Classic Values, Innovative Advice

Pension Plan for Bargaining Unit Employees of TriMet

Actuarial Valuation Report as of July 1, 2019

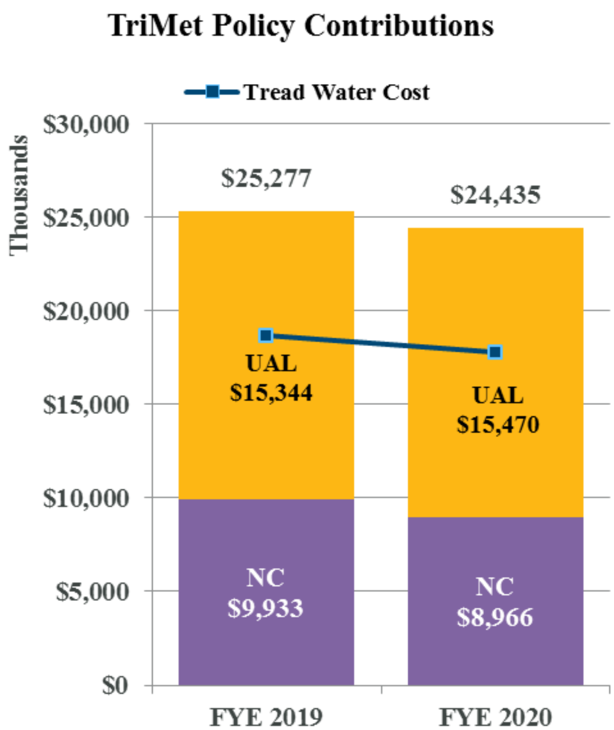
Produced by Cheiron

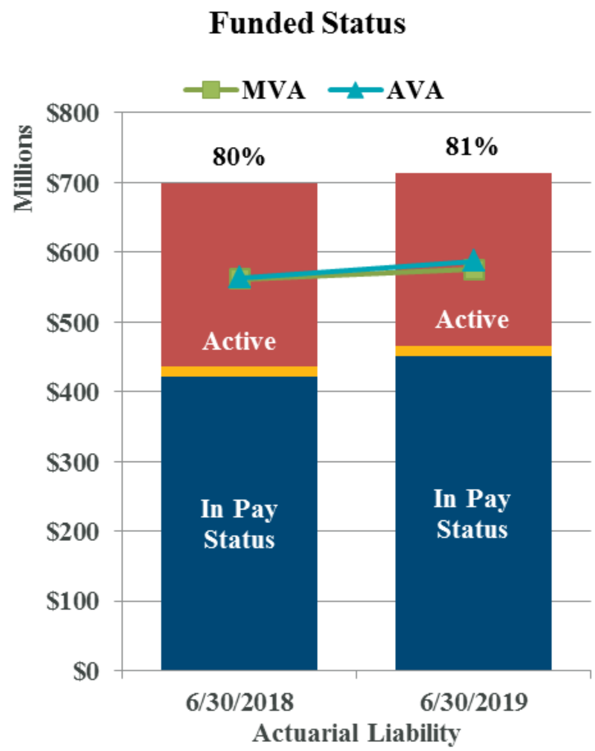
August 2019

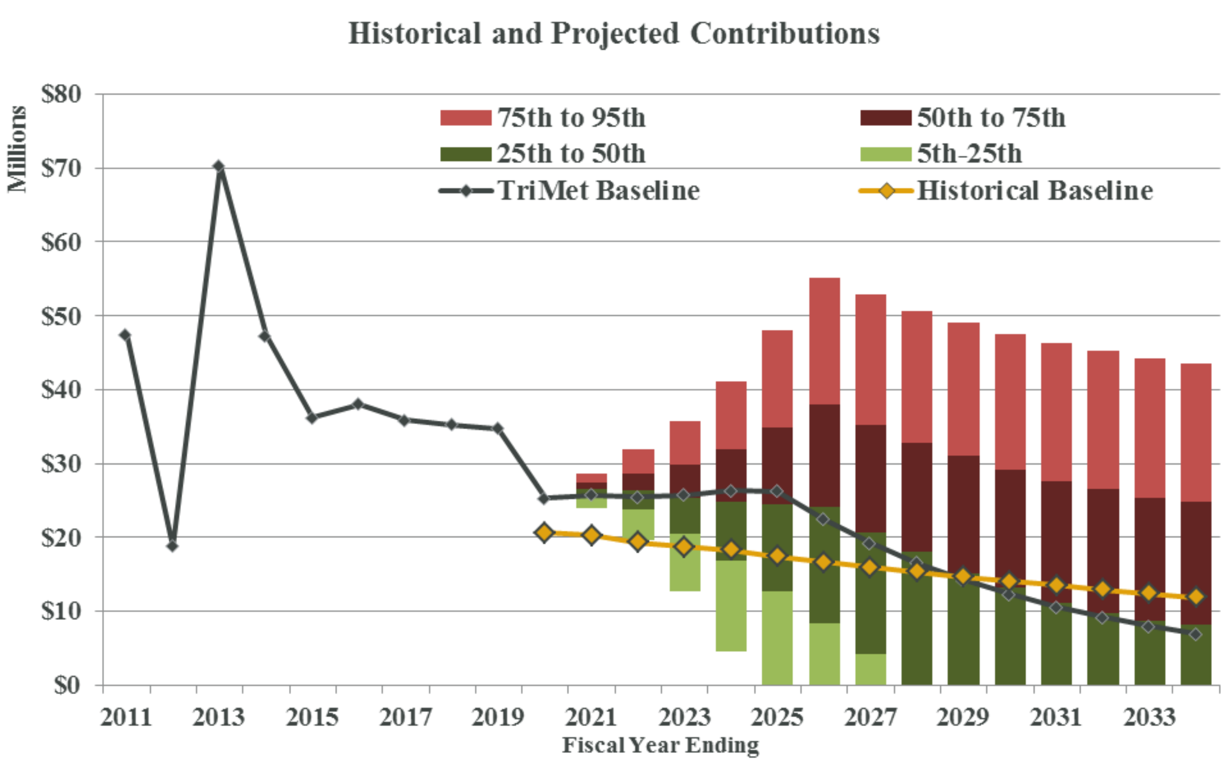
TABLE OF CONTENTS

CHEIRON

SECTION I – BOARD SUMMARY







Contributions and Pension Expense

The chart in the upper left corner of the dashboard on the prior page shows the Actuarially Determined Contribution (ADC) as of the beginning of the year under the TriMet Funding Policy compared to the Tread Water Cost for the fiscal year ending June 30, 2019 and 2020, respectively. The ADC is composed of the normal cost plus an amortization payment on the Unfunded Actuarial Liability (UAL).

There are currently two separate funding policies: the "TriMet" policy and the "Historical" policy. The "Historical" policy was established by the Trustees and is based on a rolling 20-year level dollar amortization of the UAL. The "TriMet" policy was established by TriMet and is based on a closed 15-year period commencing July 1, 2014 until the remaining period reaches five years at which time it becomes a rolling 5-year amortization period. Amortization payments under the TriMet policy increase 2.0% each year. The different policies are described in more detail in Appendix B.

The Tread Water Cost is the normal cost plus interest on the UAL. The normal cost represents the expected cost of the benefits attributed to the next year of service, and the interest on the UAL represents the amount that would need to be contributed to keep the UAL at the same dollar amount if all assumptions are met. To the extent the ADC exceeds the Tread Water Cost, the UAL is expected to decline, and to the extent actual contributions are even greater, the UAL is expected to decline further.

For FYE 2019, actual contributions were approximately $34.7 million, exceeding the ADC and paying off about $16 million of the UAL. While the normal cost decreased, other changes caused the UAL to increase and the amortization period became a year shorter. As a result, the ADC for FYE 2020 is approximately $24.4 million as of the beginning of the year, about $0.9 million lower than the $25.3 million for FYE 2019.

Under GASB 68, the annual pension expense equals the Tread Water Cost plus the cost of any benefit increases and the recognized portion of prior experience gains and losses and assumption changes. Details of this calculation are shown in Section VII of the report.

Table I-1 on the following page compares the ADC to actual contribution amounts and pension expense for the fiscal years ending in 2018 and 2019. The pension expense increased from $25.1 million for FYE 2018 to $30.2 million for FYE 2019, while the ADC increased slightly under both the "Historical" and "TriMet" funding policies.

SECTION I – BOARD SUMMARY

Table I-1

Annual Contributions and Pension Expense					
		FYE 2019		FYE 2018	% Change
Pension Expense ($ Amount)	$	30,224,284	$	25,121,768	20.3%
Actuarially Determined Contribution					
Historical Policy	$	22,326,384	$	21,950,801	1.7%
TriMet Policy	$	26,040,372	$	24,565,994	6.0%
Actual Contribution	$	34,717,720	$	35,227,507	-1.4%

As shown by the chart at the bottom of the dashboard (page 1), actual contributions have exceeded $34 million for the last seven years, which is significantly more than the ADC. For FYE 2020 and in the future, the projections in the chart assume that the ADC under the "TriMet" funding policy is contributed. The "TriMet" and "Historical" baselines represent the projected ADC under the respective policies if all assumptions are met and contributions are made in accordance with that policy. The "Historical" baseline shows a gradual decline in the ADC throughout the projection period. The "TriMet" baseline shows the ADC remaining relatively level through FYE 2025, when the policy transitions to a rolling 5-year amortization, at which point the ADC gradually declines, crossing below the projected "Historical" ADC in 2029. This crossover is the result of the accumulated difference in assumed contributions prior to 2029. As long as the Plan is not fully funded, the "TriMet" ADC will be greater than the "Historical" ADC. The range of the bars represents the potential range of the "TriMet" ADC based on the potential range of actual investment returns. There is a wide range of projected ADC's that is the combined result of investment volatility and the relatively short 5-year amortization period in the funding policy. For these projections, we used an expected return of 6.75% and a standard deviation of 10.00%.

Section II of this report provides information on the risks to contribution amounts and Section VI of this report provides additional detail on the development of the ADC.

Funded Status

The chart in the upper right corner of the dashboard (page 1) shows the measures of assets, Actuarial Liability, and funded status for the current and prior valuations. These measures are for the purpose of assessing funding progress in a budgeting context, and are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. For many pension plans, the measures for financial reporting under GASB 67 and 68 are different, but for TriMet, they are the same.

SECTION I – BOARD SUMMARY

The bars represent the Actuarial Liability (or Total Pension Liability), which is used as a funding target, and are separated between the liability for members currently receiving benefits (dark blue), inactive members entitled to future benefits (gold), and active members (red). About 63% of the liability is for members currently receiving benefits. The green line shows the Market Value of Assets (or Fiduciary Net Position), and the light blue line is the Actuarial Value of Assets that recognizes investment gains and losses over five years. The percentage on the top of the bar represents the funded status based on the Market Value of Assets, which increased from 80.2% to 80.5%.

Table I-2 below summarizes the Actuarial Liability, assets, and funded status as of July 1, 2018 and 2019.

