75+	0.000	0.000	1.000	1.000

Withdrawal Rates - Current

Age/Service	<3	3	4	5	5+
<20	0.100	0.090	0.080	0.070	0.090
20-24	0.100	0.090	0.080	0.070	0.090
25-29	0.100	0.090	0.080	0.070	0.090
30-34	0.100	0.090	0.080	0.070	0.100
35-39	0.100	0.090	0.080	0.070	0.050
40-44	0.100	0.090	0.080	0.070	0.040
45-49	0.100	0.090	0.080	0.070	0.025
50-54	0.100	0.090	0.080	0.070	0.015
55-59	0.100	0.090	0.080	0.070	0.015
60-64	0.100	0.090	0.080	0.070	0.015
65-69	0.100	0.090	0.080	0.070	0.015
70+	0.100	0.090	0.080	0.070	0.015

Withdrawal Rates - Proposed

Age/Service	<3	3	4	5	5+
<20	0.150	0.120	0.120	0.100	0.090
20-24	0.150	0.120	0.120	0.100	0.090
25-29	0.150	0.120	0.120	0.100	0.090
30-34	0.150	0.120	0.120	0.100	0.090
35-39	0.150	0.090	0.120	0.100	0.070
40-44	0.100	0.090	0.080	0.070	0.070
45-49	0.100	0.090	0.080	0.070	0.070
50-54	0.075	0.060	0.040	0.070	0.060
55-59	0.075	0.060	0.040	0.040	0.060
60-64	0.075	0.060	0.040	0.040	0.060
65-69	0.075	0.060	0.040	0.040	0.060
70+	0.075	0.060	0.040	0.040	0.060