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Valley Transportation Authority ATU Local 265 Pension Plan

Actuarial Valuation as of January 1, 2020

Produced by Cheiron

April 2020

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April 14, 2020

Board of Pensions
Santa Clara Valley Transportation Authority
3331 North First Street
San Jose, CA 95134-1906

Dear Members of the Board:

The purpose of this report is to present the January 1, 2020 actuarial valuation of the Valley Transportation Authority Amalgamated Transit Union, Local 265 Pension Plan ("Plan"). The report includes:

- Measures of funded status,
- Analysis of changes since the prior valuation,
- Development of the Plan's contribution rates for fiscal year 2020-2021,
- Historical and projected trends, and
- Assessment and disclosures of risks.

This report is for the use of the Board of Pensions and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

If you have any questions about the report or would like additional information, please let us know.

Sincerely,
Cheiron

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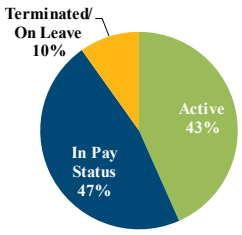
SECTION I – EXECUTIVE SUMMARY

Actuarial Valuation Dashboard

Contributions

	Fiscal Year 2019-2020	2020-2021
Employee (EE) Rate	2.47%	3.86%
Employer (ER) Rate	22.93%	21.76%
Employer BOY Amount	$ 30.58	$ 28.80
ER Normal Cost Rate	10.94%	9.49%
UAL Rate	11.72%	12.00%
Expenses	0.27%	0.27%
Total Employer Rate	**22.93%**	**21.76%**

Actuarial Liability

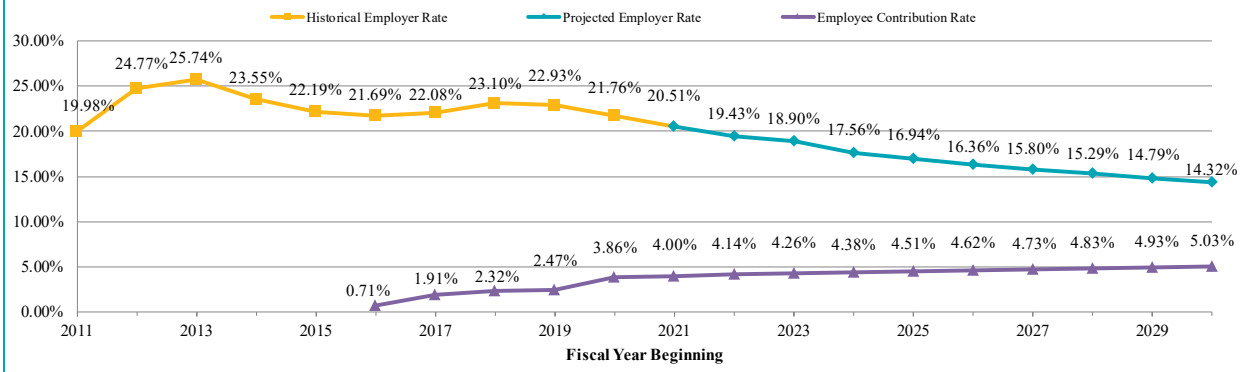


Funding Status

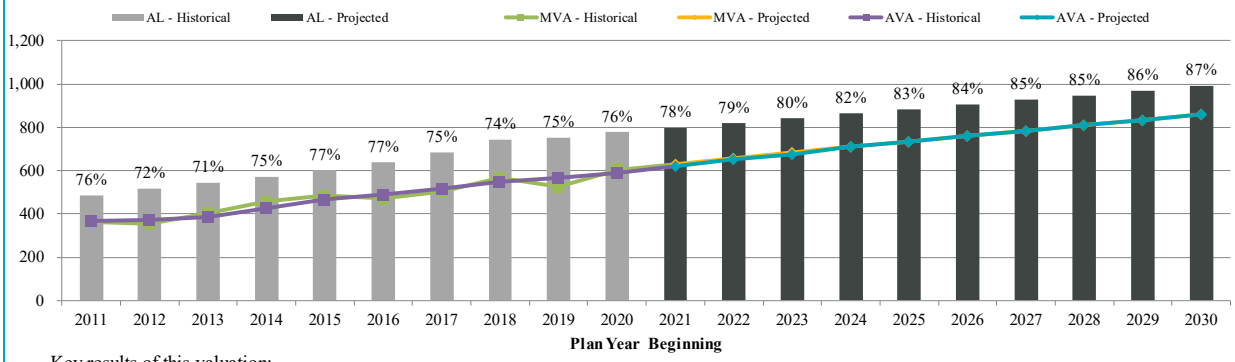
	Valuation Date 1/1/2019	1/1/2020
Actuarial Liability (AL)	$ 752	$ 778
Actuarial Value of Assets (AVA)	$ 564	$ 588
Unfunded AL (UAL) - AVA	**187**	**189**
Funded Ratio - AVA	75.1%	75.7%
Market Value of Assets (MVA)	$ 528	$ 605
UAL - MVA	**224**	**173**
Funded Ratio - MVA	70.2%	77.8%

Amounts in Millions

Historical and Projected Contribution Rates



Historical and Projected Assets and Liabilities



Key results of this valuation:

- The Plan experienced very favorable asset returns on a market value basis for the current year; however, with the continued recognition of the prior year asset loss, the Plan experienced a loss on an actuarial value of assets basis.
- The Plan experienced a small net liability loss due to more retirements than assumed by members who were on leave, partially offset by gains from active member salaries increasing by slightly less than expected.
- The Employer contribution rate decrease was driven by the increase in the Employee contribution rate for Classic members.

SECTION I – EXECUTIVE SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe, and identify the following as of the valuation date:

- The financial condition of the Plan,
- Past and expected trends in the financial progress of the Plan, and,
- Member and employer contribution rates for Fiscal Year July 1, 2020 - June 30, 2021
- Assessment and disclosure of risks.

In the balance of this Executive Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) a reconciliation of changes in Plan costs, (D) an examination of the historical trends, and (E) the projected financial outlook for the Plan.

A. Valuation Basis

This valuation determines the employer contributions for the fiscal year 2020-2021.

The Plan's funding policy is to determine an employer contribution equal to the sum of:

- The normal cost (net of any employee contributions) under the Entry Age Normal Cost Method,
- Amortization of the Unfunded Actuarial Liability, and
- The Plan's expected administrative expenses.

This valuation was prepared based on the assumptions and methods outlined in Appendix B and the plan provisions summarized in Appendix C of this report. Since the prior valuation report, there have been no changes to the actuarial assumptions and methods. There have been no changes to the plan provisions, with the exception of the Classic members' contribution rate, which increased from 1.90% to 3.40% effective September 2019.

While there have been no changes to the plan provisions reflected in this valuation, other than the increased Classic member contribution rate, we understand that the most recent agreement between Santa Clara Valley Transportation Authority (VTA) and Amalgamated Transit Union, Local 265 (ATU) contains a provision for a cost-of-living adjustment (COLA) benefit effective September 9, 2019. It is also our understanding that there is outstanding legal uncertainty surrounding the COLA provision at the time of the publication of this actuarial valuation report. As such, the liability impact and resulting cost increases of the COLA provision are not reflected in the results of this valuation.

Should the COLA provision be found to be valid and to be included in the Plan, it will impact the liabilities and costs significantly. At the request of the VTA, we prepared a cost study detailing the impact of this COLA provision, as found in our letter dated February 18, 2020 to Mr. Srinath, CFO, at VTA. In light of recent global events that caused a significant market downfall, we understand that both the likelihood assumption of the COLA being paid and the rate of COLA itself could be affected. However, as shown in the sensitivity analysis

of the COLA provision study, any cost-of-living adjustment generally has a meaningful impact on Plan liability and cost.

B. Key Findings of this Valuation

The key results of the January 1, 2020 actuarial valuation are as follows:

- The actuarially determined employer contribution rate decreased from 22.93% of payroll last year to 21.76% of payroll for fiscal year 2020-2021, assuming contributions are paid throughout the fiscal year.

- The Plan's funded ratio, the ratio of Actuarial Value of Assets over Actuarial Liability, increased from 75.1% last year to 75.7% as of January 1, 2020. Actuarial assets and liabilities experienced a loss; however, asset growth outpaced liability growth, which resulted in an increase in the funded ratio.

  The asset amounts and funded ratios do not include the value of the remainder of fiscal year contributions shown in the Plan assets but reported as deferred revenue in the asset statements ($15.1 million for the current year).

  As a point of comparison, a funding ratio of 63.4% or more is required just to fund the liabilities of the inactive members: those currently retired, disabled, terminated with vested benefits, on leave, terminated non-vested with contributions on account, and beneficiaries. This is sometimes referred to as the Inactive Funded Ratio.

- The Unfunded Actuarial Liability (UAL) is the excess of the Plan's Actuarial Liability over the Actuarial Value of Assets. The Plan experienced an increase in the UAL from $187,234,308 to $189,094,650 as of January 1, 2020. This increase in UAL was from both actuarial asset and liability experience losses. The UAL does not include the deferred revenue mentioned above, but is adjusted for this deferred revenue when determining the UAL payment for the employer contribution.

  The Plan experienced a loss on the Actuarial Liability of $2,916,984. This liability loss was driven by more retirements than assumed by members who were previously on leave of absence. Among other factors, inactive members living longer than expected also accounted for the liability experience loss, which was partially offset by gains from active member salaries increasing less than expected.

  During the year ended December 31, 2019, the return on Plan assets was 16.84% on a market value basis net of investment expenses, as compared to the 7.00% assumption for the 2019 Plan year. This resulted in a market value gain on investments of $50,274,954.

  The Actuarial Value of Assets recognizes 20% of the difference between the expected and actual return on the Market Value of Assets (MVA). This method of smoothing the

asset gains and losses resulted in a 6.27% return on the smoothed value of assets, an actuarial asset loss of $5,195,074. The return on the smoothed value of assets was lower than the market return due to the recognition of prior years' net investment losses with only partial recognition of the current year market gain.

Combining the liability experience loss and the actuarial asset loss, the Plan experienced a total actuarial loss of $8,112,058.

- Overall participant membership – including retirees and other members in pay status – increased slightly compared to last year. There was a shift in membership from active and terminated or on leave statuses to in pay statuses. With 177 members leaving active employment (with many going on leave of absence) and only 83 new hires and 57 members returning to work since January 1, 2019, the total active population decreased by 2.53%. The number of participants receiving a benefit increased by 4.70%. Total fiscal year projected payroll decreased by 0.76% from $137,953,801 for FY 2019-2020 to $136,909,370 for FY 2020-2021. Average pay per member increased by only 1.82%.

SECTION I – EXECUTIVE SUMMARY

Table I-1 summarizes all the key results of the valuation with respect to membership, assets and liabilities, and contributions. The results are presented and compared for both the prior and current plan year.

Table I-1
Summary of Principal Plan Results

	January 1, 2019	January 1, 2020	% Change
Participant Counts			
Active Participants	1,461	1,424	-2.53%
Participants Receiving a Benefit	1,469	1,538	4.70%
Terminated / On Leave Participants	336	323	-3.87%
Total	**3,266**	**3,285**	**0.58%**
Annual Pay of Active Members	$ 135,929,919	$ 134,900,811	-0.76%
Projected Fiscal Year Payroll	$ 137,953,801	$ 136,909,370	-0.76%
Assets and Liabilities			
Actuarial Liability (AL)	$ 751,566,289	$ 777,544,046	3.46%
Actuarial Value of Assets (AVA)	564,331,981	588,449,396	4.27%
Unfunded Actuarial Liability (UAL)	$ 187,234,308	$ 189,094,650	0.99%
Funded Ratio (AVA)	75.1%	75.7%	0.59%
Funded Ratio (MVA)	70.2%	77.8%	7.56%
Inactive Funded Ratio	62.2%	63.4%	1.15%
Contributions	**FY 2019-2020**	**FY 2020-2021**	
Employer Contribution (Beginning of Fiscal Year)	$ 30,583,847	$ 28,798,368	-5.84%
Employer Contribution as a Percentage of Payroll (Paid Throughout Fiscal Year)	22.93%	21.76%	-1.17%
Employee Contribution as a Percentage of Payroll [1]	2.47%	3.86%	

[1] *Classic Member contributions increased from 1.90% of pay effective October 2017 to 3.40% of pay effective September 2019. PEPRA Member contributions had increased from 5.50% of pay effective October 2016 to 6.00% of pay effective July 1, 2018.*

C. Changes in Plan Cost

Table I-2 summarizes the impact of actuarial experience on Plan cost.

Table I-2
Employer Contribution Reconciliation

Item	Total	Normal Cost	UAL Amortization	Admin Expense
FY 2019-2020 Net Employer Contribution Rate	22.93%	10.94%	11.72%	0.27%
Change due to asset loss	0.36%	0.00%	0.36%	0.00%
Change due to contribution delay	-0.06%	0.00%	-0.06%	0.00%
Change due to demographic changes	0.08%	-0.09%	0.17%	0.00%
Change due to amortization payroll	0.09%	0.00%	0.09%	0.00%
Change due to rolling amortization	-0.28%	0.00%	-0.28%	0.00%
Change due to PEPRA new hires	-0.13%	-0.13%	0.00%	0.00%
Change due to employee contributions	-1.23%	-1.23%	0.00%	0.00%
FY 2020-2021 Net Employer Contribution Rate	21.76%	9.49%	12.00%	0.27%

An analysis of the cost changes from the prior valuation reveals the following:

- Asset experience produced an investment gain on a market basis and an investment loss on an actuarial basis.

  The assets of the Plan returned 16.84% (net of investment expenses) on a market basis, higher than the assumed rate of 7.00%. The actuarial return on assets was 6.27%, lower than the assumed rate of 7.00% for 2019. The asset loss caused an increase in the contribution rate of 0.36% of payroll.

  The Market Value of Assets is higher than the actuarial value; there are approximately $16.2 million in deferred asset gains.

- Differences between the actuarial cost for the 2019 calendar year and the actual contributions made decreased the cost slightly.

  The contribution amount for the 2019 calendar year was based on two pieces: one for the second half of the 2018-2019 fiscal year and one for the first half of the 2019-2020 fiscal year. The actuarial cost for the calendar year was slightly higher than the average of the two fiscal year contributions, which decreased the cost by 0.06% of payroll.

SECTION I – EXECUTIVE SUMMARY

- Demographic experience differed from what was expected.

  The demographic experience of the Plan – rates of retirement, death, disability, and termination, along with assumed pay increases – was different than predicted by the actuarial assumptions in aggregate, causing an increase in the contribution rate of 0.08% of payroll. The primary factor increasing the contribution rate was the increase in retirements, specifically from leave of absence status in the prior year. There was also lower than expected inactive mortality, leading to liability experience losses as members live longer and continue to receive benefits. On the other hand, active membership experience led to a decrease in the normal cost component with slightly lower than expected salary increases for the year.

- Decrease in payroll increased the amortization payment as a percentage of payroll.

  The unfunded liability is amortized as a level dollar amount. Therefore, a decrease in total projected payroll will increase the contribution rate as a percentage of payroll. The decrease in projected payroll this year increased the contribution rate by 0.09% of pay. This change has no impact on the *dollar* amount of the contribution.

- A rolling 20-year period is used to amortize the UAL.