Table I-2

Summary of Funded Status	July 1, 2019	July 1, 2018	% Change
Actuarial Liability			
Actives	$ 247,952,697	$ 263,739,275	-6.0%
Deferred Vested	14,367,801	13,519,286	6.3%
In Pay Status	451,435,464	421,675,445	7.1%
Total	$ 713,755,962	$ 698,934,006	2.1%
Market Value of Assets (MVA)	$ 574,919,893	$ 560,882,099	2.5%
Unfunded Actuarial Liability - MVA Basis	$ 138,836,069	$ 138,051,907	0.6%
Funding Ratio - MVA Basis	80.5%	80.2%	0.4%
Historical Policy Basis			
Actuarial Value of Assets (AVA)	$ 586,631,303	$ 563,561,685	4.1%
Unfunded Actuarial Liability - AVA Basis	$ 127,124,659	$ 135,372,321	-6.1%
Funding Ratio - AVA Basis	82.2%	80.6%	1.9%
TriMet Policy Basis			
Actuarial Value of Assets (AVA)	$ 586,631,303	$ 563,111,042	4.2%
Unfunded Actuarial Liability - AVA Basis	$ 127,124,659	$ 135,822,964	-6.4%
Funding Ratio - AVA Basis	82.2%	80.6%	2.0%

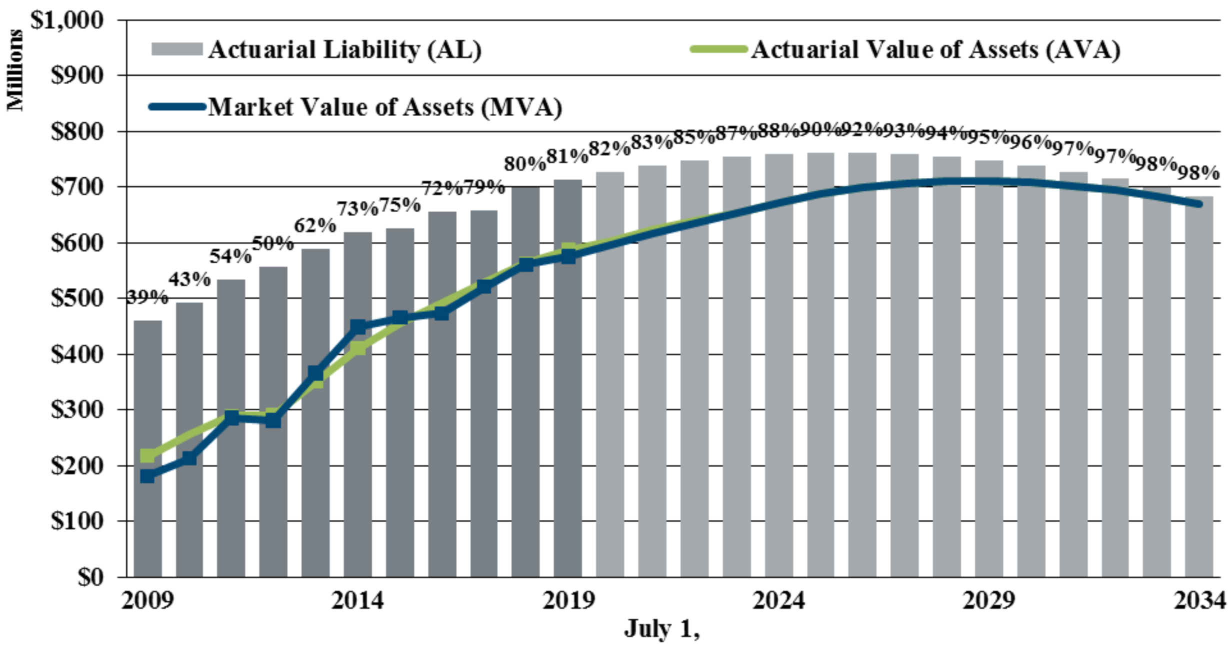
The Actuarial Liability represents the target amount of assets the plan should have in the trust as of the valuation date based on the actuarial cost method. In aggregate, the Actuarial Liability increased 2.1%. The Market Value of Assets increased 2.5% due to actual contributions and investment returns offset by benefit payments and expenses. As a result, the Unfunded Actuarial Liability (UAL) measured on the Market Value of Assets increased from approximately $138.1 million to $138.8 million.

SECTION I – BOARD SUMMARY

The asset smoothing method deferred 80% of the current year's investment loss while recognizing 20% of the prior four years' gains and losses, resulting in an increase in the Actuarial Value of Assets of 4.1% on the "Historical" and 4.2% on the "TriMet" bases. The Actuarial Value of Assets on these two bases are now the same and will remain the same in the future as long as the same assumptions are used. The UAL measured on the Actuarial Value of Assets decreased to $127.1 million from $135.4 million and $135.8 million on the "Historical" and "TriMet" bases respectively. The Market Value of Assets is smaller than the actuarial value, so if assumptions are met in the future, we expect an increase in the ADC as the deferred asset losses are recognized in the Actuarial Value of Assets.

The chart below shows the historical and projected assets (both market and smoothed actuarial) compared to the Actuarial Liability, and also shows the progress of the funding ratios (based on the Market Value of Assets). The historical Actuarial Liability is shown in dark gray while the projected Actuarial Liability is shown in a lighter gray. If all assumptions are met in the future and contributions are made in accordance with the "TriMet" funding policy, the funded status is expected to reach 98% by 2034 (86% under "Historical" funding policy).

<u>Historical and Projected Assets and Actuarial Liability</u>



More detail on the assets can be found in section IV of this report, and more detail on the measures of liability can be found in section V of this report.

Changes

During FYE 2019, the UAL increased by $0.8 million. Table I-3 below shows the breakdown of the changes in the UAL in the last year by source.

Table I-3

Changes in UAL or NPL		
		Amount
UAL/NPL, July 1, 2019	$	138,836,069
UAL/NPL, July 1, 2018	$	138,051,907
Change in UAL/NPL	**$**	**784,162**
Sources of Changes		
Plan Changes	$	0
Assumption Changes		0
Contributions vs. Tread Water Cost		(15,849,436)
Investment (gain) or loss		19,086,931
Liability (gain) or loss		
Retiree COLA experience	$	1,469,242
Benefit Rate experience		(6,351,189)
Mortality experience		3,604,574
Retirement experience		(1,148,456)
Other experience		(27,504)
Total Liability (gain) or loss	$	(2,453,333)
Total Changes	**$**	**784,162**

The largest increase to the UAL was $19.1 million due to investment losses. The most significant source of reduction in the UAL is that actual contributions exceeded the Tread Water Cost by approximately $15.8 million. Liability experience reduced the UAL by approximately $2.5 million due to gains attributable to retirement and benefit rate experience offset by losses due to retiree COLA and mortality experience. The gains due to benefit rate experience are largely attributable to an improvement in the assumed timing of future increases.

SECTION I – BOARD SUMMARY

Table I-4 below provides a summary of the results of this valuation compared to the prior valuation.

Table I-4

Summary of Valuation Results	July 1, 2019	July 1, 2018	% Change
Membership			
Actives	1,236	1,378	-10.3%
Deferred	133	130	2.3%
In Pay Status	1,975	1,859	6.2%
Total	3,344	3,367	-0.7%
Active Member Payroll	$ 86,219,192	$ 92,577,667	-6.9%
Actuarial Liability/Total Pension Liability	$ 713,755,962	$ 698,934,006	2.1%
Market Value of Assets/Fiduciary Net Position	574,919,893	560,882,099	2.5%
Unfunded Actuarial Liability/Net Pension Liability	$ 138,836,069	$ 138,051,907	0.6%
Deferred Outflows of Resources	(25,666,118)	(29,624,412)	-13.4%
Deferred Inflows of Resources	11,569,197	20,805,089	-44.4%
Net Impact on Statement of Net Position	$ 124,739,148	$ 129,232,584	-3.5%
Funding Ratio - MVA Basis	80.5%	80.2%	0.3%
Actuarially Determined Contribution			
Historical Policy	$ 20,592,864	$ 22,326,384	-7.8%
TriMet Policy	$ 25,173,360	$ 26,040,372	-3.3%

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 closed 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 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. Retirement benefits under the plan are increased each year by 90% or 100% of inflation (CPI-W) depending upon retirement date. Higher inflation than expected will result in the payment of greater benefits, and lower inflation than expected will result in the payment of lower benefits.

Contribution risk is the potential for actual future actuarially determined contributions to deviate from expected future contributions to an extent that they become unaffordable. TriMet’s policy is to treat the Actuarially Determined Contribution (ADC) as a minimum, and the ADC is based on a short remaining amortization period. As a result, a significant loss or change in assumptions may cause a large increase in the ADC. While TriMet can change its Funding Policy when such a situation occurs, it may want to consider alternatives in advance.

The table on the next page shows an 8-year history of changes in the UAL by source.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

UAL Change by Source

FYE	Plan Changes	Assumption Changes	Contributions vs. Tread Water	Investments	Liability Experience	Total UAL Change
2012	$(10,616,209)	$ 0	$ 9,269,242	$22,499,513	$ 7,780,692	28,933,238
2013	0	15,353,638	(40,663,591)	(18,892,593)	(8,583,422)	(52,785,968)
2014	0	29,476,059	(20,462,968)	(36,496,410)	(11,294,241)	(38,777,560)
2015	0	(16,558,463)	(12,601,239)	19,269,512	(541,183)	(10,431,373)
2016	0	18,776,392	(16,375,082)	30,755,311	(8,966,475)	24,190,146
2017	0	0	(12,798,667)	(14,722,298)	(19,614,961)	(47,135,926)
2018	3,286,046	0	(16,274,620)	(6,367,130)	20,935,664	1,579,960
2019	0	0	(15,849,436)	19,086,931	(2,453,333)	784,162
Total	**$ (7,330,163)**	**$47,047,626**	**$(125,756,361)**	**$15,132,836**	**$(22,737,259)**	**$(93,643,321)**

Over the last eight years, the UAL has been reduced by approximately $93.6 million. Contributions reduced the UAL by $125.8 million and liability experience reduced the UAL by $22.7 million, while investment returns increased the UAL by $15.1 million and assumption changes increased the UAL by $47.0 million.

Plan Maturity Measures

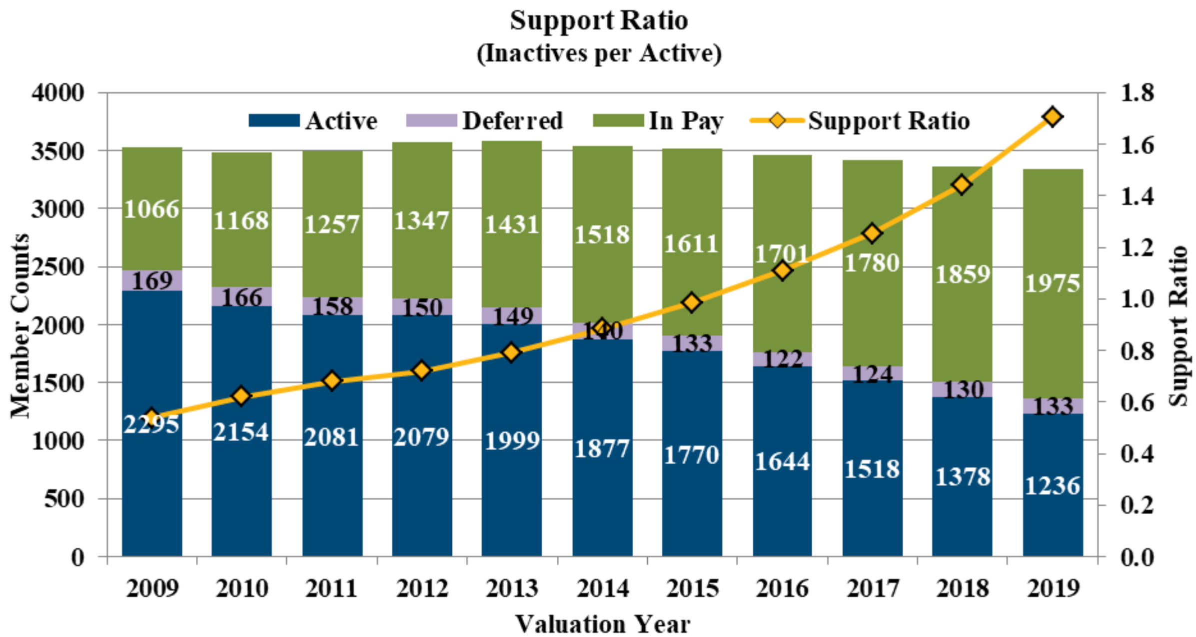
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan.

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. Given that the Plan has been closed to new entrants since 2012, maturity measures isolated on the Plan show significant increases in maturity while maturity measures setting the Plan in the context of TriMet as a whole show declining maturity.

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. For a closed plan, the Support Ratio is expected to increase significantly unless active employees who are not covered by the Plan are included. The chart on the following page shows the growth in the Support Ratio for the closed Plan for the current and prior 10 years.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

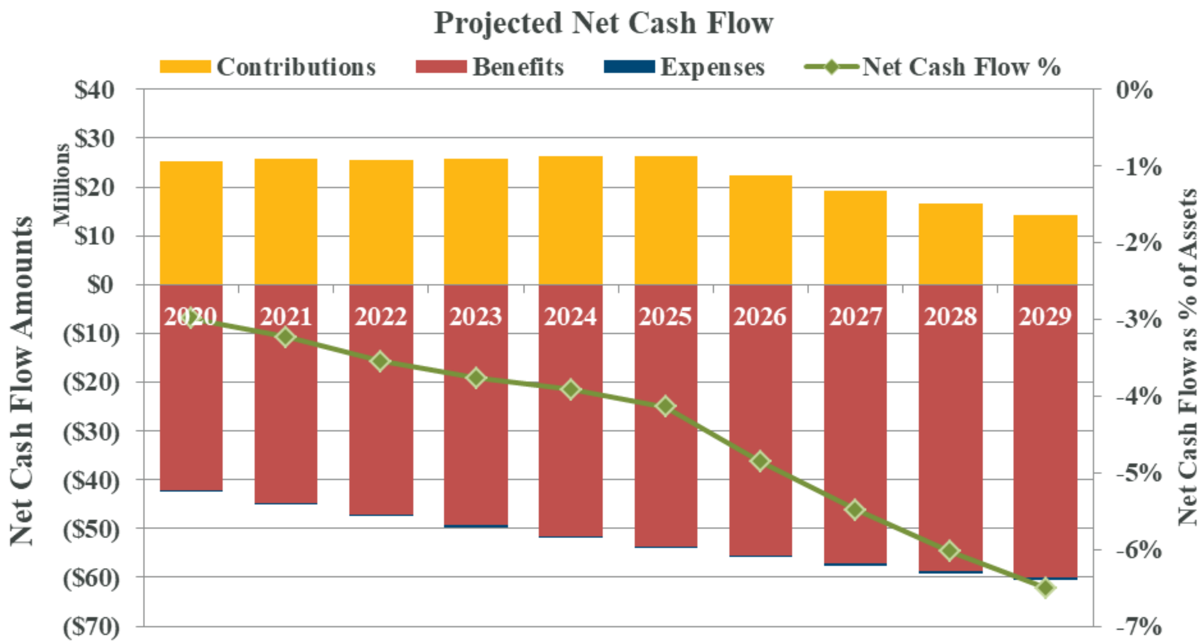


Net Cash Flow

The net cash flow of the plan as a percentage of the beginning of year assets indicates the sensitivity of the plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded.

The chart on the following page shows the projected net cash flow for the next 10 fiscal years. The bars represent the dollar amounts of the different components of the projected net cash flow, and the line represents the net cash flow as a percentage of the assets as of the beginning of the fiscal year.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK



With TriMet contributing amounts significantly greater than the ADC to improve the funded status of the Plan, the net cash flow has been slightly negative the last two years. As benefit payments grow, the Plan becomes well-funded and contributions are reduced, the net cash flow is expected to become increasingly negative.

The first issue this change presents to the Plan is a need for liquidity in the investments so that benefits can be paid. When the cash flow was positive or close to neutral, benefits could be paid out of contributions without liquidating investments. As net cash flow becomes increasingly negative, the benefit payments will require liquidation of some investments (at least to the extent the bond portfolio doesn't generate sufficient cash income).

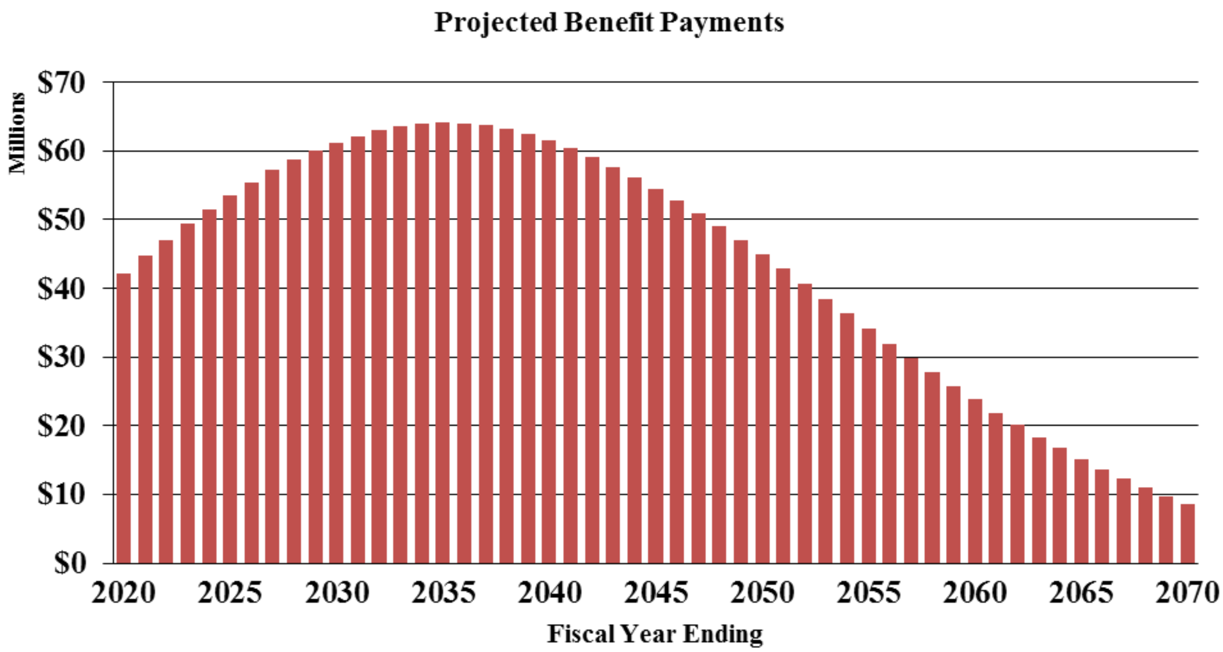
The other change of note is the sensitivity to short-term investment returns. Investment losses in the short term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. On the other hand, large investment gains in the short term also tend to have a longer beneficial effect as any future losses are relative to a smaller liability base due to the negative cash flow.

Assessing Costs and Risks

A closed pension plan will ultimately either end up with excess assets after all benefits have been paid or run out of assets before all benefits have been paid. If the Plan develops surplus assets, it may be able to reduce the risk in its investment portfolio, immunize investments, or purchase annuities to settle the remaining obligation. However, such an approach may not be the objective for TriMet, and if the surplus assets exceed the additional amounts needed to purchase annuities or immunize the portfolio, it is not clear how they could be used until all benefits have been paid.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

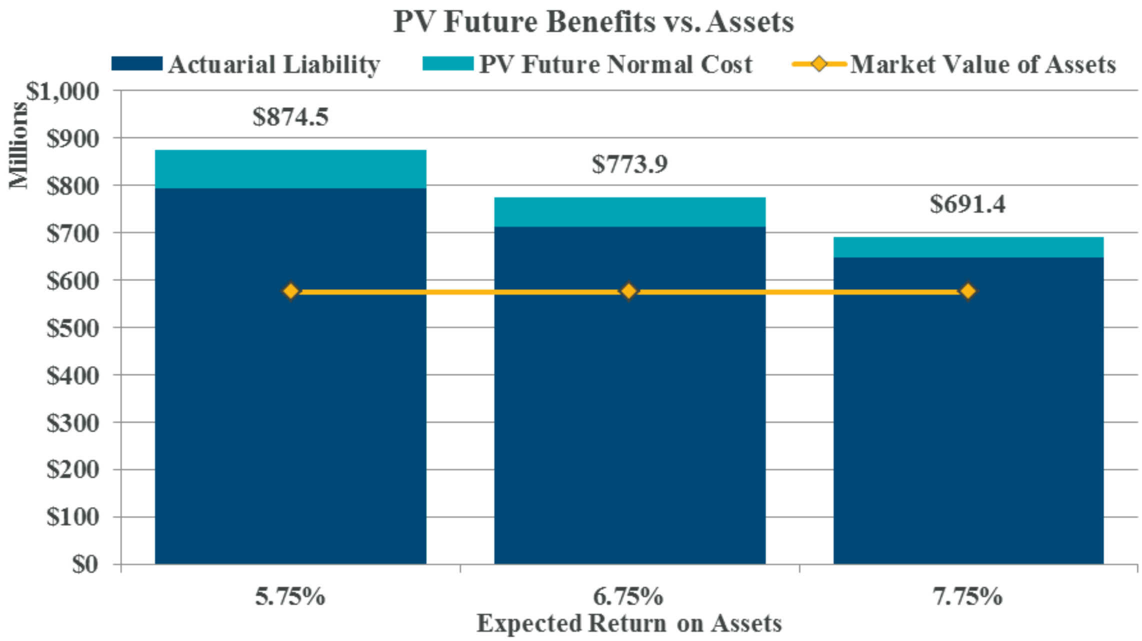
If the Plan, on the other hand, were to run out of assets, TriMet would be forced to pay benefits directly on a pay-as-you-go basis. As long as TriMet can afford the pay-as-you-go costs, benefits would remain secure. The chart below shows a projection of expected benefit payments for the closed plan.



Sensitivity to Investment Returns

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 investment returns 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



If investments return 6.75% annually, the Plan would need approximately $774 million in assets today to pay all projected benefits compared to current assets of $575 million. If investment returns are only 5.75%, the Plan would need approximately $875 million in assets today, and if investment returns are 7.75%, the Plan would need approximately $691 million in assets today.