  The Board of Pensions previously elected to use rolling 20-year amortization for the UAL, computed as a level dollar amount. Rather than declining by one year each year, the amortization period is reset each year to a new 20-year period. The impact of this rolling period is to reduce the fiscal year 2020-2021 cost slightly, by 0.28% of pay.

- An increase in the proportion of the active members covered under the PEPRA provisions continues to reduce the normal cost.

  As new members continue to enter the Plan and are subject to the lower benefits and higher member contributions prescribed under PEPRA, the aggregate employer normal cost of the Plan continues to decrease. The impact on the overall normal cost of the Plan was a reduction of 0.13% of payroll.

- An increase in the Classic members' contribution rate reduced the employer's normal cost.

  The increase in Classic employee contribution rate from 1.90% of pay to 3.40% of pay effective September 2019 decreased the employer's fiscal year 2020-2021 cost by 1.23% of pay.

The net impact of these changes is a decrease in the employer contribution rate of 1.17%, from 22.93% to 21.76% of pensionable payroll payable throughout the year.

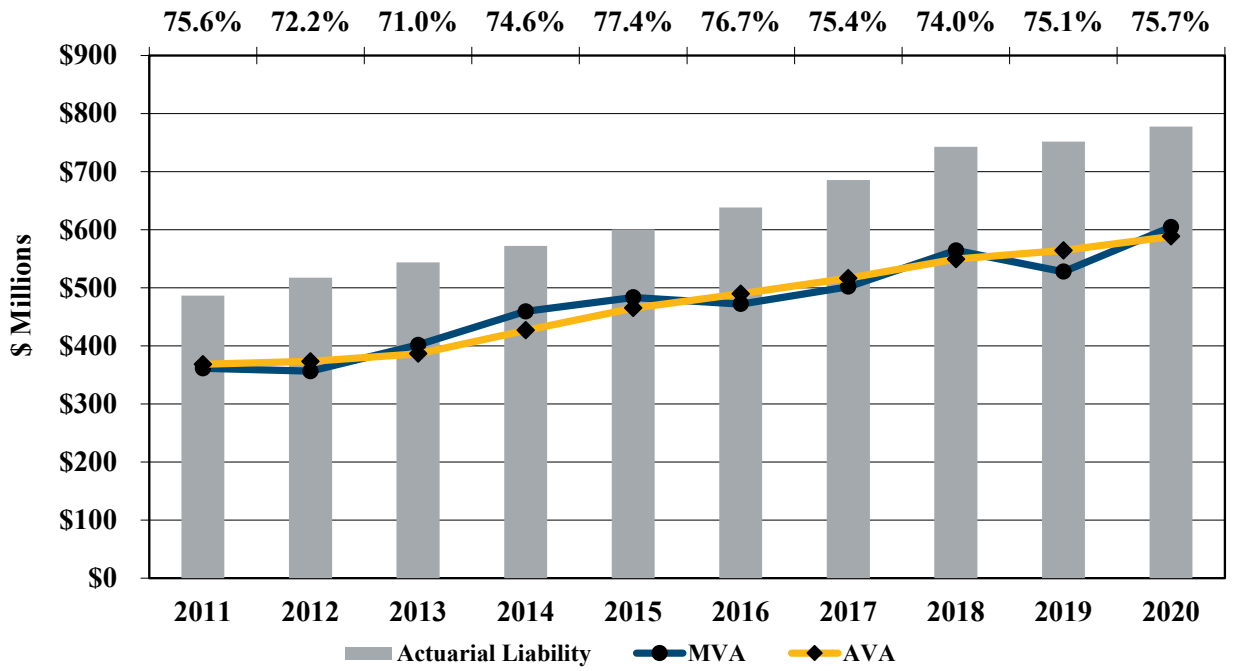
D. Historical Trends

Despite the fact that for most retirement plans the greatest attention is given to the current valuation results and in particular, the size of the current Unfunded Actuarial Liability and the employer contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

Assets and Liabilities

The chart below compares the Market Value of Assets (MVA) and Actuarial Value of Assets (AVA) to the Actuarial Liabilities. The percentage shown at the top of the graph is the ratio of the Actuarial Value of Assets to the Actuarial Liability (the funded ratio). As stated earlier, the asset amounts and funded ratios do not include the value of the remainder of fiscal year contributions shown in the Plan assets but reported as deferred revenue in the asset statements ($15.1 million for the current year).

The funded ratio has remained steady over the period shown from 75.6% in 2011 to 75.7% as of January 1, 2020. Favorable investment experience over the period offset by changes in the economic and demographic actuarial assumptions leaves the plan in a similar position in terms of funded ratio, however under considerably more conservative actuarial assumptions. In particular, the rate of return assumption was reduced gradually from 8.00% in 2011 to 7.00% in 2017.

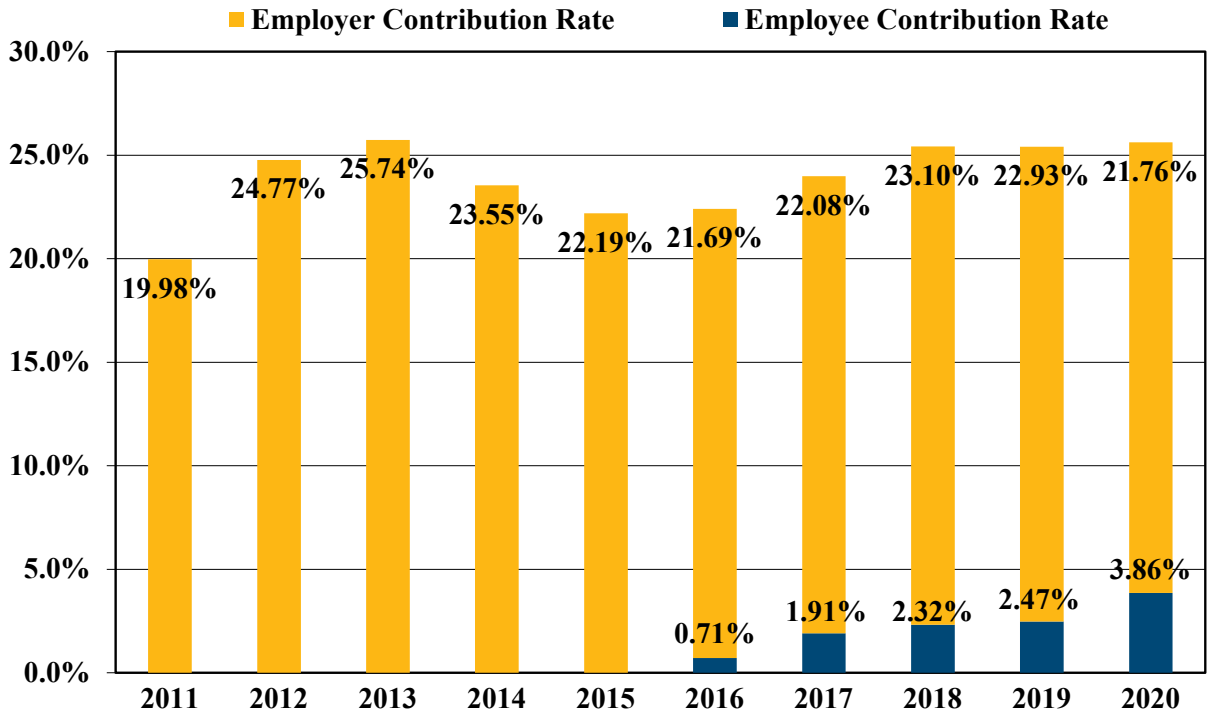


SECTION I – EXECUTIVE SUMMARY

Contributions

The chart below shows a history of the Plan's actuarially determined employer contribution rates and the Employee contribution rates, as a percentage of payroll. Employees began contributing to the Plan during 2016. Classic members initially contributed 0.90% of pay effective October 2016, which increased to 1.90% of pay effective October 2017, and increased again to 3.40% of pay effective September 2019. PEPRA members contribute half of the PEPRA normal cost of the Plan rounded to the nearest 0.25%. This PEPRA contribution rate is subject to change as discussed in Section VI of this report. PEPRA members were contributing 5.50% of pay effective October 2016, which increased to 6.00% of pay effective July 2018. The aggregate employee contribution rate will continue to increase as more PEPRA members enter the Plan.

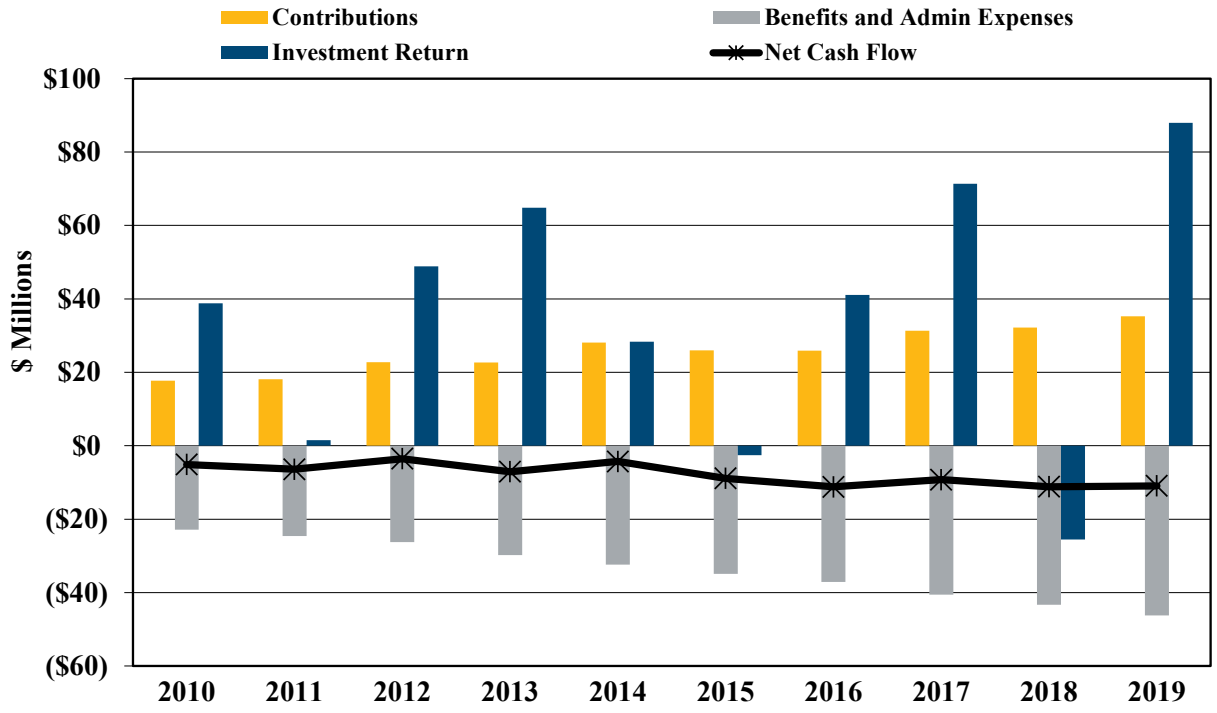
There were large increases in the employer contribution rate from 2011 to 2013, mostly due to the recognition of the 2008 investment loss and subsequent assumption changes. The employer contribution rate then declined through 2016. Assumption changes in 2017 and 2018, among other factors, increased the employer contribution rate. The contribution rate decreased from 22.93% in 2019 to 21.76% in 2020 largely due to the increased employee contribution rate for Classic members.



SECTION I – EXECUTIVE SUMMARY

Cash Flows

The chart shows the Plan's cash flow (contributions less benefit payments and administrative expenses). This is a critical measure, as it reflects the ability to have funds available to meet benefit payments without having to make difficult investment decisions, especially during volatile markets.



The Plan's net cash flow excluding investment returns, shown as the black line in the chart above, has been below zero all 10 years shown, ranging from -0.9% to -2.2% of Plan assets. A negative cash flow does not necessarily mean that a plan is in a dangerous position – in fact, we expect that a mature plan should eventually reach a negative cash flow pattern (ignoring investment returns), since the investment earnings are intended to pay for a portion of the benefits that would otherwise be covered by contributions.

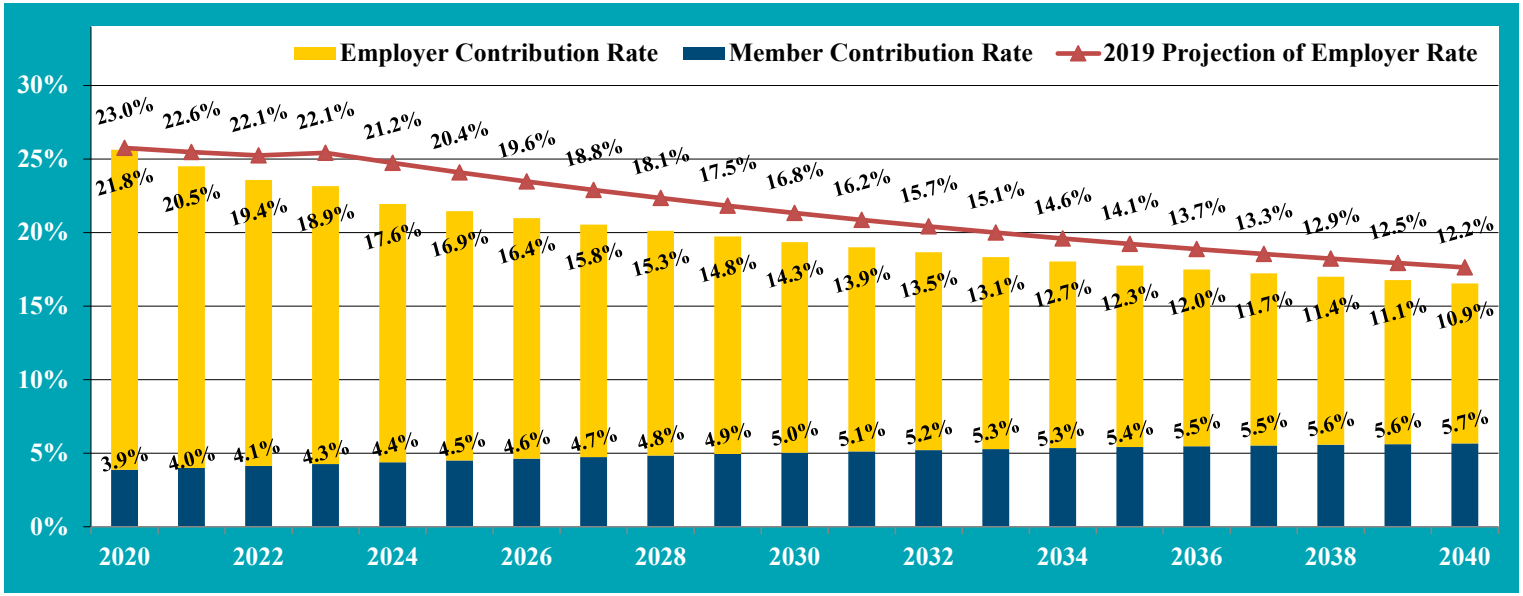
However, the implications of a plan in negative cash flow are that the impact of market fluctuations can be more severe: as assets are being depleted to pay benefits in down markets, there is less principal available to be reinvested during favorable return periods.