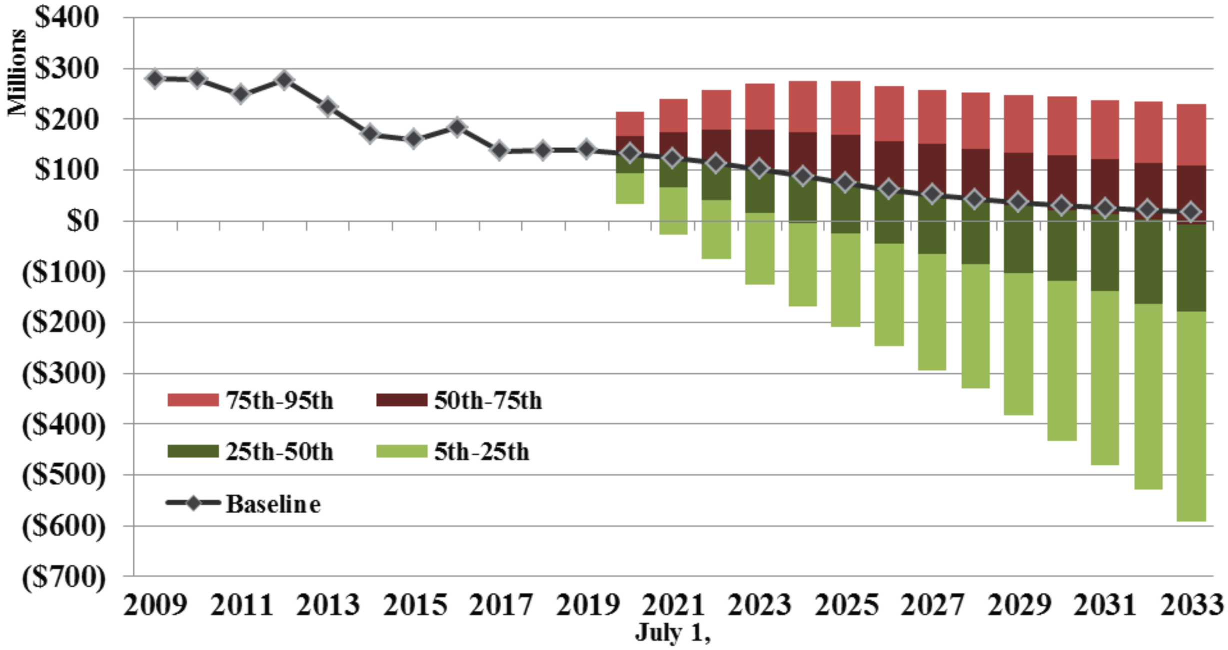
The present value of future benefits shown above, however, assumes annual inflation of 2.5%. If annual inflation is higher; more assets would be needed to pay the benefits, and if inflation is lower; fewer assets would be needed to pay benefits. In this case, it is better to think of the sensitivity based on the investment return in excess of inflation. The assumption of 6.75% nominal investment returns and 2.5% inflation equates to a real investment return assumption of 4.25%. Similarly, expected nominal investment returns of 5.75% and 7.75% equate to 3.25% and 5.25% real investment returns, respectively.

Stochastic Projections

The stochastic projections of contributions shown at the bottom of the dashboard (page 1) show a very wide range in future ADC's. This range is driven both by the volatility of investment returns and by the short amortization period used to calculate the ADC. The chart on the following page shows the projected range of the UAL or surplus on the same basis. Surplus amounts are shown as negative numbers.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Historical and Stochastic Projection of UAL/(Surplus)



While the UAL is projected in the baseline to be relatively small by 2033, there is a wide range of potential outcomes. The relatively short amortization period for the UAL prevents the UAL from becoming too large. Good investment returns, however, can grow the surplus unrestrained because the minimum contribution is $0. These projected surpluses may be restrained by changes in investment policy as the surplus develops.

More Detailed Assessment

While a more detailed assessment of risk is always valuable to enhance the understanding of the risks identified above, given the closed plan and the recently completed asset-liability study, the advantages of a more detailed assessment may not justify its costs at this time.

SECTION III – CERTIFICATION

The purpose of this report is to present the July 1, 2019 Actuarial Valuation of the Pension Plan for Bargaining Unit Employees of TriMet ("Plan"). This report is for the use of the Plan and TriMet.

In preparing our report, we relied on information, some oral and some written, supplied by TriMet. 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 actuarial assumptions were recommended by the prior actuary based upon their 2013 experience study and additional analyses they performed and communicated in letters dated February 18, 2016 and May 31, 2017. We have not performed an independent analysis, but we reviewed the experience study, letters, and the recently completed asset-liability study and believe the assumptions to be reasonable.

The liability measures and funding ratios in this report are for the purpose of establishing contribution rates. 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 and TriMet for the purposes described 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 other user.

William R. Hallmark

William R. Hallmark, ASA, EA, FCA, MAAA
Consulting Actuary

Steven M. Hastings

Steven M. Hastings, FSA, EA, FCA, MAAA
Consulting Actuary

SECTION IV – ASSETS

The Plan uses two different asset measurements: the Market Value and Actuarial Value of Assets. The market value represents the value of the assets if they were liquidated on the valuation date. The actuarial value smooths annual investment returns over five years to reduce the impact of short-term investment volatility on contributions. The Market Value of Assets is used primarily for reporting and disclosure, and the Actuarial Value of Assets is used primarily to calculate Actuarially Determined Contributions.

This section shows the changes in the Market Value of Assets, calculates the money-weighted investment return for GASB 67 and 68, and develops the Actuarial Value of Assets.

Statement of Change in Market Value of Assets

Table IV-1 shows the changes in the Market Value of Assets for the current and prior fiscal years.

Table IV-1

Change in Market Value of Assets	FYE 2019	FYE 2018
Market Value, Beginning of Year	$ 560,882,099	$ 520,926,813
Contributions	34,717,720	35,227,507
Net Investment Earnings	18,620,471	41,479,101
Benefit Payments	(38,904,785)	(36,394,436)
Administrative Expenses	(395,612)	(356,886)
Market Value, End of Year	**$ 574,919,893**	**$ 560,882,099**

The Market Value of Assets increased from approximately $560.9 million as of June 30, 2018 to $574.9 million as of June 30, 2019. Actual contributions and investment earnings increased the market value by approximately $53 million while benefit payments and administrative expenses decreased the market value by approximately $39 million.

The rate of return during the year is calculated on a money-weighted basis, which reflects the effect of external cash flows (contributions less benefit payments and administrative expenses) on a monthly basis. Table IV-2 shows the external cash flows by month, the number of months each cash flow was considered invested, and the external cash flows with interest at the money-weighted rate of return of 3.40% to the end of the year. The sum of the external cash flows with interest equals the Market Value of Assets at the end of the year.

SECTION IV – ASSETS

Table IV-2

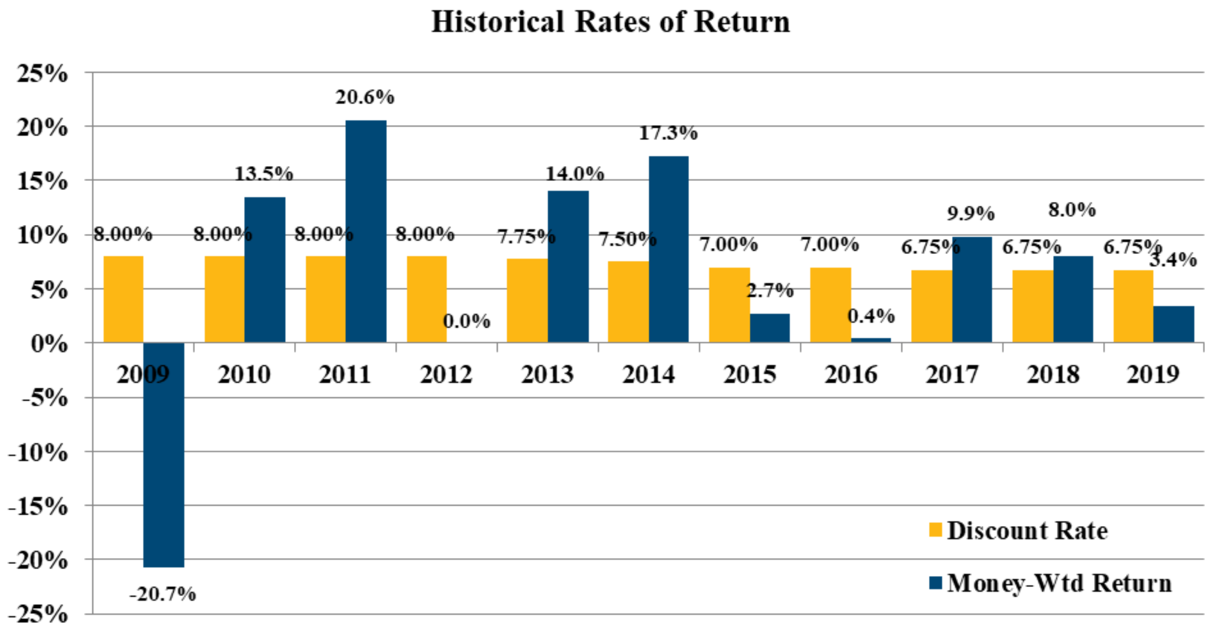
Money-Weighted Rate of Return
Fiscal Year Ending June 30, 2019

	Net External Cash Flows	Months Invested	Net External Cash Flows With Interest
Beginning Value, July 1, 2018	$ 560,882,099	12	$ 579,974,606
Monthly Net External Cash Flows			
July	(244,223)	11	(251,833)
August	(288,495)	10	(296,655)
September	(286,861)	9	(294,153)
October	(501,030)	8	(512,337)
November	(424,452)	7	(432,822)
December	(472,812)	6	(480,792)
January	(3,453,970)	5	(3,502,481)
February	2,713,358	4	2,743,803
March	(459,750)	3	(463,614)
April	(396,848)	2	(399,068)
May	(556,602)	1	(558,157)
June	(606,603)	0	(606,603)
Ending Value, June 30, 2019			$ 574,919,893
Money-Weighted Rate of Return	3.40%		

The money-weighted rate of return for the year ended June 30, 2019 was 3.40% compared to an expected return of 6.75%. As shown in the chart on the following page, over the last 10 years the money-weighted rate of return[1] has varied significantly from negative 20.7% in 2009 to 20.6% in 2011.

[1] Money-weighted returns prior to FYE 2014 were not calculated based on actual monthly external cash flows, but estimated the timing of external cash flows throughout the year.

SECTION IV – ASSETS



Actuarial Value of Assets

To determine on-going contributions, most pension plans utilize an Actuarial Value of Assets that smooths year-to-year market value returns in order to reduce the volatility of contributions.

The Actuarial Value of Assets is calculated by recognizing the deviation of actual investment returns compared to the expected return over a five-year period. The dollar amount of the expected return on the Market Value of Assets is determined using actual contributions, benefit payments, and administrative expenses during the year. Any difference between this amount and the actual net investment earnings is considered a gain or loss. For FYE 2019, the 3.40% return compared to the expected return of 6.75% produced an investment loss of approximately $19.1 million.

Table IV-3 on the next page shows the calculation of the Actuarial Value of Assets. For each of the last four years, it shows the actual earnings, the expected earnings, the gain or loss, and the portion of the gain or loss that is not recognized in the current Actuarial Value of Assets. For FYE 2015, there were two calculations. Under the "Historical" policy, the expected return was 7.5%, and under the "TriMet" policy the expected return was 7.0%. Since FYE 2015 is no longer part of the smoothing calculation, the "Historical" and "TriMet" policies produce the same Actuarial Value of Assets. The remaining total deferred gain or loss will be recognized in future years.

SECTION IV – ASSETS

Table IV-3

Development of Actuarial Value of Assets	FYE 2016	FYE 2017	FYE 2018	FYE 2019
Actual Earnings	$ 1,948,822	$ 46,645,429	$ 41,479,101	$ 18,620,471
Expected Earnings	32,704,133	31,923,131	35,111,971	37,707,402
Investment Gain or (Loss)	(30,755,311)	14,722,298	6,367,130	(19,086,931)
Percentage Deferred	20%	40%	60%	80%
Deferred Gain or (Loss)	$ (6,151,062)	$ 5,888,919	$ 3,820,278	$ (15,269,545)

Market Value of Assets (MVA)	$ 574,919,893
Deferred Gain or (Loss)	
FYE 2016	$ (6,151,062)
FYE 2017	5,888,919
FYE 2018	3,820,278
FYE 2019	(15,269,545)
Total Deferred Gain or (Loss)	$ (11,711,410)
Preliminary Actuarial Value of Assets (MVA less Deferred Gain or (Loss))	$ 586,631,303
Minimum Actuarial Value of Assets (80% of Market Value)	459,935,914
Maximum Actuarial Value of Assets (120% of Market Value)	689,903,871
Actuarial Value of Assets (AVA)	**$ 586,631,303**
Ratio of Actuarial to Market	102.0%
Estimated Rate of Return	5.0%

On an Actuarial Value of Assets basis, the aggregate return for the year ending June 30, 2019 was 4.9% for the "Historical" policy and 5.0% for the "TriMet" policy. Both returns are less than the assumed return of 6.75% resulting in losses of $10.2 million and $9.8 million respectively.

SECTION V – MEASURES OF LIABILITY

This section presents detailed information on liability measures for the Plan for funding purposes, including:

- Present value of future benefits,
- Actuarial Liability, and
- Normal cost.

Present Value of Future Benefits: The present value of future benefits represents the expected amount of money needed today if all assumptions are met to pay for all benefits both earned as of the valuation date and expected to be earned in the future by current plan members under the current plan provisions. Table V-1 below shows the present value of future benefits as of July 1, 2019 and July 1, 2018.

Table V-1

Present Value of Future Benefits			
	July 1, 2019	July 1, 2018	% Change
Actives	$ 308,075,021	$ 331,481,804	-7.1%
Deferred	14,367,801	13,519,286	6.3%
In Pay Status	451,435,464	421,675,445	7.1%
Total	**$ 773,878,286**	**$ 766,676,535**	**0.9%**

SECTION V – MEASURES OF LIABILITY

Actuarial Liability

The Actuarial Liability represents the expected amount of money needed today if all assumptions are met to pay for benefits attributed to service prior to the valuation date under the Entry Age actuarial cost method. As such, it is the amount of assets targeted by the actuarial cost method for the Plan to hold as of the valuation date. It is not the amount necessary to settle the obligation. Under GASB 67 and 68, the Entry Age Actuarial Liability is referred to as the Total Pension Liability. Table V-2 below shows the Actuarial Liability as of July 1, 2019 and July 1, 2018.

Table V-2

Actuarial Liability	July 1, 2019	July 1, 2018	% Change
Actives			
Retirement	$ 222,280,851	$ 235,620,898	-5.7%
Termination	1,745,305	1,885,514	-7.4%
Death	2,138,714	2,232,499	-4.2%
Disability	17,457,375	18,697,929	-6.6%
Transfers to Management	4,330,452	5,302,435	-18.3%
Total Actives	$ 247,952,697	$ 263,739,275	-6.0%
Vested Terminated	$ 14,367,801	$ 13,519,286	6.3%
In Pay Status			
Retirees and Beneficiaries	$ 391,078,202	$ 362,527,104	7.9%
Disabled	60,357,262	59,148,341	2.0%
Total In Pay	$ 451,435,464	$ 421,675,445	7.1%
Total	**$ 713,755,962**	**$ 698,934,006**	**2.1%**

SECTION V – MEASURES OF LIABILITY

Normal Cost

Under the Entry Age (EA) actuarial cost method, the present value of future benefits for each individual is spread over the individual's expected working career under the Plan as a level percentage of the individual's expected pay. The normal cost rate is determined by taking the value, as of entry age into the Plan, of each member's projected future benefits divided by the present value, also at entry age, of the each member's expected future salary. The normal cost rate is multiplied by current salary to determine each member's normal cost. The normal cost of the Plan is the sum of the normal costs for each individual. The normal cost represents the expected amount of money needed to fund the benefits attributed to the next year of service under the Entry Age actuarial cost method. Under GASB 67 and 68, the EA normal cost is referred to as the service cost. Table V-3 below shows the Total normal cost as of July 1, 2019 and July 1, 2018.

Table V-3

Normal Cost			
	July 1, 2019	July 1, 2018	% Change
Retirement	$ 6,959,443	$ 7,788,067	-10.6%
Termination	234,779	252,968	-7.2%
Death	97,088	109,245	-11.1%
Disability	1,265,246	1,363,800	-7.2%
Transfers to Management	118,676	128,660	-7.8%
Total Normal Cost	**$ 8,675,232**	**$ 9,642,740**	**-10.0%**

SECTION VI – CONTRIBUTIONS

This section of the report develops the Actuarially Determined Contribution in accordance with the Plan's Pension Funding Policy and Objectives (Funding Policy).

Amortization of the Unfunded Actuarial Liability

There are two components to the contribution: the normal cost (including administrative expenses) and an amortization payment on the Unfunded Actuarial Liability (UAL). The normal cost was developed in Section V. This section develops the UAL contribution.

Under the "Historical" Funding Policy, the UAL is amortized as a level dollar amount over a rolling 20-year period. Because the period is reset each year to 20 years, this policy is not expected to fully pay off the UAL, but produces more stable contributions.

Under the "TriMet" Funding Policy, the UAL is amortized over a period that started at 15 years (10 years remaining) with payment increases of 2.0% each year and will transition to a rolling 5-year period. Because the period will be reset each year to 5 years, this policy also is not expected to fully pay off the UAL. However, 5 years is short enough that the UAL is expected to be nearly paid off and the Plan does not fail GASB's crossover test until 2103.

Actuarially Determined Contribution

Table VI-1 shows the components of the Actuarially Determined Contribution (ADC) for FYE 2020 and 2019 under both the "Historical" policy and the "TriMet" policy. The ADC amounts are shown assuming contributions are made at the beginning of the fiscal year or at the beginning of each month.

Table VI-1

Actuarially Determined Contribution Amounts	FYE 2020		FYE 2019	
	Historical	TriMet	Historical	TriMet
Total Normal Cost	$ 8,675,232	$ 8,675,232	$ 9,642,740	$ 9,642,740
Administrative Expenses	290,360	290,360	290,360	290,360
UAL Payment	11,023,428	15,469,612	11,738,612	15,343,686
Total ADC (Beginning of Year)	**$ 19,989,020**	**$ 24,435,204**	**$ 21,671,712**	**$ 25,276,786**
Equivalent Monthly Contribution	**$ 1,716,072**	**$ 2,097,780**	**$ 1,860,532**	**$ 2,170,031**
Annual Amount **(Equivalent Monthly Contribution x 12)**	**$ 20,592,864**	**$ 25,173,360**	**$ 22,326,384**	**$ 26,040,372**

SECTION VII – GASB 67 AND 68 DISCLOSURES

This section of the report provides accounting and financial reporting information under Governmental Accounting Standards Board Statements 67 and 68 for the Plan and TriMet. This information includes:

- Determination of Discount Rate,
- Changes in the Net Pension Liability,
- Calculation of the Net Pension Liability at the discount rate as well as discount rates 1% higher and lower than the discount rate,
- Schedule of Employer Contributions,
- Disclosure of Deferred Inflows and Outflows, and
- Calculation of the Annual Pension Expense for TriMet.

Determination of Discount Rate

The discount rate used to measure the Total Pension Liability was 6.75%.

The projection of cash flows used to determine the discount rate assumed that contributions to the Plan will follow the “TriMet” Funding Policy, which requires contributions equal to normal cost (including assumed administrative expenses) and an amortization payment on the remaining UAL that will ultimately be over a rolling 5-year period. The UAL is based on an Actuarial Value of Assets that smooths investment gains and losses over five years.

Based on these assumptions, the Plan’s fiduciary net position was projected to be available to make projected future benefit payments for current members until FYE 2103, when only a portion of the projected benefit payments are expected to be made from the projected fiduciary net position. Projected benefit payments are discounted at the long-term expected return on assets of 6.75% to the extent the fiduciary net position is available to make the payments and at the municipal bond rate of 3.50% (Bond Buyer 20-Bond GO Index as of June 27, 2019) to the extent they are not available. The single equivalent rate used to determine the Total Pension Liability as of June 30, 2019 rounded to four decimals is 6.75%.

Appendix D shows the details of this calculation.

Note Disclosures

Table VII-1 below shows the changes in the Total Pension Liability, the Plan Fiduciary Net Position (i.e., fair value of Plan assets), and the Net Pension Liability during the Measurement Year.

Table VII-1

Change in Net Pension Liability	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at 6/30/2018	$ 698,934,006	$ 560,882,099	$ 138,051,907
Changes for the year:			
Service cost	9,642,740		9,642,740
Interest	46,537,334		46,537,334
Changes of benefits	0		0
Differences between expected and actual experience	(2,453,333)		(2,453,333)
Changes of assumptions	0		0
Contributions - employer		34,717,720	(34,717,720)
Contributions - member		0	0
Net investment income		18,620,471	(18,620,471)
Benefit payments	(38,904,785)	(38,904,785)	0
Administrative expense		(395,612)	395,612
Net changes	14,821,956	14,037,794	784,162
Balances at 6/30/2019	$ 713,755,962	$ 574,919,893	$ 138,836,069

During the measurement year, the NPL increased by approximately $0.8 million. The service cost and interest cost increased the NPL by approximately $56.2 million while contributions and investment returns offset by administrative expenses decreased the NPL by approximately $52.9 million. In addition, gains due to liability experience reduced the NPL by approximately $2.5 million.

There were no changes in benefits or assumptions during the year.

SECTION VII – GASB 67 AND 68 DISCLOSURES

Changes in the discount rate affect the measurement of the TPL. Lower discount rates produce a higher TPL and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the NPL can be very significant for a relatively small change in the discount rate. The table below shows the sensitivity of the NPL to the discount rate.

Table VII-2

Sensitivity of Net Pension Liability to Changes in Discount Rate

	1% Decrease 5.75%	Discount Rate 6.75%	1% Increase 7.75%
Total Pension Liability	$ 792,603,842	$ 713,755,962	$ 646,769,626
Plan Fiduciary Net Position	574,919,893	574,919,893	574,919,893
Net Pension Liability	$ 217,683,949	$ 138,836,069	$ 71,849,733
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	72.5%	80.5%	88.9%

A one percent decrease in the discount rate increases the TPL by approximately 11.0% and increases the NPL by approximately 57%. A one percent increase in the discount rate decreases the TPL by approximately 9.4% and decreases the NPL by approximately 48%.