SECTION I – EXECUTIVE SUMMARY

E. Future Expected Financial Trends

The analysis of projected financial trends is perhaps the most important component of this valuation. In this Section, we present our assessment of the implications of the January 1, 2020 valuation results in terms of benefit security (assets over liabilities) and contribution levels. All the projections in this section are based on the assumption that the Plan will exactly achieve the investment return assumption of 7.00% each year, which is clearly an impossibility. We also assumed future payroll increases of 3.00% per year.

Projection of Employer and Member Contributions, 7.00% return each year



The contribution rate graph shows that VTA's contribution as a percentage of payroll rate is expected to gradually decline, due to the use of a rolling, level dollar amortization policy and expected increases in the average member contribution rate, as more participants are subject to the PEPRA provisions. The dollar contribution for VTA will be approximately $28.8 million this year and will decrease down to approximately $26 million over the coming years as the deferred investment gains from 2019 are recognized as a result of the asset smoothing method. The contribution in dollar terms is then expected to remain steady for the remainder of the period shown. In contrast, the contribution rate is expected to decline steadily with assumed payroll growth.

SECTION I – EXECUTIVE SUMMARY

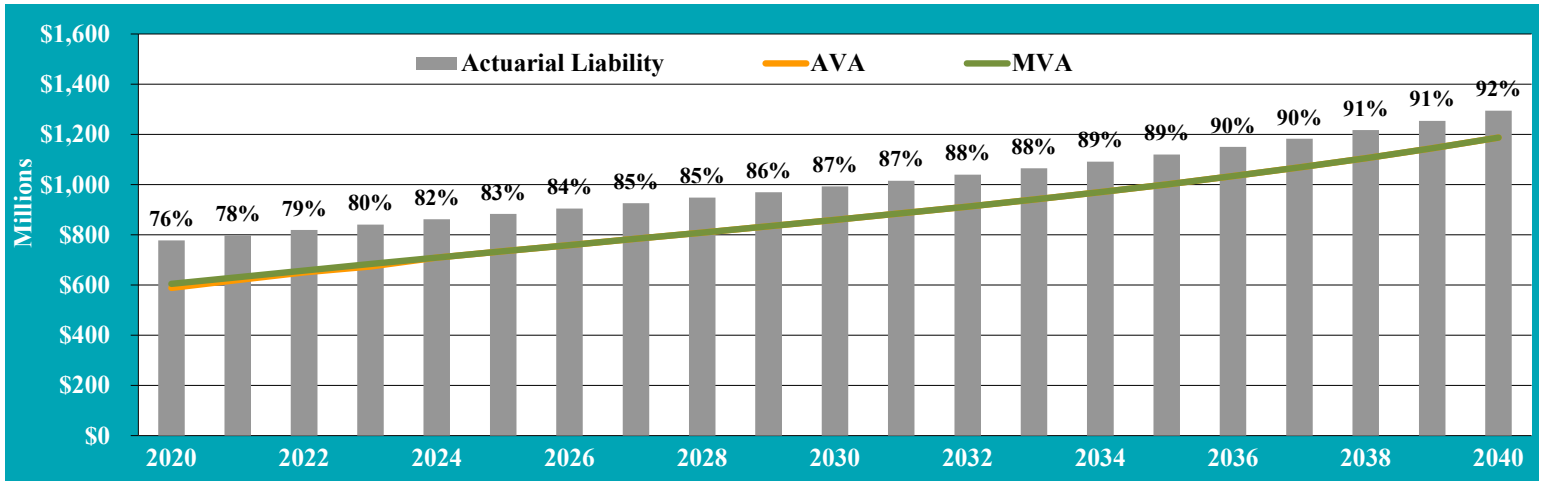
In comparison to the contribution rate projections from the 2019 actuarial valuation results, the current projected employer contribution rates are lower than last year due to the asset gain of 16.84% and the increased Classic member contribution rate to 3.40% up from 1.90%.

The graph on the previous page does not forecast any actuarial gains or losses or changes to the funding policy. In particular, the graph does not reflect any of the recent changes in the markets that have occurred as a result of the recent global health pandemic. These events and the associated risks to the Plan are addressed in Section II of this Report.

Asset and Liability Projections

The following graph shows the projection of assets and liabilities assuming that assets will earn the 7.00% assumption each year during the projection period. The funded ratio, based on the Actuarial Value of Assets, is shown above the bars. As in the earlier calculations shown in this report, the projected asset amounts and funded ratios do not include the value of the remainder of fiscal year contributions shown in the Plan assets but reported as deferred revenue in the asset statements ($15.1 million for the current year).

Projection of Assets and Liabilities, 7.00% return each year



The graph above shows that the projected funded status gradually increases over the entirety of the projection period as the current unfunded liability is amortized over a rolling 20-year period, assuming the actuarial assumptions are achieved.

SECTION I – EXECUTIVE SUMMARY

However, it is the actual return on Plan assets that will determine the future funded status and employer contribution rate to the Plan. To this point, based on the 2019 projected funded status, the Plan was projected to be 88% in 2038 compared to the current 2032 projected funded status of 88%.

Because a rolling amortization period is being used, the UAL is not expected to be fully amortized by the end of the 20-year projection period, assuming all assumptions are met. However, the UAL is expected to continue to decrease in dollar terms, and the funded ratio is expected to continue to increase, as the use of a 20-year rolling period with level dollar amortization will result in an amortization payment greater than the interest on the UAL.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to the plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

The fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While we believe it is unlikely that the Plan by itself would become unaffordable, the contributions needed to support the Plan may differ significantly from expectations. While there are a number of factors that could lead to contribution amounts deviating from expectations, we believe the primary sources are:

- Investment risk,
- Inflation risk, and
- Contribution risk.

Other risks that we have not identified may also turn out to be important.

Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability (UAL) necessitating higher contributions in the future unless there are other gains that offset these investment losses. In contrast, higher investment returns than anticipated may create a potentially significant surplus that could be difficult to use until all benefits have been paid. Expected future investment returns and their potential volatility are determined by the Plan's asset allocation.

Inflation risk is the potential for actual inflation to be different than expected. While historically benefits under the Plan have not automatically increased for inflation year over year, the recent bargaining agreement signed by the VTA and ATU Local 265 includes an automatic cost-of-living adjustment provision (subject to the attainment of a designated funding percentage). If this COLA provision is found to be legally valid and is implemented, future benefit levels are likely to be significantly influenced by inflation.

Higher inflation than expected could result in the payment of greater benefits through higher salaries, and lower inflation than expected could result in the payment of lower benefits through lower salaries. The salary experience is one of the main drivers of the liability experience shown in Table II-1 on the following page.

Contribution risk is the potential for actual future actuarially determined contributions to deviate from expected future contributions to an extent that they become unaffordable. The Plan's funding policy is to determine an Actuarially Determined Contribution (ADC) equal to the sum of the normal cost, amortization of the UAL, and the Plan's expected administrative expenses. The UAL is amortized in level dollar payments over a rolling 20-year period. As a result, a significant loss or change in assumptions may cause a large increase in the ADC. While the Plan

can change its Funding Policy when such a situation occurs, any reduction in the ADC will result in a slower recovery in funded status.

The table below shows a nine-year history of changes in the UAL by source.

Table II-1
UAL Change by Source

Valuation Year	Plan Changes	Assumption & Method Changes	Contributions	Investment Experience	Liability Experience	Total UAL Change
2012	0	6,742,210	(809,142)	16,570,254	2,890,263	25,393,585
2013	0	0	(908,750)	12,221,928	2,252,131	13,565,309
2014	0	4,696,959	(143,230)	(17,828,443)	1,248,999	(12,025,716)
2015	0	0	(6,311,932)	(9,652,754)	5,997,381	(9,967,305)
2016	74,277	7,063,796	(3,858,305)	1,880,424	8,044,097	13,204,289
2017	(60,707)	16,790,689	(1,577,820)	6,992,535	(1,953,917)	20,190,780
2018	0	21,604,044	(4,832,761)	(5,154,743)	12,603,295	24,219,835
2019	0	0	(1,768,912)	13,045,851	(17,259,833)	(5,982,894)
2020	0	0	(6,251,716)	5,195,074	2,916,984	1,860,342
Total	**$ 13,570**	**$ 56,897,698**	**$ (26,462,569)**	**$ 23,270,126**	**$ 16,739,400**	**$ 70,458,225**

Over the last nine years, the UAL has increased by approximately $70.5 million. Contributions reduced the UAL by $26.5 million. Assumption and method changes increased the UAL by $56.9 million, investment experience increased the UAL by $23.3 million, and liability experience increased the UAL by $16.7 million.

As mentioned earlier, the UAL is amortized in level dollar payments over a rolling 20-year period. It is important to note that even though the amortization period is reset each year, the UAL is being paid down by contributions, as seen in the table above where contributions reduced the UAL by $26.5 million. A level dollar payment method provides for a larger payment amount in the initial years than under the level percent of pay method. Also, limiting the period to 20 years means that a substantial payment towards principal (i.e. greater than the interest on the unfunded liability) will always be made.

Plan Maturity Measures

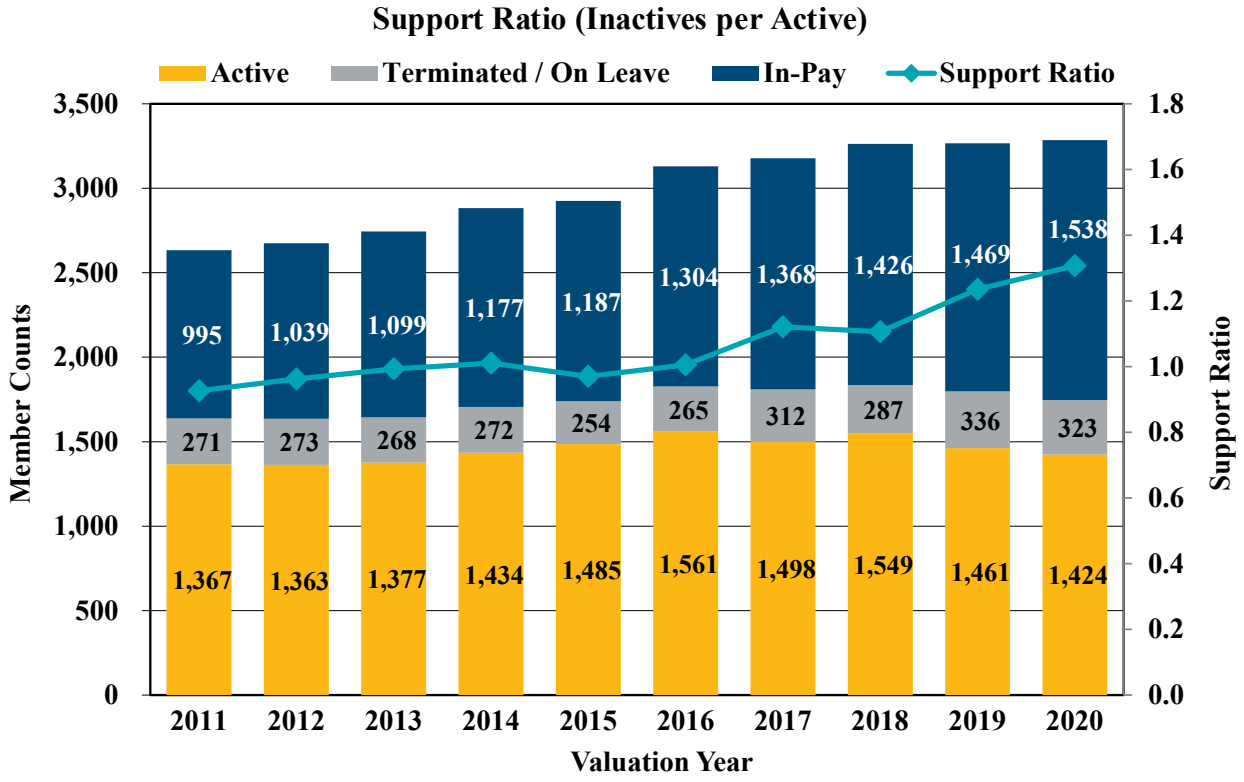
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. Maturity measures of the Plan show a gradual increase in maturity.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Support Ratio (Inactives per Active)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. The Support Ratio is expected to increase gradually as a plan matures. The chart below shows the growth in the Support Ratio for the Plan for the past 10 years.

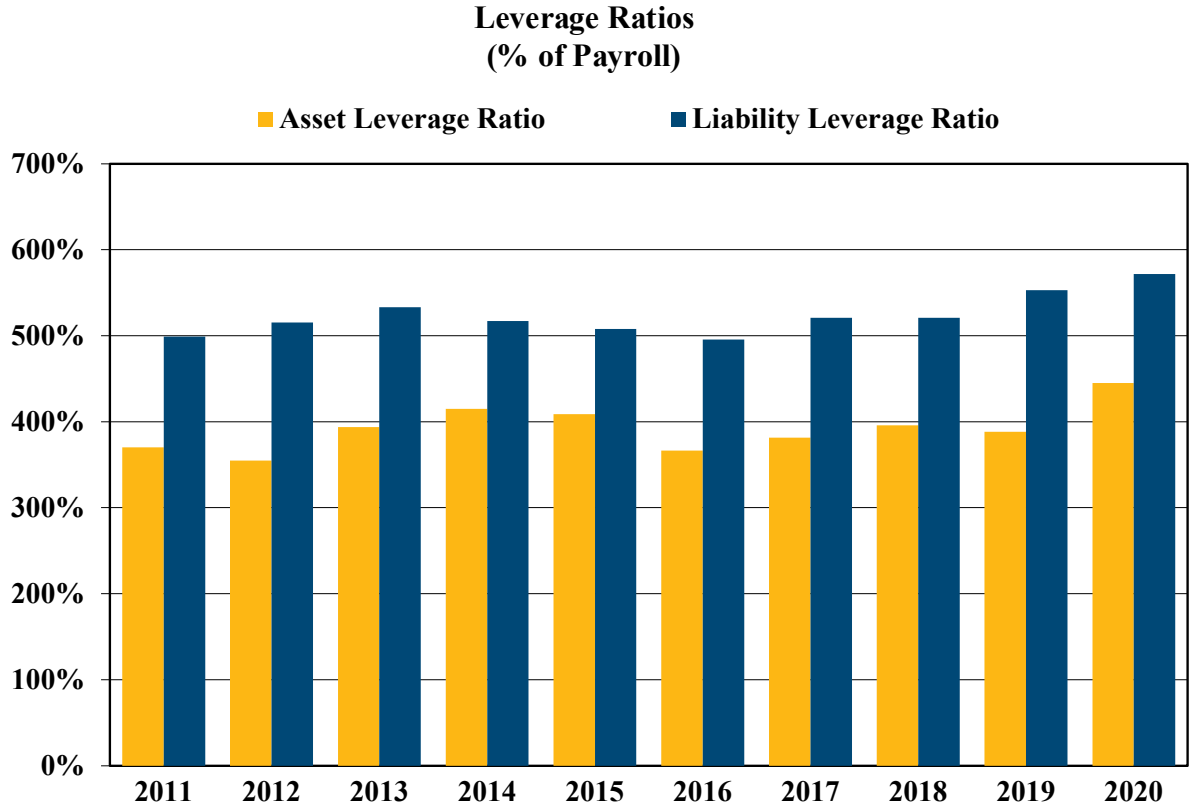


Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. For VTA-ATU, we have calculated the historical asset leverage ratio and actuarial liability leverage ratio as a multiple of the Plan's payroll. An asset leverage ratio of 4.0, for example, means that if the Plan's assets lose 3% of their value (an actuarial loss of 10% compared to the expected return of 7.0%), the loss would be equivalent to 40% (10% loss x 4.0) of the Plan's payroll. An additional payment of 4% of payroll would be required to amortize this asset loss over a 20-year period. When the Plan becomes 100% funded, the asset leverage ratio would equal the Actuarial Liability (AL) leverage ratio. The AL leverage ratio also indicates how sensitive the Plan is to experience gains and losses or assumption changes. For example, an assumption change that increases the AL by 5% would add a liability equivalent to about 25% of the Plan's payroll if the AL leverage ratio is 5.0. An additional payment of 2% of payroll would be required to amortize this liability loss over a 20-year period.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

The chart below shows the historical leverage ratios of the Plan. The leverage ratios have been gradually increasing. This indicates an increase in sensitivity of the Plan to returns earned on Plan assets and an increase in the volatility of the contributions.



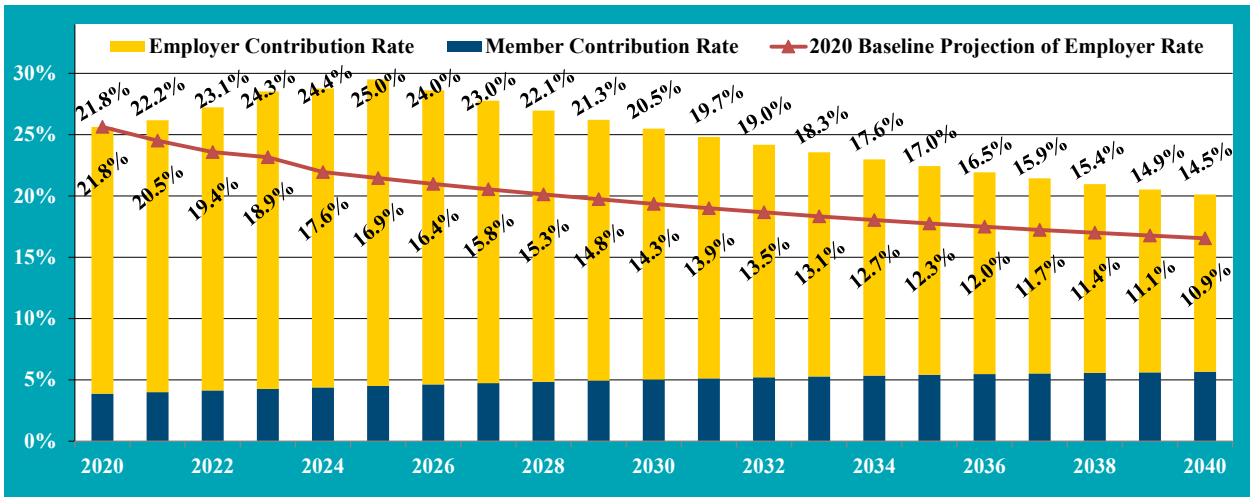
Assessing Costs and Risks

Investment Risk – Stress Test

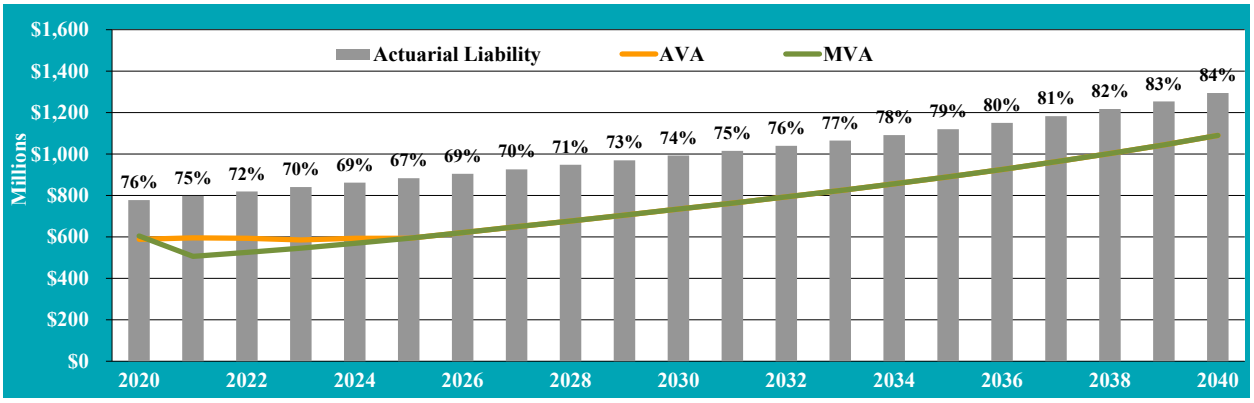
As recent events have clearly shown, the amount of risk associated with short-term changes in the investment markets is substantial. In light of current events surrounding the global coronavirus pandemic and subsequent market fallout, we have produced a stress test based on the Plan's approximate return through March 31, 2020. Although actual investment returns for 2020 will not be known until after the Plan year end, this stress test provides a picture of how costs and funded ratios could be affected under a plausible scenario. The graphs on the next page show the projection of contributions and funded status, based on an assumed return of –14% for 2020, followed by returns of 7.00% per year thereafter. No other gains or losses, or changes to assumptions or funding policy, are assumed.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Projection of Employer and Member Contributions, -14.00% return in 2020 followed by 7.00% return thereafter



Projection of Assets and Liabilities, -14.00% return in 2020 followed by 7.00% return thereafter

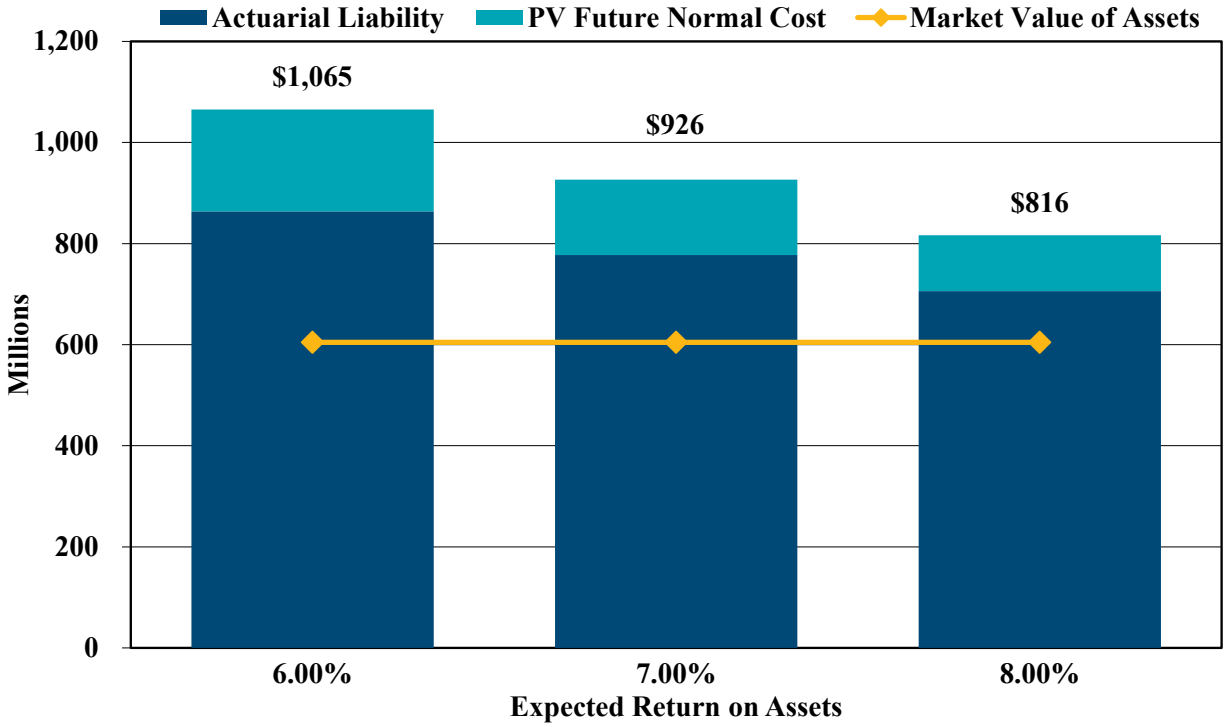


Investment Risk - Sensitivity Test

The chart on the next page compares assets to the present value of all projected future benefits discounted at the current expected rate of return and at an investment return 100 basis points above and below the expected rate of return. The present value of future benefits is shown as a bar with the portion attributable to past service in dark blue (Actuarial Liability) and the portion attributable to future service in teal (Present Value of Future Normal Costs). The Market Value of Assets is shown by the gold line.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Present Value of Future Benefits versus Assets



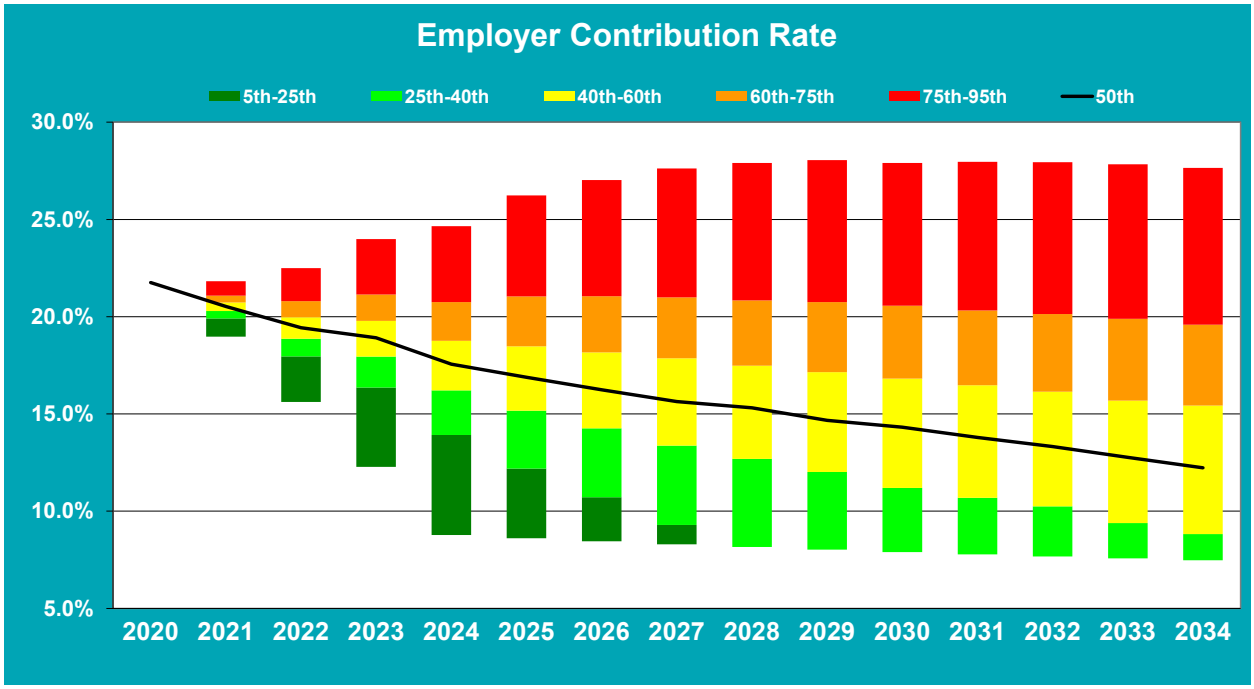
If investments return 7.00% annually, the Plan would need approximately $926 million in assets today to pay all projected benefits compared to current assets of $604 million. If investment returns are only 6.00%, the Plan would need approximately $1,065 million in assets today, and if investment returns are 8.00%, the Plan would need approximately $816 million in assets today.

Stochastic Projections

Stochastic projections serve to show the range of probable outcomes of various measurements. The charts on the following pages show the projected range of the employer contribution rate and of the funded ratio on an actuarial value of assets basis. The range in both scenarios is driven by the volatility of investment returns (assumed to be based on an 11% standard deviation of annual returns).

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

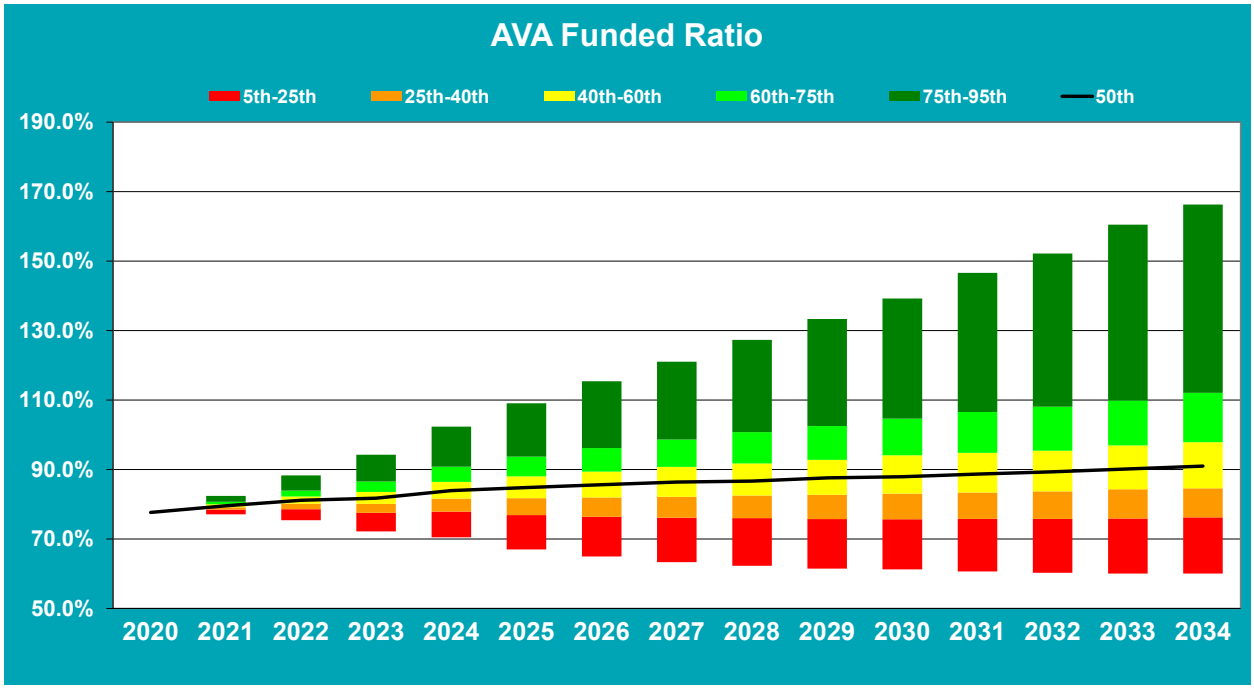
Stochastic Projection of Employer Contributions as a Percent of Pay



The stochastic projection of employer contributions as a percent of pay shows the probable range of future contribution rates. The baseline contribution rate (black line), which is based on the median of the simulations using an average return of 7.00%, aligns closely with the projections discussed in Subsection D. of the Executive Summary of this report. The projections do not include any known market events that have occurred after December 31, 2019. In the most pessimistic scenario shown, the 95th percentile, the projected employer contribution rate approaches 30% of pay. We note that the projections do not allow the employer contribution rate to drop below the normal cost, as required under PEPRA (unless the Plan becomes extremely overfunded).