Required Supplementary Information

The schedules of Required Supplementary Information eventually will build up to 10 years of information. The schedule below shows the changes in NPL and related ratios required by GASB for the years since TriMet implemented GASB 67.

Table VII-3

Schedule of Changes in Net Pension Liability and Related Ratios

	FYE 2019	FYE 2018	FYE 2017	FYE 2016	FYE 2015	FYE 2014	FYE 2013	FYE 2012
Total Pension Liability								
Service cost	$ 9,642,740	$ 9,875,234	$ 10,850,730	$ 10,702,574	$ 11,756,232	$ 11,406,016	$ 11,122,166	$ 11,030,625
Interest (includes interest on service cost)	46,537,334	43,832,738	43,888,922	43,371,673	43,025,200	42,869,939	41,827,133	40,065,267
Changes of benefit terms	0	3,286,046	0	0	0	0	0	(10,616,209)
Differences between expected and actual experience	(2,453,333)	20,935,664	(19,614,961)	(8,966,475)	(541,183)	(11,294,241)	(8,583,422)	7,780,692
Changes of assumptions	0	0	0	18,776,392	(16,558,463)	29,476,059	15,353,638	0
Benefit payments, including refunds of member contributions	(38,904,785)	(36,394,436)	(34,162,919)	(32,679,854)	(30,677,192)	(28,845,723)	(27,372,519)	(23,863,800)
Net change in total pension liability	**$ 14,821,956**	**$ 41,535,246**	**$ 961,772**	**$ 31,204,310**	**$ 7,004,594**	**$ 43,612,050**	**$ 32,346,996**	**$ 24,396,575**
Total pension liability - beginning	**698,934,006**	**657,398,760**	**656,436,988**	**625,232,678**	**618,228,084**	**574,616,034**	**542,269,038**	**517,872,463**
Total pension liability - ending	**$ 713,755,962**	**$ 698,934,006**	**$ 657,398,760**	**$ 656,436,988**	**$ 625,232,678**	**$ 618,228,084**	**$ 574,616,034**	**$ 542,269,038**
Plan fiduciary net position								
Contributions - employer	$ 34,717,720	$ 35,227,507	$ 35,862,442	$ 38,026,735	$ 36,200,926	$ 47,261,301	$ 70,379,741	$ 18,823,691
Contributions - member	0	0	0	0	0	0	0	0
Net investment income	18,620,471	41,479,101	46,645,429	1,948,822	12,275,500	64,460,966	42,348,566	792,478
Benefit payments, including refunds of member contributions	(38,904,785)	(36,394,436)	(34,162,919)	(32,679,854)	(30,677,192)	(28,845,723)	(27,372,519)	(23,863,800)
Administrative expense	(395,612)	(356,886)	(247,254)	(281,539)	(363,267)	(486,934)	(222,824)	(289,032)
Net change in plan fiduciary net position	**$ 14,037,794**	**$ 39,955,286**	**$ 48,097,698**	**$ 7,014,164**	**$ 17,435,967**	**$ 82,389,610**	**$ 85,132,964**	**$ (4,536,663)**
Plan fiduciary net position - beginning	**560,882,099**	**520,926,813**	**472,829,115**	**465,814,951**	**448,378,984**	**365,989,374**	**280,856,410**	**285,393,073**
Plan fiduciary net position - ending	**$ 574,919,893**	**$ 560,882,099**	**$ 520,926,813**	**$ 472,829,115**	**$ 465,814,951**	**$ 448,378,984**	**$ 365,989,374**	**$ 280,856,410**
Net pension liability - ending	**$ 138,836,069**	**$ 138,051,907**	**$ 136,471,947**	**$ 183,607,873**	**$ 159,417,727**	**$ 169,849,100**	**$ 208,626,660**	**$ 261,412,628**
Plan fiduciary net position as a percentage of the total pension liability	80.55%	80.25%	79.24%	72.03%	74.50%	72.53%	63.69%	51.79%
Covered payroll	$ 97,405,506	$ 109,924,285	$ 106,596,389	$ 117,666,306	$ 116,555,801	$ 124,695,531	$ 125,143,307	$ 125,142,143
Net pension liability as a percentage of covered payroll	142.53%	125.59%	128.03%	156.04%	136.77%	136.21%	166.71%	208.89%

SECTION VII – GASB 67 AND 68 DISCLOSURES

The schedule below shows a comparison of the Actuarially Determined Contribution (ADC) to actual contributions.

Table VII-4

Schedule of Employer Contributions

	FYE 2019	FYE 2018	FYE 2017	FYE 2016	FYE 2015	FYE 2014	FYE 2013	FYE 2012	FYE 2011	FYE 2010
Actuarially Determined Contribution	$ 26,040	$ 24,566	$ 28,498	$ 28,030	$ 31,926	$ 35,553	$ 34,638	$ 32,224	$ 34,028	$ 28,051
Contributions in Relation to the Actuarially Determined Contribution	34,718	35,228	35,862	38,027	36,201	47,261	70,380	18,824	47,428	28,051
Contribution Deficiency/(Excess)	$ (8,677)	$ (10,662)	$ (7,365)	$ (9,996)	$ (4,275)	$ (11,708)	$ (35,742)	$ 13,400	$ (13,400)	$ 0
Covered Payroll	$ 97,406	$ 109,924	$ 106,596	$ 117,666	$ 116,556	$ 124,696	$ 125,143	$ 125,142	$ 119,166	$ 121,124
Contributions as a Percentage of Covered Payroll	35.64%	32.05%	33.64%	32.32%	31.06%	37.90%	56.24%	15.04%	39.80%	23.16%

Amounts in Thousands

Key methods and assumptions used to determine the ADC for FYE 2019.

Actuarial Cost Method	Individual Entry Age as a level percent of pay
Asset Valuation Method	Investment gains and losses are smoothed over 5 years with the resulting actuarial value restricted to be between 80% and 120% of the market value
Amortization Method	Closed 15-year period until 5 years remains, then open. Payments are scheduled to increase 2.0% each year. (July 1, 2014)
Discount Rate	6.75% (July 1, 2016)
Salary Increases	2.75% (July 1, 2015)
Inflation	2.5% (July 1, 2016)
Healthy Mortality	RP-2014 Annuitant and Non-Annuitant Mortality with Blue Collar Adjustment set forward one year for males and two years for females (July 1, 2016)

Employer Accounting

The schedules in this section are to be used by TriMet for its employer accounting for FYE 2018. These schedules develop the annual pension expense, including the amounts of deferred inflows and outflows.

The impact of experience gains or losses and assumption changes on the TPL are recognized in expense over the average expected remaining service life of all active and inactive members of the Plan. As of the measurement date, this recognition period was 3.2 years.

During the year, there was a liability experience gain of approximately $2.5 million. Approximately $0.8 million of that loss was recognized as a reduction in pension expense in the current year and the remainder will be recognized over the next 3 years, resulting in a deferred inflow of resources as of June 30, 2019 of approximately $1.7 million. Approximately $2.5 million was recognized as a reduction in pension expense in the current year due to experience gains and losses from prior periods. As of June 30, 2019, there is a deferred inflow of approximately $10.3 million due to current and prior period gains and a deferred outflow of approximately $10.1 million due to prior period losses.

There were no assumption changes since the last measurement date. Approximately $5.0 million was recognized as an increase in pension expense in the current year due to assumption changes from prior periods. As of June 30, 2019, there is a deferred inflow of approximately $1.2 million and a deferred outflow of approximately $3.8 million due to prior assumption changes.

The impact of investment gains or losses is recognized over a period of five years. During the measurement year, there was an investment loss of approximately $19.1 million. Approximately $3.8 million of that loss was recognized in the current year and an identical amount will be recognized in each of the next four years. Unrecognized investment losses from prior periods were approximately $2.2 million of which $5.7 million was recognized as an increase in pension expense in the current year. The combination of unrecognized investment gains and losses from this year and prior periods results in a deferred outflow of resources as of June 30, 2019 of approximately $11.7 million.

The table on the next page summarizes the current balances of deferred outflows and deferred inflows of resources along with the net recognition over the next five years.

SECTION VII – GASB 67 AND 68 DISCLOSURES

Table VII-5

Schedule of Deferred Inflows and Outflows of Resources		
	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 10,199,426	$ 10,342,644
Changes in assumptions	3,755,280	1,226,553
Net difference between projected and actual earnings on pension plan investments	11,711,412	0
Total	**$ 25,666,118**	**$ 11,569,197**

Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:

Measurement year ended June 30:	
2020	6,783,237
2021	1,105,669
2022	2,390,628
2023	3,817,387
2024	0
Thereafter	$ 0

The annual pension expense recognized by TriMet can be calculated two different ways. First, it is the change in the amounts reported on TriMet's Statement of Net Position that relate to the Plan and are not attributable to employer contributions. That is, it is the change in NPL plus the changes in deferred outflows and inflows plus employer contributions.

Alternatively, annual pension expense can be calculated by its individual components. While GASB does not require or suggest the organization of the individual components shown in the table on the following page, we believe it helps to understand the level and volatility of pension expense.

SECTION VII – GASB 67 AND 68 DISCLOSURES

Table VII-6

Calculation of Pension Expense			
	Measurement Year Ending		
	2020	2019	2018
Change in Net Pension Liability	*$ (7,066,884)*	$ 784,162	$ 1,579,960
Change in Deferred Outflows	*14,873,962*	3,958,294	892,720
Change in Deferred Inflows	*(8,090,725)*	(9,235,892)	(12,578,419)
Employer Contributions	*25,173,360*	34,717,720	35,227,507
Pension Expense	***$ 24,889,713***	**$ 30,224,284**	**$ 25,121,768**
Operating Expenses			
Service cost	*$ 8,675,232*	$ 9,642,740	$ 9,875,234
Employee contributions	*0*	0	0
Administrative expenses	*300,000*	395,612	356,886
Total	*$ 8,975,232*	$ 10,038,352	$ 10,232,120
Financing Expenses			
Interest cost	*$ 47,365,662*	$ 46,537,334	$ 43,832,738
Expected return on assets	*(38,234,418)*	(37,707,402)	(35,111,971)
Total	*$ 9,131,244*	$ 8,829,932	$ 8,720,767
Changes			
Benefit changes	*$ 0*	$ 0	$ 3,286,046
Recognition of assumption changes	*2,528,727*	5,006,258	8,287,965
Recognition of liability gains and losses	*(1,496,053)*	(3,254,724)	(3,892,926)
Recognition of investment gains and losses	*5,750,563*	9,604,466	(1,512,204)
Total	*$ 6,783,237*	$ 11,356,000	$ 6,168,881
Pension Expense	***$ 24,889,713***	**$ 30,224,284**	**$ 25,121,768**

Figures for the 2020 measurement year are projected

First, there are components referred to as operating expenses. These are items directly attributable to the operation of the plan during the measurement year. Service cost less employee contributions represents the increase in employer-provided benefits attributable to the year, and administrative expenses are the cost of operating the Plan for the year.

Second, there are the financing expenses: the interest on the Total Pension Liability less the expected return on assets. Since the discount rate is equal to the long-term expected return on assets, the financing expense is just the interest on the Net Pension Liability.