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Stochastic Projection of Funded Ratio on an Actuarial Value of Assets Basis



While the baseline funded ratio (black line) is only projected to be around 90% at the end of the 15-year period shown here, there is a wide range of potential outcomes. Good investment returns have the likelihood of bringing the funded ratio well over 100%. Due to the sound funding policy of the Plan, even in scenarios with unfavorable investment returns, the Plan is projected to remain over 60% funded on an actuarial value of assets basis.

SECTION III – CERTIFICATION

The purpose of this report is to present the January 1, 2020 actuarial valuation of the Valley Transportation Authority Amalgamated Transit Union, Local 265 Pension Plan ("Plan"). This report is for the use of the Plan and the Board of Pensions and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

In preparing our report, we relied on information (some oral and some written), supplied by the Plan. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

The rate of return and inflation assumptions in this report were adopted by the Board of Pensions, at the November 2016 Board of Pensions meeting. Other assumptions were based on recommendations from our experience study presented November 14, 2017 covering plan experience during the period from January 1, 2012 through December 31, 2016.

The funded ratios in this report are for the purpose of assessing the need for and the amount of future contributions. These measures are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and, changes in plan provisions or applicable law.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for the Plan for the purposes described herein and for use by the plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any such other users.

Graham A. Schmidt, ASA, FCA, MAAA, EA
Consulting Actuary

Anne D. Harper, FSA, MAAA, EA
Principal Consulting Actuary

SECTION IV – ASSETS

Pension Plan assets play a key role in the financial operation of the Plan and in the decisions the Board may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on Plan assets including:

- **Disclosure** of Plan assets as of December 31, 2019
- Statement of the **changes in market** values during the year
- Development of the **Actuarial Value of Assets**
- Comparison of the actual and expected **investment performance** during the year, and
- **Historical investment performance**.

Disclosure

There are two types of asset values disclosed in the valuation, the Market Value of Assets and the Actuarial Value of Assets. The market value represents "snapshot" or "cash out" values, which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-range planning as are the Actuarial Value of Assets, which reflect smoothing of annual investment returns.

SECTION IV – ASSETS

Table IV-1 discloses each component of the market value of assets as of December 31, 2018 and December 31, 2019.

Table IV-1
Statement of Assets at Market Value
December 31,

	2018	2019
Investments		
Cash and cash equivalents	$ 9,038,857	$ 1,528,152
Money market	5,786	4,201,537
Corporate bonds	65,067,720	57,042,763
U.S. treasury obligations	9,153,614	11,433,766
U.S. agency securities	46,424,841	50,216,203
Municipal bonds	3,072,910	2,472,999
Equities	299,789,395	361,488,991
Real asset	61,385,550	59,695,123
Alternative investments	49,225,594	71,432,118
Total Investments	$ 543,164,267	$ 619,511,652
Receivables		
Interest and Dividends Receivable	$ 924,267	$ 828,244
Due from Other Agencies	0	2,550
Employer Contributions	0	0
Prepaid Expenses	0	0
Total Receivables	$ 924,267	$ 830,794
Payables		
Deferred Revenue (Prepaid Contribution)	$ (15,954,003)	$ (15,076,589)
Accounts Payable	(465,618)	(575,916)
Other	0	0
Total Payables	$ (16,419,621)	$ (15,652,505)
Market Value of Assets	**$ 527,668,913**	**$ 604,689,941**

SECTION IV – ASSETS

Changes in Market Value

The components of asset change are:

- Contributions (employer and employee)
- Benefit payments
- Expenses (investment and administrative)
- Investment income (realized and unrealized)

Table IV-2 shows the components of the change in the Market Value of Assets during 2018 and 2019.

Table IV-2
Changes in Market Values
December 31,

	2018	2019
Contributions		
Employer's Contribution	$ 28,984,928	$ 31,429,296
Members' Contributions	3,205,865	3,855,143
Total Contributions	$ 32,190,793	$ 35,284,439
Investment Income		
Interest & Dividends	$ 8,123,638	$ 19,625,414
Realized & Unrealized Gain/(Loss)	(31,769,081)	70,763,788
Other Investment Income	0	0
Investment Expenses	(1,915,604)	(2,434,984)
Total Investment Income	$ (25,561,047)	$ 87,954,218
Disbursements		
Benefit Payments	$ (42,983,728)	$ (45,818,493)
Administrative Expenses	(350,918)	(399,136)
Total Disbursments	$ (43,334,646)	$ (46,217,629)
Net increase (Decrease)	$ (36,704,900)	$ 77,021,028
Net Assets Held in Trust for Benefits		
Beginning of Year	564,373,813	527,668,913
End of Year	$ 527,668,913	$ 604,689,941
Approximate Return	-4.57%	16.84%
Administrative Expenses as a Percentage of Mean Assets	0.06%	0.07%

SECTION IV – ASSETS

Actuarial Value of Assets (AVA)

The Actuarial Value of Assets represents a "smoothed" value developed by the actuary to reduce the volatile results, which could develop due to short-term fluctuations in the Market Value of Assets. For this Plan, the Actuarial Value of Assets is calculated on a modified market-related value. The Market Value of Assets is adjusted to recognize, over a five-year period, investment earnings which are greater than (or less than) the assumed investment return. The actuarial value is constrained to fall within 20% of the market value.

Table IV-3
Development of Actuarial Value of Assets
as of January 1, 2020

Year	(a) Expected Return	(b) Actual Return	(c) = (b) – (a) Investment Gain or (Loss)	(d) Not Recognized	(c) x (d) Unrecognized Earnings
2015	$ 36,927,197	$ (2,555,116)	$ (39,482,313)	0%	$ 0
2016	34,770,691	41,080,496	6,309,805	20%	1,261,961
2017	35,881,258	71,350,921	35,469,663	40%	14,187,865
2018	40,154,359	(25,561,047)	(65,715,406)	60%	(39,429,244)
2019	37,679,264	87,954,218	50,274,954	80%	40,219,963

1. Total Unrecognized Asset Gains/(Losses)	$ 16,240,545
2. Market Value of Assets as of January 1, 2020	604,689,941
3. Actuarial Value of Assets as of January 1, 2020: [(2) - (1)]	588,449,396
4. Ratio of Actuarial Value to Market Value [(3) ÷ (2)]	97.31%

SECTION IV – ASSETS

Investment Performance

The following table calculates the investment related gain/loss for the plan year on both a market value and an actuarial value basis. The market value gain/loss is an appropriate measure for comparing the actual asset performance to the valuation's long-term assumption. The rate of return assumption is 7.00%.

Table IV-4
Asset Gain/(Loss)

	Market Value	Actuarial Value
As of January 1, 2019	**$ 527,668,913**	**$ 564,331,981**
Employer Contributions	31,429,296	31,429,296
Employee Contributions	3,855,143	3,855,143
Benefit Payments	(45,818,493)	(45,818,493)
Expenses	(399,136)	(399,136)
Expected Investment Earnings (7.00%)	37,679,264	40,245,679
Expected Value as of January 1, 2020	**$ 554,414,987**	**$ 593,644,470**
Investment Gain / (Loss)	50,274,954	(5,195,074)
As of January 1, 2020	**$ 604,689,941**	**$ 588,449,396**
Return	16.84%	6.27%

SECTION IV – ASSETS

Historical Investment Performance

The table below shows the historical annual asset returns on a market value and an actuarial value basis, as well as the increase in Consumer Price Index (CPI) since 2006.

Table IV-5
Historical Asset Returns

Year Ended December 31	Return on Market Value	Return on Actuarial Value	Increase in CPI [1]
2006	14.0%	9.5%	2.5%
2007	5.1%	10.9%	4.1%
2008	(20.6%)	(12.0%)	0.1%
2009	23.0%	10.8%	2.7%
2010	12.0%	5.2%	1.5%
2011	0.4%	3.1%	3.0%
2012	13.8%	4.5%	1.7%
2013	16.3%	12.4%	1.5%
2014	6.2%	10.0%	0.8%
2015	(0.5%)	7.3%	0.7%
2016	8.8%	7.9%	2.1%
2017	14.3%	8.2%	2.1%
2018	(4.6%)	4.8%	1.9%
2019	16.8%	6.3%	2.3%
Compounded 10-Year Average	8.1%	6.9%	1.8%
Compounded 5-Year Average	6.6%	6.9%	1.8%

[1] *Based on All Urban Consumers – U.S. City Average, December Indices.*

SECTION V – LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities at January 1, 2019 and January 1, 2020
- Statement of **changes** in these liabilities during the year

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them. Note that these liabilities are not appropriate for settlement purposes, including the purchase of annuities and the payment of lump sums.

- **Present Value of Future Benefits:** Used for measuring all future Plan obligations, represents the amount of money needed today to fully fund all benefits of the Plan both earned as of the valuation date and those to be earned in the future by current plan participants, under the current Plan provisions.

- **Actuarial Liability:** Used for funding calculations, the Normal Cost rate is calculated taking the total Projected Value of Benefits at Entry Age, divided by Present Value of Future Salary at Entry Age. The Actuarial Liability is the portion of the Present Value of Future Benefits not covered by future expected Normal Costs. The method used for this Plan is called the **Entry Age to Final Decrement** (EAFD) funding method.

- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Actuarial Value of Assets.

Table V-1 discloses each of these liabilities for the current and prior valuations.

Table V-1
Liabilities/Net (Surplus)/Unfunded

	January 1, 2019	January 1, 2020
Present Value of Future Benefits		
Active Participant Benefits	$ 436,226,113	$ 433,832,386
Inactive Participant Benefits	467,527,418	492,642,584
Present Value of Future Benefits (PVB)	**$ 903,753,531**	**$ 926,474,970**
Actuarial Liability		
Present Value of Future Benefits (PVB)	$ 903,753,531	$ 926,474,970
Present Value of Future Normal Costs (PVFNC)	152,187,242	148,930,924
Actuarial Liability (AL = PVB – PVFNC)	**$ 751,566,289**	**$ 777,544,046**
Actuarial Value of Assets (AVA)	564,331,981	588,449,396
Net (Surplus)/Unfunded (AL – AVA)	**$ 187,234,308**	**$ 189,094,650**

SECTION V – LIABILITIES

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments modifying benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method or software

Table V-2 shows the components of change in Actuarial Liability.

Table V-2
Changes in Actuarial Liability

Actuarial Liability at January 1, 2019	$	751,566,289
Actuarial Liability at January 1, 2020	$	777,544,046
Liability Increase (Decrease)	$	25,977,757
Change due to:		
Plan Amendment	$	0
Assumption Change		0
Accrual of Benefits		16,678,645
Actual Benefit Payments		(45,818,493)
Interest		52,200,621
Actuarial Liability (Gain)/Loss		2,916,984
Liability Increase (Decrease)	$	25,977,757

SECTION V – LIABILITIES

Unfunded liabilities will change (as shown in Table V-3) because of all of the above, and also due to changes in Plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

Table V-3
Development of Actuarial (Gain) / Loss

1. Unfunded Actuarial Liability at Start of Year (not less than zero)	$	187,234,308
2. Total Normal Cost at Start of Year		16,678,645
3. Interest on 1. and 2. to End of Year		14,273,907
4. Contributions for Prior Year (Excluding Admin Expenses)		34,885,303
5. Interest on 4. to End of Year		2,318,965
6. Change in Unfunded Actuarial Liability Due to Changes in Actuarial Methods		0
7. Change in Unfunded Actuarial Liability Due to Changes in Assumptions		0
8. Change in Unfunded Actuarial Liability Due to Changes in Plan Design		0
9. Expected Unfunded Actuarial Liability at End of Year [1. + 2. + 3. – 4. – 5. + 6. + 7. + 8.]	$	180,982,592
10. Actual Unfunded Actuarial Liability at End of Year (not less than zero)		189,094,650
11. Actuarial (Gain) / Loss [10. – 9.]	$	8,112,058

SECTION VI – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this Plan, the actuarial funding method used to determine the normal cost and the Unfunded Actuarial Liability is the **Entry Age to Final Decrement (EAFD)** cost method. This method is consistent with the method required under the current GASB accounting statements.

The normal cost rate is determined with the normal cost percentage equal to the total Projected Value of Benefits at Entry Age, divided by Present Value of Future Salary at Entry Age. The Actuarial Liability is the portion of the present value of all future benefits for each member not expected to be covered by the future normal cost payments.

The Unfunded Actuarial Liability is the difference between the EAFD Actuarial Liability and the Actuarial Value of Assets. The UAL rate is based on a level dollar 20-year rolling amortization of the remainder of the Unfunded Actuarial Liability as of January 1, 2020.

An amount equal to the expected administrative expenses for the Plan is added directly to the actuarial cost calculation.

ATU members hired before January 1, 2016 contributed 0.95% of Compensation to the Plan as of October 2016, which increased to 1.90% beginning October 2017 and increased again to 3.40% beginning September 2019. New PEPRA members hired on or after January 1, 2016 contribute half of the PEPRA normal cost of the Plan rounded to the nearest 0.25%. Once established, the contribution rate for PEPRA members will be adjusted to reflect a change in the normal cost rate, but only if the normal cost rate changed by more than 1% of payroll. The PEPRA member rate of 5.50%, effective since October 2016, was increased to 6.00% effective July 2018 because the total normal cost rate for the PEPRA members (12.12% as of January 1, 2018) had increased by more than 1% of pay from when the rate was initially determined. The PEPRA member contribution rate will remain at 6.00% based on the results of the current valuation.

Because a rolling amortization period is being used, the UAL is not expected to be fully amortized by the end of the 20-year projection period, assuming all assumptions are met. However, the UAL is expected to continue to decrease in dollar terms, and the funded ratio is expected to continue to increase, as the use of a 20-year rolling period with level dollar amortization will result in an amortization payment greater than the interest on the UAL.

The tables on the following pages present the development of employer contributions for the Plan for the current and prior valuations and the normal cost contributions for the Plan, split between Classic and PEPRA members.

SECTION VI – CONTRIBUTIONS

Table VI-1
Development of Employer Contribution Amount

		January 1, 2019		January 1, 2020
1. Entry Age Normal Cost				
a. Retirement	$	13,089,748	$	12,899,804
b. Disability		1,880,936		1,878,751
c. Termination		575,242		600,700
d. Transfers		1,556,262		1,537,561
e. Death		236,614		230,285
f. Non-vested Refund of Employee Contributions		17,801		26,647
g. Total Normal Cost (a) + (b) + (c) + (d) + (e) + (f)	$	17,356,603	$	17,173,748
2. Entry Age Actuarial Liability				
Active Members				
a. Retirement	$	259,208,777	$	259,027,575
b. Disability		12,839,095		13,348,965
c. Termination		2,974,044		3,050,372
d. Transfers		5,010,125		5,446,045
e. Death		3,928,523		3,906,269
f. Non-vested Refund of Employee Contributions		78,307		122,236
g. Total Active Liability: (a) + (b) + (c) + (d) + (e) + (f)	$	284,038,871	$	284,901,462
Inactive Members				
h. Retirement	$	379,232,738	$	404,428,040
i. Disability		35,888,653		33,471,690
j. Termination		34,776,629		34,549,509
k. Transfer		0		0
l. Death		17,629,398		20,193,345
m. Total Inactive Liability: (h) + (i) + (j) + (k) + (l)	$	467,527,418	$	492,642,584
n. Total Entry Age Actuarial Liability: (2g) + (2m)	$	751,566,289	$	777,544,046
3. Actuarial Value of Assets	$	564,331,981	$	588,449,396
4. Contributon Receivable		15,954,003		15,076,589
5. Unfunded Accrued Liability: (2n) - (3) - (4)	$	171,280,305	$	174,018,061
6. Amortization of Unfunded Liability		15,109,952		15,351,471
7. Expected Administrative Expenses		350,000		350,000
8. Employee Contributions		3,250,035		5,034,786
9. Employer Contribution Payable: (1g) + (6) + (7) - (8)	$	29,566,521	$	27,840,433
10. Employer Contribution with Interest	$	31,636,177	$	29,789,263
11. Projected Payroll	$	137,953,801	$	136,909,370
12. Employer Contribution as a Percent of Projected Payroll: (10) / (11)		22.93%		21.76%
13. Employee Contribution as a Percent of Projected Payroll		2.47%		3.86%
		FY 2019-2020		**FY 2020-2021**
14. Employer Contribution Payable at Beginning of Fiscal Year	$	30,583,847	$	28,798,368

SECTION VI – CONTRIBUTIONS

Table VI-2 shows the development of employer contributions by Plan tier. The employer normal cost rate shown in this table, 9.31%, is based on the projected calendar year pay of the active members. This rate differs from the employer normal cost rate shown in Table I-2, 9.49%, which is shown on a projected fiscal year payroll basis. The employer rate for the fiscal year is determined by adjusting the dollar amount of the calendar year normal cost with interest to the fiscal year, and then dividing this amount by the projected fiscal year payroll.

Table VI-2
Development of Employer Contribution by Plan Tier

	CLASSIC	PEPRA	TOTAL
1. Entry Age Normal Cost	$ 14,296,997	$ 2,876,751	$ 17,173,748
2. Employee Contributions	3,648,496	1,386,290	5,034,786
3. Employer Normal Cost: (1) - (2)	$ 10,648,501	$ 1,490,461	$ 12,138,962
4. Annual Pay of Active Members	$ 111,000,991	$ 23,899,820	$ 134,900,811
5. Normal Cost as a Percent of Pay	13.32%	12.45%	13.17%
6. Employee Contribution Rate	3.40%	6.00%	3.86%
7. Employer Normal Cost Rate	9.92%	6.45%	9.31%
8. Amortization of Unfunded Liability			15,351,471
9. Expected Administrative Expenses			350,000
10. Employer Contribution: (3) + (8) + (9)			$ 27,840,433
11. Employer Contribution with Interest			$ 29,789,263
12. Projected Fiscal Year Payroll			$ 136,909,370
13. Employer Contribution as a Percent of Projected Payroll: (11) / (12)			21.76%
			FY 2020-2021
14. Employer Contribution Payable at Beginning of Fiscal Year			$ 28,798,368

APPENDIX A – MEMBERSHIP INFORMATION

Data pertaining to active and inactive Members and their beneficiaries as of the valuation date was supplied by the Plan Administrator and the ATU on electronic media. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Several assumptions and methodologies were applied to obtain additional data needed for the valuation. For active participants whose salary was inconsistent from one year to the next, we applied an adjustment to the salary provided. Salary earned was either adjusted to equal the pay rate or an average of prior years' earnings. For terminated vested participants without a deferred monthly benefit amount, we estimated a future monthly benefit payable according to plan provisions.

Lastly, benefits due to former spouses of participants who have not commenced benefits are included with the participant's benefit. The Plan Administrator is providing information on these deferred recipients, and the benefits are being valued accordingly.

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of

	January 1, 2019	January 1, 2020
Active Participants		
Number	1,461	1,424
Number Vested	668	616
Average Age	46.4	46.2
Average Service	11.0	11.1
Average Pay	$ 93,039	$ 94,734
Retired Participants		
Number	1,119	1,182
Average Age	69.9	70.2
Average Annual Benefit	$ 34,613	$ 35,161
Beneficiaries and Alternate Payees		
Number	167	177
Average Age	68.3	68.7
Average Annual Benefit	$ 15,415	$ 16,557
Disabled Participants		
Number	183	179
Average Age	68.5	68.8
Average Annual Benefit	$ 15,316	$ 15,863
Terminated Vested Participants		
Number	137	130
Average Age	56.8	57.2
Average Annual Benefit	$ 17,694	$ 17,781
Members on Leave		
Number	102	85
Average Age	44.6	44.8
Average Annual Benefit	$ 11,969	$ 11,170
Transferred Participants		
Number	87	86
Average Age	46.9	45.9
Average Annual Benefit	$ 41,971	$ 44,009
Terminated Non-Vested Participants		
Number	10	22
Average Age	31.9	37.1
Average Contribution Refund	$ 1,578	$ 2,881

APPENDIX A – MEMBERSHIP INFORMATION

Participant Data as of January 1, 2020

	CLASSIC Members	PEPRA Members
Active Participants		
Number	1,105	319
Number Vested	616	0
Average Age	48.6	37.8
Average Service	13.7	2.1
Average Pay	$ 100,453	$ 74,921
Retired Participants		
Number	1,182	0
Average Age	70.2	n/a
Average Annual Benefit	$ 35,161	n/a
Beneficiaries and Alternate Payees		
Number	177	0
Average Age	68.7	n/a
Average Annual Benefit	$ 16,557	n/a
Disabled Participants		
Number	179	0
Average Age	68.8	n/a
Average Annual Benefit	$ 15,863	n/a
Terminated Vested Participants		
Number	130	0
Average Age	57.2	n/a
Average Annual Benefit	$ 17,781	n/a
Members on Leave		
Number	66	19
Average Age	47.2	36.2
Average Annual Benefit	$ 11,170	n/a
Transferred Participants		
Number	86	0
Average Age	45.9	n/a
Average Annual Benefit	$ 44,009	n/a
Terminated Non-Vested Participants		
Number	11	11
Average Age	34.8	39.4
Average Contribution Refund	$ 1,876	$ 3,885

APPENDIX A – MEMBERSHIP INFORMATION

Data Reconciliation January 1, 2019 to January 1, 2020

	Active	Members on Leave	Transfers to DCLA	Terminated with Funds on Account	Terminated Vested	Disabled	Retired	Beneficiaries	QDROs	Total
Participant count as of January 1, 2019	**1,461**	**102**	**87**	**10**	**137**	**183**	**1,119**	**116**	**51**	**3,266**
New January 2, 2019 through December 31, 2019	83	0	0	0	0	0	0	0	0	83
Return to Active Service	57	(56)	0	0	(1)	0	0	0	0	0
Terminated with Vested Benefits	(3)	0	0	0	3	0	0	0	0	0
Terminated with Funds on Account	(14)	(3)	0	17	0	0	0	0	0	0
Active Disabled	(65)	65	0	0	0	0	0	0	0	0
Became Disabled	(1)	(3)	(1)	0	0	5	0	0	0	0
Retired	(63)	(9)	(6)	0	(9)	0	87	0	0	0
Transfer to DCLA Position	(8)	0	8	0	0	0	0	0	0	0
Died or Transfer to Non-DCLA, Without a Vested Benefit	(2)	0	(2)	0	0	(9)	(17)	(1)	0	(31)
Died with Beneficiary Payable	(2)	0	0	0	0	0	(7)	9	0	0
Refund of Contributions or Certain Period Ended	(19)	(11)	0	(5)	0	0	0	(2)	0	(37)
QDRO Commenced	0	0	0	0	0	0	0	0	5	5
Miscellaneous Adjustments	0	0	0	0	0	0	0	(1)	0	(1)
Total Change	(37)	(17)	(1)	12	(7)	(4)	63	5	5	19
Participant count as of January 1, 2020	**1,424**	**85**	**86**	**22**	**130**	**179**	**1,182**	**121**	**56**	**3,285**

APPENDIX A – MEMBERSHIP INFORMATION

Age / Service Distribution Of Active Participants
As of January 1, 2020

Age	Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	13	19	0	0	0	0	0	0	0	0	32
25 to 29	13	59	17	0	0	0	0	0	0	0	89
30 to 34	14	74	51	14	0	0	0	0	0	0	153
35 to 39	15	76	72	39	4	1	0	0	0	0	207
40 to 44	6	49	66	28	20	15	0	0	0	0	184
45 to 49	4	32	47	29	25	30	3	0	0	0	170
50 to 54	7	40	33	32	31	43	16	10	0	0	212
55 to 59	3	22	36	23	29	47	15	21	3	1	200
60 to 64	0	15	13	18	23	30	6	10	8	2	125
65 to 69	0	3	8	13	7	6	2	0	3	1	43
70 & up	0	1	0	0	3	4	0	0	0	1	9
Total	75	390	343	196	142	176	42	41	14	5	1,424

Average Service = 11.1

Age / Service Distribution Of Active Participants
Average Salary As of January 1, 2020

Age	Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	54,366	69,712	0	0	0	0	0	0	0	0	$ 63,477
25 to 29	54,354	78,046	85,162	0	0	0	0	0	0	0	75,945
30 to 34	54,637	84,605	95,345	94,837	0	0	0	0	0	0	86,379
35 to 39	58,033	88,665	95,232	100,759	104,253	97,602	0	0	0	0	91,353
40 to 44	55,656	94,001	95,296	93,193	105,261	102,306	0	0	0	0	94,993
45 to 49	54,153	92,556	96,134	97,485	107,791	104,260	105,599	0	0	0	98,018
50 to 54	56,262	93,329	102,662	99,921	105,825	108,860	122,449	99,729	0	0	102,030
55 to 59	56,554	95,218	100,897	94,920	103,932	105,303	104,263	106,459	100,176	84,473	101,139
60 to 64	0	100,720	89,853	97,669	103,305	105,355	94,348	107,877	109,345	113,695	101,765
65 to 69	0	98,118	99,302	93,655	115,115	104,140	114,637	0	126,160	104,135	103,461
70 & up	0	150,446	-	0	63,105	92,042	0	0	0	107,174	90,567
Total	$ 55,504	$ 87,897	$ 96,086	$ 97,194	$ 104,808	$ 105,363	$ 110,364	$ 105,163	$ 110,984	$ 104,635	$ 94,734

APPENDIX A – MEMBERSHIP INFORMATION

Retired Participants
Benefit Summary

Age	Count	Average Monthly Benefit
under 30	0	0
30 - 34	0	0
35 - 39	0	0
40 - 44	0	0
45 - 49	0	0
50 - 54	0	0
55 - 59	60	3,891
60 - 64	173	4,482
65 - 69	341	3,268
70 - 74	321	2,502
75 - 79	177	1,999
80 - 84	78	1,712
85 - 89	23	1,761
90+	9	1,025
	1,182	2,930

Beneficiaries and Alternate Payee
Benefit Summary

Age	Count	Average Monthly Benefit
under 30	0	0
30 - 34	1	1,497
35 - 39	6	2,692
40 - 44	2	1,002
45 - 49	6	1,586
50 - 54	2	1,338
55 - 59	12	1,676
60 - 64	36	1,800
65 - 69	30	1,384
70 - 74	29	1,034
75 - 79	16	1,401
80 - 84	18	1,055
85 - 89	11	674
90+	8	892
	177	1,380

Disabled Participants
Benefit Summary

Age	Count	Average Monthly Benefit
under 30	0	0
30 - 34	0	0
35 - 39	0	0
40 - 44	0	0
45 - 49	2	2,531
50 - 54	4	2,078
55 - 59	13	1,827
60 - 64	32	1,423
65 - 69	50	1,310
70 - 74	33	1,269
75 - 79	30	980
80 - 84	11	1,284
85 - 89	2	812
90+	2	716
	179	1,322

Terminated Vested Participants
Benefit Summary

Age	Count	Average Monthly Benefit
under 30	0	0
30 - 34	1	2,079
35 - 39	3	1,382
40 - 44	8	1,531
45 - 49	9	1,997
50 - 54	19	1,458
55 - 59	29	1,392
60 - 64	47	1,534
65 - 69	9	1,217
70 - 74	4	1,222
75 - 79	1	151
80 - 84	0	0
85 - 89	0	0
90+	0	0
	130	1,482

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the actuarial valuation as of January 1, 2020 are:

Actuarial Method

Annual contributions to the Valley Transportation Authority Amalgamated Transit Union, Local 265 Pension Plan (the Plan) are computed under the Entry Age to Final Decrement Cost Method.

Under this Cost Method, the Normal Cost is calculated as the amount necessary to fund Members' benefits as a level percentage of total payroll over their projected working lives. At each valuation date, the Actuarial Liability is equal to the difference between the liability for the members' total projected benefit and the present value of future Normal Cost contributions.

The excess of the Actuarial Liability over Plan assets is the Unfunded Actuarial Liability, and this liability is amortized in level dollar payments over a rolling 20-year period. The UAL is adjusted by the deferred revenue for prepaid contributions when determining the level dollar payment. Amounts may be added to or subtracted from the Unfunded Actuarial Liability due to Plan amendments, changes in actuarial assumptions, and actuarial gains and losses.

The Normal Cost is determined for each member individually. The total Normal Cost is calculated as the sum of the individual Normal Costs for all active members.

The total Plan cost is the sum of the Normal Cost, the amortization of the Unfunded Actuarial Liability, and the expected Administrative Expenses.

Actuarial Value of Plan Assets

The actuarial value of Plan assets is calculated on a modified market-related value. The Market Value of Assets is adjusted to recognize, over a five-year period, investment earnings which are greater than (or less than) the assumed investment return on the Market Value of Assets.

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

The demographic assumptions were adopted by the Board at the November, 2017 Board of Pensions meeting, based on recommendations included in an Experience Study performed by Cheiron covering the period from January 1, 2012 through December 31, 2016. The economic assumptions – in particular the rate of return and inflation assumptions used in this report - were adopted by the Board of Pensions at the November, 2016 Board of Pensions meeting.

1. Valuation Date

All assets and liabilities are computed as of January 1, 2020.

2. Rate of Return

The annual rate of return on all Plan assets is assumed to be 7.00% net of investment expenses.

3. Cost-of-Living

The cost-of-living as measured by the Consumer Price Index (CPI) will increase at the rate of 2.75% per year.

4. Plan Expenses

An allowance of $350,000 for Plan administrative expenses has been included in the annual cost calculated.

This amount is expected to increase in future valuations at the same rate as the growth in payroll (currently assumed to be 3.00% per year).

5. Increases in Pay

Assumed pay increases for active Participants consist of the compounded rate increases due to salary growth, 3.00%, and increases due to longevity and promotion.

Longevity and promotion increases are assumed to be:

Years of Service	Rate of Increase
0	15.00%
1	12.00%
2	9.00%
3	6.00%
4	3.00%
5+	0.25%

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

Healthy Active and Retired Participant Mortality

Rates of mortality for active and retired Members and their spouses, beneficiaries, and survivors are given by the Retired Pensioners (RP) 2014 Adjusted to 2006 Healthy Employee and Annuitant Blue Collar mortality tables with generational improvements using Scale MP-2017.

6. Disabled Participant Mortality

Rates of mortality for all disabled Members are given by the RP-2014 Adjusted to 2006 Disabled Annuitant mortality tables with generational improvements using Scale MP-2017.

7. Family Composition

85% of active Members are assumed to be married. Male spouses are assumed to be four years older than their wives.