The final category is changes. This category will drive most of the volatility in pension expense from year to year. It includes any changes in benefits made during the year and the recognized

SECTION VII – GASB 67 AND 68 DISCLOSURES

amounts due to assumption changes, gains or losses on the TPL, and investment gains or losses. The total pension expense increased from the prior year by about $5.1 million. The recognition of changes increased by approximately $5.2 million, which is slightly more than the total increase in pension expense.

APPENDIX A – MEMBERSHIP INFORMATION

Data Assumptions and Methods

In preparing our data, we relied on information supplied by TriMet. This information includes, but is not limited to, plan provisions, employee data, and financial information. Our methodology for obtaining the data used for the valuation is based upon the following assumptions and practices:

- All active employees are assumed to accrue a full year of service in all future years.
- The most recent annual salary for actives is calculated to be "Hourly Rate" multiplied by 2,080 for members identified as Full-Time Operators.
- The most recent annual salary for actives is calculated to be "Hourly Rate" multiplied by 1,560 for members identified as Mini-Run Operators.

Table A-1

Active Member Data	July 1, 2019	July 1, 2018	% Change
Active Union Members			
Count	1,186	1,320	-10.2%
Average Current Age	53.2	53.0	0.4%
Average Eligibility Service	17.3	16.5	4.8%
Average Benefit Service	16.7	15.9	5.0%
Transfers to Management			
Count	50	58	-13.8%
Average Age	53.0	53.2	-0.3%

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2

In Pay Status Member Data	July 1, 2019	July 1, 2018	%Change
Retirees			
Count	1,506	1,414	6.5%
Average Age	70.6	70.3	0.4%
Total Annualized Benefits	$ 32,394,032	$ 29,814,782	8.7%
Average Annual Benefit	$ 21,510	$ 21,085	2.0%
Beneficiaries & Alternate Payees			
Count	276	256	7.8%
Average Age	71.2	71.4	- 0.3%
Total Annualized Benefits	$ 3,508,177	$ 3,171,410	10.6%
Average Annual Benefit	$ 12,711	$ 12,388	2.6%
Disabled			
Count	193	189	2.1%
Average Age	63.2	62.6	1.0%
Total Annualized Benefits	$ 4,721,354	$ 4,417,597	6.9%
Average Annual Benefit	$ 24,463	$ 23,374	4.7%
Total			
Count	1,975	1,859	6.2%
Average Age	70.0	69.7	0.4%
Total Annualized Benefits	$ 35,902,209	$ 32,986,192	8.8%
Average Annual Benefit	$ 18,178	$ 17,744	2.4%

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3

Deferred Member Data	Count July 1, 2019	Count July 1, 2018	% Change
Vested Terminated Members			
Count	114	110	3.6%
Average Age	52.4	52.4	0.0%
Total Annualized Benefits	$ 1,291,158	$ 1,224,805	5.4%
Average Annual Benefit	$ 11,326	$ 11,135	1.7%
Deferred Beneficiaries			
Count	19	20	-5.0%
Average Age	55.4	54.8	1.1%

APPENDIX A – MEMBERSHIP INFORMATION

Table A-4

Change in Plan Membership									
	Active	Terminated Vested	Transfer to Mgmt	Deferred Beneficiary	Retiree	Beneficiary	Disabled	Alternate Payee	Totals
July 1, 2018	**1,320**	**110**	**58**	**20**	**1,414**	**208**	**189**	**48**	**3,367**
New Entrants	0	0	0	0	0	0	0	0	0
Rehires/Returned to Work	1	0	0	0	0	0	(1)	0	0
Vested Terminations	(11)	14	(3)	0	0	0	0	0	0
Nonvested Terminations	(2)	0	0	0	0	0	0	0	(2)
Disabilities	(7)	0	(1)	0	0	0	8	0	0
Retirements	(108)	(10)	(7)	0	125	0	0	0	0
Deaths	(3)	0	0	(1)	(34)	(7)	(3)	0	(48)
New Beneficiaries	0	0	0	0	0	20	0	7	27
Beneficiary Deaths	0	0	0	0	0	0	0	0	0
Benefit Ceased	0	0	0	0	0	0	0	0	0
Transfers to Mgmt*	(7)	0	6	0	0	0	0	0	(1)
Transfers from Mgmt*	3	0	(3)	0	0	0	0		0
Miscellaneous Adjustments	0	0	0	0	1	0	0	0	1
July 1, 2019	**1,186**	**114**	**50**	**19**	**1,506**	**221**	**193**	**55**	**3,344**

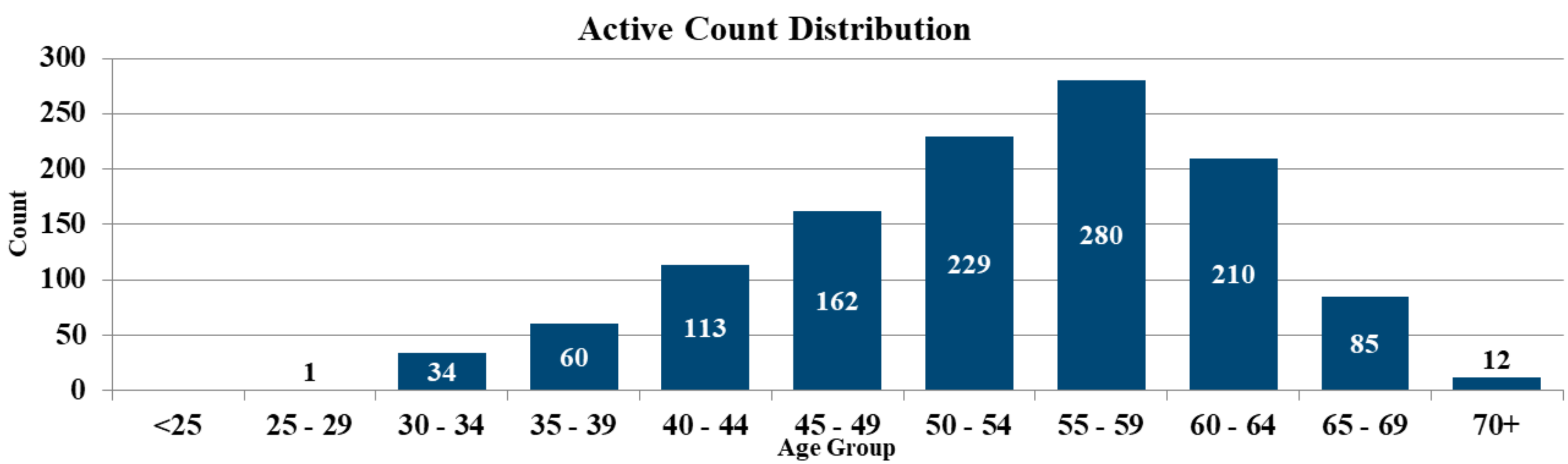
** Includes transfers who are not eligible for Management DB Plan.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-5

Distribution of Active Members as of July 1, 2019											
	Years of Service										
Age	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 and up	Total
Under 25	0	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	1	0	0	0	0	0	0	0	1
30 to 34	0	0	25	9	0	0	0	0	0	0	34
35 to 39	0	0	33	25	2	0	0	0	0	0	60
40 to 44	0	0	36	48	20	9	0	0	0	0	113
45 to 49	0	0	37	57	25	40	3	0	0	0	162
50 to 54	0	0	31	74	44	53	25	2	0	0	229
55 to 59	0	0	39	71	49	55	38	22	5	1	280
60 to 64	0	0	36	43	34	45	24	10	14	4	210
65 to 69	0	0	9	18	14	14	13	6	8	3	85
70 and up	0	0	2	3	1	4	1	0	0	1	12
Total Count	0	0	249	348	189	220	104	40	27	9	1,186

Chart A-1



APPENDIX A – MEMBERSHIP INFORMATION

Table A-6

Retirees, Disabled, Beneficiaries and Alternate Payees by Attained Age and Benefit Effective Date* as of July 1, 2019

Benefit Effective Fiscal Year End	Under 50	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 and up	Total
Prior to 1995	0	0	0	2	2	1	4	7	26	21	**63**
1996	0	0	0	0	0	0	5	1	7	0	**13**
1997	0	0	0	0	0	2	5	6	8	0	**21**
1998	0	0	0	1	1	0	3	6	2	0	**13**
1999	0	0	0	0	0	0	3	16	2	0	**21**
2000	0	0	0	0	0	3	3	16	1	0	**23**
2001	0	0	0	0	0	1	13	16	0	0	**30**
2002	0	0	0	0	1	6	11	14	0	0	**32**
2003	0	0	0	2	2	4	26	7	0	0	**41**
2004	0	0	0	2	2	15	29	6	1	0	**55**
2005	0	0	2	1	5	23	30	5	0	0	**66**
2006	0	0	0	1	14	32	27	4	0	0	**78**
2007	0	0	0	0	6	49	30	4	0	0	**89**
2008	0	0	0	3	14	53	15	2	1	0	**88**
2009	0	0	2	6	28	45	11	3	0	0	**95**
2010	0	0	1	7	17	55	14	4	1	0	**99**
2011	0	1	1	7	31	43	15	1	0	0	**99**
2012	0	0	1	9	52	45	14	3	0	1	**125**
2013	0	0	0	17	48	23	3	2	0	0	**93**
2014	0	0	1	26	64	20	4	2	0	0	**117**
2015	0	0	6	19	49	20	2	2	0	0	**98**
2016	0	0	5	24	81	21	3	2	1	0	**137**
2017	1	1	11	51	38	15	1	0	4	2	**124**
2018	1	0	14	55	41	25	1	1	0	0	**138**
2019	1	0	26	54	34	15	3	0	0	0	**133**
Missing	5	16	41	22	0	0	0	0	0	0	**84**
Total	**8**	**18**	**111**	**309**	**530**	**516**	**275**	**130**	**54**	**24**	**1,975**

Average Age at Retirement/Disability	61.6
Average Current Age	70.0
Average Annual Pension	$ 18,178