8. Benefit Service/Terminal Cash Out

Based on a review of a sample of actual retirement benefit calculations from 2012-2016, future service retirement liabilities are increased by 7.0% and future disability retirement liabilities are decreased by 5.0% to reflect anticipated sick and vacation cash outs and reductions in Benefit Service due to the loss of certain periods of Inactive Service.

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

Demographic Rates

Demographic rates – including retirement rates among eligible members, rates of disability, and rates of termination from causes other than death, disability, and rates of termination from causes other than death, disability, and service retirement – were studied in the 2017 Experience Study for calendar years 2012-2016. The rates shown on the following pages were developed as a result of that Study.

9. Service Retirement

Retirement is assumed to occur in accordance with the rates shown in the following table:

Age	Less Than 25 Years of Service	25 or More Years of Service
52	8.0%	16.0%
53	8.0%	16.0%
54	8.0%	16.0%
55	8.0%	16.0%
56	5.0%	16.0%
57	5.0%	16.0%
58	5.0%	16.0%
59	5.0%	16.0%
60	5.0%	16.0%
61	15.0%	16.0%
62	15.0%	27.0%
63	15.0%	27.0%
64	20.0%	27.0%
65	25.0%	27.0%
66	25.0%	27.0%
67	25.0%	38.0%
68	25.0%	38.0%
69	25.0%	38.0%
70+	100.0%	100.0%

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

10. Termination

The following service-based turnover rates are assumed:

Years of Service	Male Rate	Female Rate
0	8%	12.5%
1	5%	8%
2	4%	6%
3	3%	5%
4-7	3%	4%
8-19	2%	4%
20+	2%	2%

No terminations are assumed for participants who are eligible for retirement.

50% of Members terminating with at least 10 (five for PEPRA Members) years of service are assumed to transfer to VTA administrative positions in line of career advancement. 25% of Members terminating with less than 10 (five for PEPRA Members) years of service are assumed to transfer to VTA administrative positions in line of career advancement. Pay for these Members is assumed to increase by 4.50% per year from the date of termination until the assumed retirement date, which is assumed to be age 59.

Benefits for these who do not transfer are assumed to begin at age 65.

Members who are currently on a leave of absence are valued as disabled participants. Members with at least 10 years of service are valued with an immediate life annuity benefit and Members with least than 10 years of service are valued as a refund of contributions.

11. Disability

Disability rates are as follows:

Male Rate	Female Rate
0.80%	2.25%

Disability rates are not applied until a member has at least 10 years of eligibility service. 75% of disabilities are assumed to be Occupational, the remainder Total and Permanent. Disabled Participants are assumed not to return to active service.

12. Changes in Actuarial Methods and Assumptions since Prior Valuation

None

APPENDIX C – SUMMARY OF PLAN PROVISIONS

A. Definitions

Average Final Earnings: Effective February 2, 2004, Average Final Earnings means the average monthly compensation during the three years that produces a Member's highest average compensation. Average Final Earnings is computed as the higher of two figures:

- Divide the Periodic Pensionable Earnings received during the highest 78 consecutive pay periods by 78. No paired pay periods with earnings shall be skipped or dropped. However, paired pay periods with zero earnings shall be skipped and replaced with the next consecutive paired pay period(s) that do not have zero earnings.

  For purposes of this calculation, paired pay periods shall mean any pair of consecutive bi-weekly pay periods, with the further requirement that the first period of the pair shall be the first, third, fifth, etc. period ending in a calendar year. For years that contain 27 pay periods, if the 27th pay period contains no earnings, it shall be ignored. If the 27th pay period contains earnings, it shall be included as an unpaired pay period and the number of pay periods used in the calculation shall be increased by one (i.e., from 78 to 79).

  Divide Terminal Earnings by 78. Add the two figures. Take the resulting figure, multiply it by 26, and then divide it by 12.

- Use the total of the Periodic Pensionable Earnings from the highest three calendar (payroll) years. These years need not be consecutive years. There shall be no skips and drops within the three calendar (payroll) years. Add the total Periodic Pensionable Earnings to Terminal Earnings and then divide by 36.

PEPRA requires an averaging period of at least 36 consecutive months and the exclusion of terminal payouts. Therefore, for PEPRA Members hired on or after January 1, 2016 the averaging period is 36 consecutive months, without the addition of Terminal Earnings.

Benefit Service: In general, Benefit Service is completed years of Eligibility Service with some exceptions. Specifically, after 1986 Benefit Service excludes:

- Any Eligibility Service during which Disability Benefits were paid under this Plan,

APPENDIX C – SUMMARY OF PLAN PROVISIONS

- Any Eligibility Service earned for service not covered by the Collective Bargaining Agreement,
- For service prior to February 16, 2004, any Eligibility Service earned as an Inactive Member, unless 10 or more years of Benefit Service had been earned prior to the Member becoming inactive, and
- For service on and after February 16, 2004, any time earned as an Inactive Member.

Benefit Service for PEPRA Members includes partial years of service.

Collective Bargaining Agreement: The Collective Bargaining Agreement is between VTA and Local 265 of the Amalgamated Transit Union.

Eligibility Service: In general, Eligibility Service is service as an Active or Inactive Member. Specifically, Eligibility Service includes:

- Service as an Active Member under the Collective Bargaining Agreement,
- Service as an Inactive Member not covered under the Collective Bargaining Agreement due to transfer to another position within VTA in normal line of career advancement,
- Military service, and
- Service prior to February 16, 2004 as an Inactive Member accumulating seniority under the Collective Bargaining Agreement.

Employer: The Employer is the Santa Clara Valley Transportation Authority (VTA).

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Periodic Pensionable Earnings:

Periodic Pensionable Earnings means the remuneration for services paid by the Employer during a bi-weekly pay period prior to retirement, including overtime, sick leave, and vacation/holiday allowance. A full-time Member working for the Union will be credited with Periodic Pensionable Earnings based on his/her earnings from the Union. A part-time Member working for the Union will be credited with Periodic Pensionable Earnings based on his/her seniority and job classification.

PEPRA Members' Periodic Pensionable Earnings are limited to only base compensation up to the PEPRA Compensation Limit for members participating in the federal system ($126,291 for 2020) to count for computing Plan benefits and employee contributions; in particular, all or most overtime will be excluded. In addition, it is likely that some sources of compensation, such as those underlined above, may be excluded from benefit and contribution computations.

Terminal Earnings:

Terminal Earnings are compensation received from the Employer after the Member's period of service has ended. In general, such compensation includes payments of accrued but unused vacation/floating holidays and sick leave.

Use of Terminal Earnings is excluded in computing benefits for PEPRA Members.

B. Membership

All employees working for the Employer under the Collective Bargaining Agreement, ATU clerical members, and full-time union officials with seniority under the Collective Bargaining Agreement are Active Members in the Plan.

Any Member joining the Plan for the first time on or after January 1, 2016 is a PEPRA Member. Employees who transfer from and are eligible for reciprocity with another public employer will not be PEPRA Members if their service in the reciprocal system was under a pre-PEPRA plan.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

C. Retirement Benefit

Eligibility: Members are eligible for service retirement upon attaining age 55 and completing 15 or more years of Eligibility Service, or attaining age 65 with 10 or more years of Eligibility Service, or upon reaching age 65 with five or more years of Eligibility Service and receiving permission to retire from the Board.

PEPRA Members are eligible to retire upon attaining age 52 and completing five or more years of service.

Benefit Amount: The monthly service retirement benefit is the Member's Average Final Earnings multiplied by the percentage figures shown in Table 1 for the Member's retirement age and completed years of Benefit Service.

For PEPRA Members, the benefit multiplier is 1% at age 52, increasing by 0.1% for each year of age up to 2.5% at 67. In between exact ages, the multiplier will increase by 0.025% for each quarter year increase in age.

Form of Benefit: The normal form of benefit is an annuity payable for the life of the Participant, with no continuation of benefits to a beneficiary after death. Optional forms of benefit are available on an actuarially adjusted basis.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 1 Effective: July 1, 1997 through June 30, 2002

	Age																				
	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1	1.40	1.44	1.48	1.52	1.56	1.60	1.64	1.68	1.72	1.76	1.80	1.84	1.88	1.92	1.96	2.00	2.04	2.08	2.12	2.16	2.20
2	2.80	2.88	2.96	3.04	3.12	3.20	3.28	3.36	3.44	3.52	3.60	3.68	3.76	3.84	3.92	4.00	4.08	4.16	4.24	4.32	4.40
3	4.20	4.32	4.44	4.56	4.68	4.80	4.92	5.04	5.16	5.28	5.40	5.52	5.64	5.76	5.88	6.00	6.12	6.24	6.36	6.48	6.60
4	5.60	5.76	5.92	6.08	6.24	6.40	6.56	6.72	6.88	7.04	7.20	7.36	7.52	7.68	7.84	8.00	8.16	8.32	8.48	8.64	8.80
5	7.00	7.20	7.40	7.60	7.80	8.00	8.20	8.40	8.60	8.80	9.00	9.20	9.40	9.60	9.80	10.00	10.20	10.40	10.60	10.80	11.00
6	8.40	8.64	8.88	9.12	9.36	9.60	9.84	10.08	10.32	10.56	10.80	11.04	11.28	11.52	11.76	12.00	12.24	12.48	12.72	12.96	13.20
7	9.80	10.08	10.36	10.64	10.92	11.20	11.48	11.76	12.04	12.32	12.60	12.88	13.16	13.44	13.72	14.00	14.28	14.56	14.84	15.12	15.40
8	11.20	11.52	11.84	12.16	12.48	12.80	13.12	13.44	13.76	14.08	14.40	14.72	15.04	15.36	15.68	16.00	16.32	16.64	16.96	17.28	17.60
9	12.60	12.96	13.32	13.68	14.04	14.40	14.76	15.12	15.48	15.84	16.20	16.56	16.92	17.28	17.64	18.00	18.36	18.72	19.08	19.44	19.80
10	14.00	14.40	14.80	15.20	15.60	16.00	16.40	16.80	17.20	17.60	18.00	18.40	18.80	19.20	19.60	20.00	20.40	20.80	21.20	21.60	22.00
11	15.40	15.84	16.28	16.72	17.16	17.60	18.04	18.48	18.92	19.36	19.80	20.24	20.68	21.12	21.56	22.00	22.44	22.88	23.32	23.76	24.20
12	16.80	17.28	17.76	18.24	18.72	19.20	19.68	20.16	20.64	21.12	21.60	22.08	22.56	23.04	23.52	24.00	24.48	24.96	25.44	25.92	26.40
13	18.20	18.72	19.24	19.76	20.28	20.80	21.32	21.84	22.36	22.88	23.40	23.92	24.44	24.96	25.48	26.00	26.52	27.04	27.56	28.08	28.60
14	19.60	20.16	20.72	21.28	21.84	22.40	22.96	23.52	24.08	24.64	25.20	25.76	26.32	26.88	27.44	28.00	28.56	29.12	29.68	30.24	30.80
15	21.00	21.60	22.20	22.80	23.40	24.00	24.60	25.20	25.80	26.40	27.00	27.60	28.20	28.80	29.40	30.00	30.60	31.20	31.80	32.40	33.00
16	22.40	23.04	23.68	24.32	24.96	25.60	26.24	26.88	27.52	28.16	28.80	29.44	30.08	30.72	31.36	32.00	32.64	33.28	33.92	34.56	35.20
17	23.80	24.48	25.16	25.84	26.52	27.20	27.88	28.56	29.24	29.92	30.60	31.28	31.96	32.64	33.32	34.00	34.68	35.36	36.04	36.72	37.40
18	25.20	25.92	26.64	27.36	28.08	28.80	29.52	30.24	30.96	31.68	32.40	33.12	33.84	34.56	35.28	36.00	36.72	37.44	38.16	38.88	39.60
19	26.60	27.36	28.12	28.88	29.64	30.40	31.16	31.92	32.68	33.44	34.20	34.96	35.72	36.48	37.24	38.00	38.76	39.52	40.28	41.04	41.80
20	28.00	28.80	29.60	30.40	31.20	32.00	32.80	33.60	34.40	35.20	36.00	36.80	37.60	38.40	39.20	40.00	40.80	41.60	42.40	43.20	44.00
21	29.40	30.24	31.08	31.92	32.76	33.60	34.44	35.28	36.12	36.96	37.80	38.64	39.48	40.32	41.16	42.00	42.84	43.68	44.52	45.36	46.20
22	30.80	31.68	32.56	33.44	34.32	35.20	36.08	36.96	37.84	38.72	39.60	40.48	41.36	42.24	43.12	44.00	44.88	45.76	46.64	47.52	48.40
23	32.20	33.12	34.04	34.96	35.88	36.80	37.72	38.64	39.56	40.48	41.40	42.32	43.24	44.16	45.08	46.00	46.92	47.84	48.76	49.68	50.60
24	33.60	34.56	35.52	36.48	37.44	38.40	39.36	40.32	41.28	42.24	43.20	44.16	45.12	46.08	47.04	48.00	48.96	49.92	50.88	51.84	52.80
25	35.00	36.00	37.00	38.00	39.00	40.00	41.00	42.00	43.00	44.00	45.00	46.00	47.00	48.00	49.00	50.00	51.00	52.00	53.00	54.00	55.00
26	36.40	37.44	38.48	39.52	40.56	41.60	42.64	43.68	44.72	45.76	46.80	47.84	48.88	49.92	50.96	52.00	53.04	54.08	55.12	56.16	57.20
27	37.80	38.88	39.96	41.04	42.12	43.20	44.28	45.36	46.44	47.52	48.60	49.68	50.76	51.84	52.92	54.00	55.08	56.16	57.24	58.32	59.40
28	39.20	40.32	41.44	42.56	43.68	44.80	45.92	47.04	48.16	49.28	50.40	51.52	52.64	53.76	54.88	56.00	57.12	58.24	59.36	60.48	61.60
29	40.60	41.76	42.92	44.08	45.24	46.40	47.56	48.72	49.88	51.04	52.20	53.36	54.52	55.68	56.84	58.00	59.16	60.32	61.48	62.64	63.80
30	42.00	43.20	44.40	45.60	46.80	48.00	49.20	50.40	51.60	52.80	54.00	55.20	56.40	57.60	58.80	60.00	61.20	62.40	63.60	64.80	66.00
31		44.64	45.88	47.12	48.36	49.60	50.84	52.08	53.32	54.56	55.80	57.04	58.28	59.52	60.76	62.00	63.24	64.48	65.72	66.96	68.20
32			47.36	48.64	49.92	51.20	52.48	53.76	55.04	56.32	57.60	58.88	60.16	61.44	62.72	64.00	65.28	66.56	67.84	69.12	70.40
33				50.16	51.48	52.80	54.12	55.44	56.76	58.08	59.40	60.72	62.04	63.36	64.68	66.00	67.32	68.64	69.96	71.28	72.60
34					53.04	54.40	55.76	57.12	58.48	59.84	61.20	62.56	63.92	65.28	66.64	68.00	69.36	70.72	72.08	73.44	74.80
35						56.00	57.40	58.80	60.20	61.60	63.00	64.40	65.80	67.20	68.60	70.00	71.40	72.80	74.20	75.60	77.00
36							59.04	60.48	61.92	63.36	64.80	66.24	67.68	69.12	70.56	72.00	73.44	74.88	76.32	77.76	79.20
37								62.16	63.64	65.12	66.60	68.08	69.56	71.04	72.52	74.00	75.48	76.96	78.44	79.92	81.40
38									65.36	66.88	68.40	69.92	71.44	72.96	74.48	76.00	77.52	79.04	80.56	82.08	83.60
39										68.64	70.20	71.76	73.32	74.88	76.44	78.00	79.56	81.12	82.68	84.24	85.80
40											72.00	73.60	75.20	76.80	78.40	80.00	81.60	83.20	84.80	86.40	88.00

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 1: Effective July 1, 2002

Age

	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1	1.60	1.64	1.68	1.72	1.76	1.80	1.84	1.88	1.92	1.96	2.00	2.04	2.08	2.12	2.16	2.20	2.24	2.28	2.32	2.36	2.40
2	3.20	3.28	3.36	3.44	3.52	3.60	3.68	3.76	3.84	3.92	4.00	4.08	4.16	4.24	4.32	4.40	4.48	4.56	4.64	4.72	4.80
3	4.80	4.92	5.04	5.16	5.28	5.40	5.52	5.64	5.76	5.88	6.00	6.12	6.24	6.36	6.48	6.60	6.72	6.84	6.96	7.08	7.20
4	6.40	6.56	6.72	6.88	7.04	7.20	7.36	7.52	7.68	7.84	8.00	8.16	8.32	8.48	8.64	8.80	8.96	9.12	9.28	9.44	9.60
5	8.00	8.20	8.40	8.60	8.80	9.00	9.20	9.40	9.60	9.80	10.00	10.20	10.40	10.60	10.80	11.00	11.20	11.40	11.60	11.80	12.00
6	9.60	9.84	10.08	10.32	10.56	10.80	11.04	11.28	11.52	11.76	12.00	12.24	12.48	12.72	12.96	13.20	13.44	13.68	13.92	14.16	14.40
7	11.20	11.48	11.76	12.04	12.32	12.60	12.88	13.16	13.44	13.72	14.00	14.28	14.56	14.84	15.12	15.40	15.68	15.96	16.24	16.52	16.80
8	12.80	13.12	13.44	13.76	14.08	14.40	14.72	15.04	15.36	15.68	16.00	16.32	16.64	16.96	17.28	17.60	17.92	18.24	18.56	18.88	19.20
9	14.40	14.76	15.12	15.48	15.84	16.20	16.56	16.92	17.28	17.64	18.00	18.36	18.72	19.08	19.44	19.80	20.16	20.52	20.88	21.24	21.60
10	16.00	16.40	16.80	17.20	17.60	18.00	18.40	18.80	19.20	19.60	20.00	20.40	20.80	21.20	21.60	22.00	22.40	22.80	23.20	23.60	24.00
11	17.60	18.04	18.48	18.92	19.36	19.80	20.24	20.68	21.12	21.56	22.00	22.44	22.88	23.32	23.76	24.20	24.64	25.08	25.52	25.96	26.40
12	19.20	19.68	20.16	20.64	21.12	21.60	22.08	22.56	23.04	23.52	24.00	24.48	24.96	25.44	25.92	26.40	26.88	27.36	27.84	28.32	28.80
13	20.80	21.32	21.84	22.36	22.88	23.40	23.92	24.44	24.96	25.48	26.00	26.52	27.04	27.56	28.08	28.60	29.12	29.64	30.16	30.68	31.20
14	22.40	22.96	23.52	24.08	24.64	25.20	25.76	26.32	26.88	27.44	28.00	28.56	29.12	29.68	30.24	30.80	31.36	31.92	32.48	33.04	33.60
15	24.00	24.60	25.20	25.80	26.40	27.00	27.60	28.20	28.80	29.40	30.00	30.60	31.20	31.80	32.40	33.00	33.60	34.20	34.80	35.40	36.00
16	25.60	26.24	26.88	27.52	28.16	28.80	29.44	30.08	30.72	31.36	32.00	32.64	33.28	33.92	34.56	35.20	35.84	36.48	37.12	37.76	38.40
17	27.20	27.88	28.56	29.24	29.92	30.60	31.28	31.96	32.64	33.32	34.00	34.68	35.36	36.04	36.72	37.40	38.08	38.76	39.44	40.12	40.80
18	28.80	29.52	30.24	30.96	31.68	32.40	33.12	33.84	34.56	35.28	36.00	36.72	37.44	38.16	38.88	39.60	40.32	41.04	41.76	42.48	43.20
19	30.40	31.16	31.92	32.68	33.44	34.20	34.96	35.72	36.48	37.24	38.00	38.76	39.52	40.28	41.04	41.80	42.56	43.32	44.08	44.84	45.60
20	32.00	32.80	33.60	34.40	35.20	36.00	36.80	37.60	38.40	39.20	40.00	40.80	41.60	42.40	43.20	44.00	44.80	45.60	46.40	47.20	48.00
21	33.60	34.44	35.28	36.12	36.96	37.80	38.64	39.48	40.32	41.16	42.00	42.84	43.68	44.52	45.36	46.20	47.04	47.88	48.72	49.56	50.40
22	35.20	36.08	36.96	37.84	38.72	39.60	40.48	41.36	42.24	43.12	44.00	44.88	45.76	46.64	47.52	48.40	49.28	50.16	51.04	51.92	52.80
23	36.80	37.72	38.64	39.56	40.48	41.40	42.32	43.24	44.16	45.08	46.00	46.92	47.84	48.76	49.68	50.60	51.52	52.44	53.36	54.28	55.20
24	38.40	39.36	40.32	41.28	42.24	43.20	44.16	45.12	46.08	47.04	48.00	48.96	49.92	50.88	51.84	52.80	53.76	54.72	55.68	56.64	57.60
25	40.00	41.00	42.00	43.00	44.00	45.00	46.00	47.00	48.00	49.00	50.00	51.00	52.00	53.00	54.00	55.00	56.00	57.00	58.00	59.00	60.00
26	41.60	42.64	43.68	44.72	45.76	46.80	47.84	48.88	49.92	50.96	52.00	53.04	54.08	55.12	56.16	57.20	58.24	59.28	60.32	61.36	62.40
27	43.20	44.28	45.36	46.44	47.52	48.60	49.68	50.76	51.84	52.92	54.00	55.08	56.16	57.24	58.32	59.40	60.48	61.56	62.64	63.72	64.80
28	44.80	45.92	47.04	48.16	49.28	50.40	51.52	52.64	53.76	54.88	56.00	57.12	58.24	59.36	60.48	61.60	62.72	63.84	64.96	66.08	67.20
29	46.40	47.56	48.72	49.88	51.04	52.20	53.36	54.52	55.68	56.84	58.00	59.16	60.32	61.48	62.64	63.80	64.96	66.12	67.28	68.44	69.60
30	48.00	49.20	50.40	51.60	52.80	54.00	55.20	56.40	57.60	58.80	60.00	61.20	62.40	63.60	64.80	66.00	67.20	68.40	69.60	70.80	72.00
31		50.84	52.08	53.32	54.56	55.80	57.04	58.28	59.52	60.76	62.00	63.24	64.48	65.72	66.96	68.20	69.44	70.68	71.92	73.16	74.40
32			53.76	55.04	56.32	57.60	58.88	60.16	61.44	62.72	64.00	65.28	66.56	67.84	69.12	70.40	71.68	72.96	74.24	75.52	76.80
33				56.76	58.08	59.40	60.72	62.04	63.36	64.68	66.00	67.32	68.64	69.96	71.28	72.60	73.92	75.24	76.56	77.88	79.20
34					59.84	61.20	62.56	63.92	65.28	66.64	68.00	69.36	70.72	72.08	73.44	74.80	76.16	77.52	78.88	80.24	81.60
35						63.00	64.40	65.80	67.20	68.60	70.00	71.40	72.80	74.20	75.60	77.00	78.40	79.80	81.20	82.60	84.00
36							66.24	67.68	69.12	70.56	72.00	73.44	74.88	76.32	77.76	79.20	80.64	82.08	83.52	84.96	86.40
37								69.56	71.04	72.52	74.00	75.48	76.96	78.44	79.92	81.40	82.88	84.36	85.84	87.32	88.80
38									72.96	74.48	76.00	77.52	79.04	80.56	82.08	83.60	85.12	86.64	88.16	89.68	91.20
39										76.44	78.00	79.56	81.12	82.68	84.24	85.80	87.36	88.92	90.48	92.04	93.60
40											80.00	81.60	83.20	84.80	86.40	88.00	89.60	91.20	92.80	94.40	96.00

APPENDIX C – SUMMARY OF PLAN PROVISIONS

D. Occupational Disability Benefit

Eligibility: A Member is eligible for an Occupational Disability Benefit if the Member has earned 10 or more years of Eligibility Service and is permanently unable to perform the duties of his or her occupation.

For PEPRA Members, the eligibility requirements for benefits other than retirement are assumed to be the same as those for the Classic Members.

Benefit Amount: The Occupational Disability Retirement Benefit is a monthly benefit equal to the Member's Average Final Earnings (AFE) multiplied by the percentage from Table 4, subject to a minimum monthly benefit of $100.

Table 4: Occupational Disability

Completed Years of Benefit Service	% of AFE	Completed Years of Benefit Service	% of AFE
1	2.80	16	31.40
2	5.60	17	32.00
3	8.40	18	32.50
4	11.20	19	33.10
5	14.00	20	33.70
6	16.80	21	34.20
7	19.60	22	34.80
8	22.40	23	35.30
9	25.20	24	35.90
10	28.00	25	36.50
11	28.60	26	37.00
12	29.20	27	37.60
13	29.70	28	38.10
14	30.30	29	38.70
15	30.90	30	39.30

The benefit is reduced by the amount of any disability benefit the Member is entitled to receive from any plan to which the Employer or the Union contributes, other than Social Security, but the combination of benefits will not be reduced below 50% of Average Final Earnings.

The Occupational Disability Benefit for PEPRA Members is based on the new definition of Compensation, which is subject to a maximum and excludes overtime, and includes partial years of service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Form of Benefit: The form of benefit is an annuity commencing at disability and payable for the life of the Member or until recovery from disability, with no continuation of benefits to a beneficiary after death. Optional forms of benefit are not available.

E. Total and Permanent Disability Benefit

Eligibility: A Member is eligible for a Total and Permanent Disability Benefit if the Member has earned 10 or more years of Eligibility Service and is permanently unable to perform the duties of any occupation.

For PEPRA Members, the eligibility requirements for benefits other than retirement are assumed to be the same as those for the Classic Members.

Benefit Amount: The Total and Permanent Disability Benefit is a monthly benefit equal to 50% of the Member's Average Final Earnings multiplied by the smaller of 1.0 and the ratio of the Member's years and completed months of Benefit Service to 10 years.

The benefit is reduced by the amount of any disability benefit the Member is entitled to receive from any plan to which the Employer or the Union contributes, other than Social Security, but the combination of benefits will not be reduced below 50% of Average Final Earnings

Form of Benefit: The form of benefit is an annuity commencing at disability and payable for the life of the Member or until recovery from disability, with no continuation of benefits to a beneficiary after death. Optional forms of benefit are not available.

F. Pre-Retirement Death Benefit

Eligibility: In order for the spouse to be eligible for this benefit, the participant must:

- Have completed at least one period of employment during which 10 or more years of Eligibility Service was earned,
- At the time of death the sum of the Member's age and years of Eligibility Service must be 70 or more, and
- The Member must have been married to (or the domestic partner of) the spouse/registered domestic partner for one year prior to death, unless death occurs from an accident occurring after the date of marriage/domestic partnership.

The spouse (or domestic partner) of PEPRA Members are eligible for this benefit upon the PEPRA Member attaining age 52 and completing five or more years of service.

Benefit Amount: The pre-retirement death benefit is 50% of the benefit that would have been payable had the Member retired immediately prior to death and elected to receive a 50% Contingent Annuitant Benefit.

The Pre-Retirement Death Benefit for PEPRA Members is based on the new definition of Compensation, which is subject to a maximum and excludes overtime.

Form of Benefit: The form of benefit is an annuity to the spouse commencing at death and payable for the life of the spouse.

G. Termination Benefit (Vested)

Eligibility: A Member is eligible for a termination benefit after earning 10 years of Eligibility Service and attaining age 65.

A PEPRA Member is treated as vested in their accrued benefit at five years of service.

Benefit Amount: The termination benefit is the Member's Average Final Earnings at termination multiplied by the percentage from Table 1 based on age 65 and the Member's projected Benefit Service to age 65, multiplied by a fraction equal to the Member's Benefit Service at termination divided by the Member's projected Benefit Service to age 65.

For PEPRA Members, the benefit multiplier is 1% at age 52, increasing by 0.1% for each year of age to 2.5% at 67. In between exact ages, the multiplier will increase by 0.025% for each quarter year increase in age. Note also the Termination Benefit is based on the new definition of Compensation, which is subject to a maximum and excludes overtime.

Form of Benefit: The Member will be eligible to commence benefits at age 65.

The normal form of benefit is an annuity payable for the life of the Member, with no continuation of benefits to a beneficiary after death. Optional forms of benefit are not available.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

H. Termination Benefit (Refund of Member Contributions)

Eligibility: A Member will be eligible for a refund of employee contributions if they die without a beneficiary or before becoming eligible for the pre-retirement death benefit, if they terminate without a vested benefit, or if they otherwise elect to withdraw their contributions.

Benefit Amount: The refund benefit is equal to the accumulated contributions made by the Member to the Plan. Currently, no interest is applied to the Member's contribution balance.

Form of Benefit: The refund benefit payable as a lump sum, with no further benefits payable to the Member.

I. Early Retirement Window

Eligibility: Members were eligible for an Early Retirement Window who:

- Retired at an age of 50 through 54 and after earning 25 or more years of Eligibility Service, and
- Were one of the first 75 Members so qualified to retire after February 2, 2004 and before February 10, 2008.

Benefit Amount: The monthly service retirement benefit is the Member's Average Final Earnings multiplied by the product of 2% and the Member's completed years of Benefit Service.

Form of Benefit: The normal form of benefit is an annuity payable for the life of the Participant, with no continuation of benefits to a beneficiary after death. Optional forms of benefit are available on an actuarially adjusted basis.

J. Funding

Previously, the employer paid the entire cost of the Plan; however, as of October 2016 Members hired before January 1, 2016 began contributing 0.95% of pensionable payroll, which increased to 1.90% as of October 2017 and to 3.40% as of September 2019. PEPRA Members (i.e. new Members hired on or after January 1, 2016), must contribute half of the normal cost of the Plan, rounded to the nearest 0.25%. The contribution rate for PEPRA members increased from the rate of 5.50% to 6.00% of pay effective July 2018.

K. Changes in Plan Provisions

Member contribution rate for members hired before January 1, 2016 increased to 3.40% effective September 2019, up from 1.90%.

APPENDIX D – GLOSSARY

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs such as mortality, withdrawal, disability, retirement, changes in compensation, and rates of investment return.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

3. Actuarial Gain (Loss)

The difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits that will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made.

6. Actuarial Valuation

The determination, as of a specified date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

7. Actuarial Value of Assets

The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values.

APPENDIX D – GLOSSARY

8. Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date, with each value based on the same set of actuarial assumptions.

9. Amortization Payment

The portion of the pension plan contribution, which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Ratio

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities. The Funded Ratio shown in this report not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in the case of a plan termination or other similar action. However, it is an appropriate measure for assessing the need for or the amount of future contributions.

12. Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses that is allocated to a valuation year by the Actuarial Cost Method.

13. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as increases in future compensation and service credits.

14. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.

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