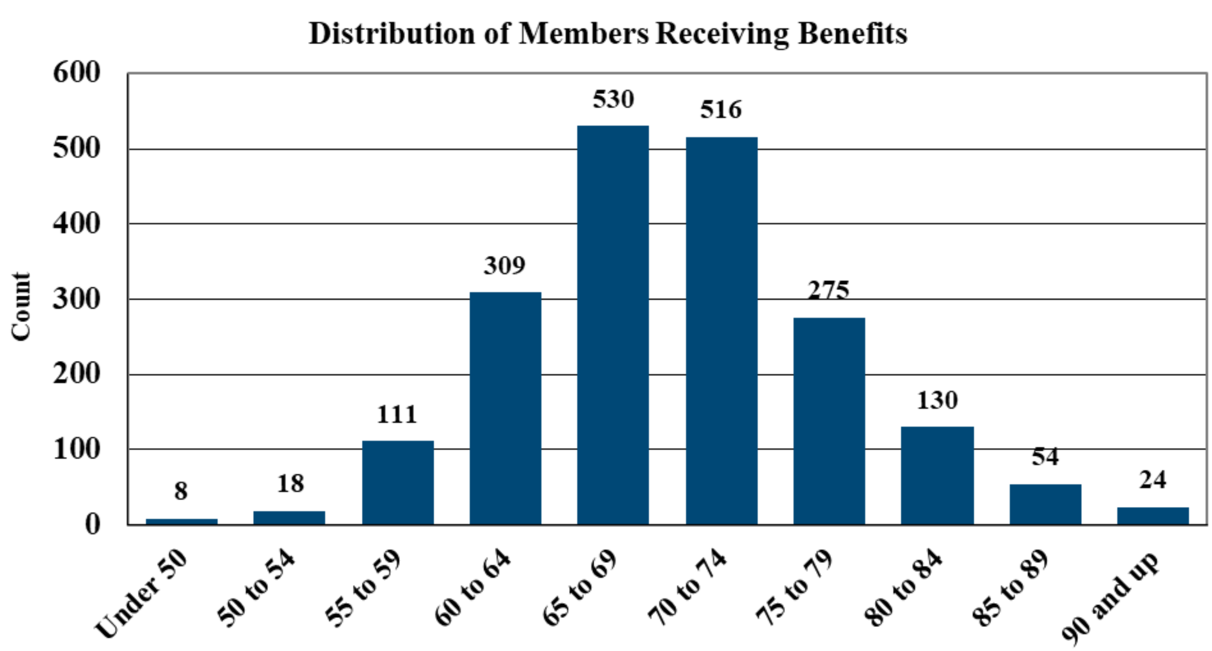
** Missing counts include 79 Disabled members who are receiving disability benefits until age 62.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-7

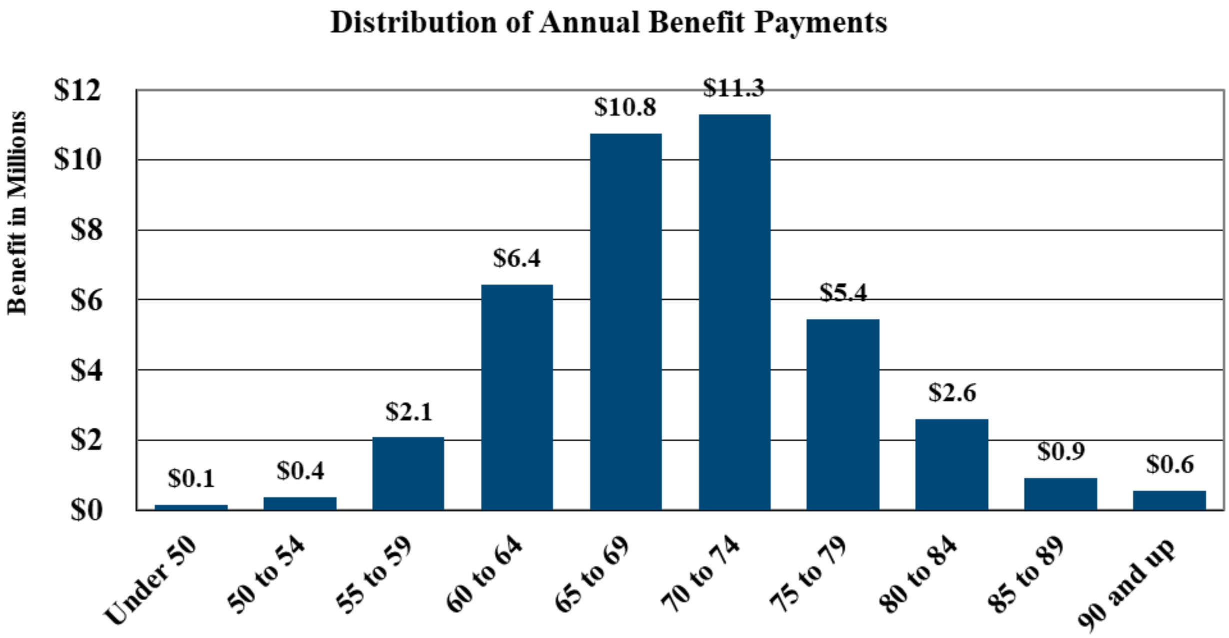
Distribution of Retirees, Disabled Members, Beneficiaries and Alternate Payees as of June 30, 2019		
Age	**Count**	**Annual Benefit**
Under 50	8	$ 149,158
50 to 54	18	379,233
55 to 59	111	2,076,148
60 to 64	309	6,433,124
65 to 69	530	10,750,587
70 to 74	516	11,299,718
75 to 79	275	5,446,711
80 to 84	130	2,602,796
85 to 89	54	917,777
90 and up	24	568,311
Total	1,975	**$ 40,623,562**

Chart A-2



APPENDIX A – MEMBERSHIP INFORMATION

Chart A-3



APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

The actuarial assumptions were recommended by the prior actuary based upon an experience study in 2013 and subsequent analyses they performed and communicated in letters dated February 18, 2016 and May 31, 2017. We have not performed an independent analysis, but we reviewed the experience study and letters along with the recent asset-liability study and believe the assumptions to be reasonable.

1. **Long-Term Expected Return on Assets (effective July 1, 2016)**

   6.75% compounded annually net of investment management and custodial fees.

2. **Salary Increases (effective July 1, 2015)**

   2.75%, compounded annually.

   Amortization Payment Growth
   2.00%, compounded annually per the "TriMet" funding policy.

3. **Price Inflation (effective July 1, 2016)**

   2.50%, compounded annually.

4. **Pre- and Post-Retirement Benefit Increases**

   The benefit rates used to calculate retirement and temporary disability benefits are assumed to increase with salary increases (2.75%) until benefit commencement. After commencement, benefit payments for members who retired prior to August 1, 2012 are assumed to increase 2.50% per year into the future, and benefit payments for members who retire on or after August 1, 2012 are assumed to increase 2.25% (90% of 2.50%) per year into the future.

   After commencement, temporary disability benefit payments are assumed to increase with price inflation (2.50%).

5. **Administrative Expenses (effective July 1, 2015)**

   $300,000 per year payable midyear.

6. **Mortality (effective July 1, 2016)**

   Healthy Lives: RP-2014 Annuitant and Non-Annuitant Mortality Tables with Blue Collar Adjustment set forward 1 year for males and 2 years for females. This assumption includes a margin for future mortality improvement based on recent plan experience.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Disabled Lives: RP-2014 Disability Mortality Table for males and females.

7. Rates of Retirement (effective July 1, 2014)

All active members and management transfers are assumed to retire by age 70. A certain percentage of active members are assumed to elect retirement beginning at age 55. The rates of retirement are as follows:

Active Rates of Retirement			
Age	Rate	Age	Rate
55 – 56	4.0%	63	20.0%
57	7.5	64	25.0
58 – 60	11.0	65	30.0
61	20.0	66 – 69	40.0
62	35.0	70	100.0

Terminated vested members are assumed to retire at their earliest unreduced retirement age. Disabled members are assumed to retire at age 62.

8. Form of Benefit (effective July 1, 2014)

Upon retirement, members are assumed to elect the following form of payment:

Form of Payment	Election Rate
Single Life Annuity	33 1/3%
66 2/3% Joint & Survivor Annuity	66 2/3%

9. Rates of Disability (effective July 1, 2014)

70% of the 1985 Pension Disability Table – Class 3 – Unisex (for nonhazardous light manual workers). Sample rates of disability used in this valuation are illustrated below.

Age	Rate of Disability
30	0.002
35	0.003
40	0.004
45	0.006
50	0.009
55	0.015
60	0.022

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

10. Rates of Termination (effective July 1, 2014)

Assumed termination rates are shown below:

Years of Vesting Service	Rates of Termination	
	Males	Females
Less than 1	0.050	0.140
1-6	0.025	0.030
7-9	0.015	0.030
10 and more	0.005	0.010

11. Unused Sick Leave Benefits (effective July 1, 2014)

Active members are assumed to accumulate a percentage of the maximum accumulated sick leave hours in effect at retirement, based on the following schedule:

Years of Vesting Service	Sick Bank Percentage
Less than 10	0%
10	20%
11 – 15	25%
16 – 18	35%
19 – 20	40%
21 – 23	50%
24 and more	55%

Active Management Transfers are not assumed to return to the Union Plan following their transfer date and are not assumed to receive the unused sick leave benefit. (effective July 1, 2012)

The schedule of maximum accumulated sick leave hours is shown in Appendix C.

12. Probability of Marriage/Domestic Partner (effective July 1, 2014)

66 2/3% of members are assumed to be married or have a domestic partner.

13. Age of Spouse/Domestic Partner (effective July 1, 2014)

Females are assumed to be two years younger than their spouses or domestic partners.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

14. Future Service Credits

Active and disabled members are assumed to earn one year of vesting service and one year of benefit service each future year. Transfers to Management are assumed to earn one year of vesting service and no benefit service each future year.

15. Mini-Run to Full Time (effective July 1, 2014)

Active mini-run members are assumed to transfer to full time at the following rates:

Years of Credited Service	Annual Probability
Less than 4	40%
4 or more	5%

16. Changes Since the Last Valuation

None.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Contribution Allocation Procedure

The contribution allocation procedure primarily consists of an actuarial cost method, an asset smoothing method, and an amortization method as described below. All components of the contribution allocation procedure were adopted as part of the Plan's Pension Funding Policy and Objectives on February 26, 2014.

1. Actuarial Cost Method (Effective July 1, 2014)

The Entry Age actuarial cost method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund all benefits between each member's date of hire and last assumed date of employment. The Actuarial Liability is the difference between the present value of future benefits and the present value of future normal costs. Or, equivalently, it is the accumulation of normal costs for all periods prior to the valuation date. The normal cost and actuarial liability are calculated on an individual basis. The sum of the individual amounts is the normal cost and Actuarial Liability for the Plan. The Actuarial Liability for the Plan represents the target amount of assets the Plan should have as of the valuation date according to the actuarial cost method.

2. Asset Valuation Method

For the purpose of determining contribution amounts, an Actuarial Value of Assets is used that dampens the volatility in the Market Value of Assets, resulting in a smoother pattern of contributions.

The Actuarial Value of Assets is calculated by recognizing 20% of the difference in each of the prior four years of actual investment returns compared to the expected return on the Market Value of Assets. The Actuarial Value of Assets is further limited to be not less than 80% nor greater than 120% of the Market Value of Assets.

3. Amortization Method

The Unfunded Actuarial Liability is the difference between the Actuarial Liability and the Actuarial Value of Assets. Under the "Historical" funding policy, the Unfunded Actuarial Liability is amortized as a level dollar amount over a rolling 20-year period. Under the "TriMet" funding policy, the Unfunded Actuarial Liability is amortized as a level percentage of total union payroll over a closed period of 15 years commencing July 1, 2014. When the remaining period is 5 years, the closed period will become a rolling 5-year period.

4. Changes Since the Last Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Eligibility

All ATU 757 bargaining unit employees of TriMet (TriMet Union employees) hired before August 1, 2012. TriMet Union employees who transfer to a management position continue to earn service for vesting purposes and retirement eligibility. However, no additional benefits are earned for continuous service as a management employee.

TriMet Union employees hired on or after August 1, 2012 are not eligible to participate in this Plan.

Members who are re-employed as an eligible employee on or after August 1, 2012 may recommence participation if the rehire date is before the earlier of (1) 36 months following termination or (2) the date their break in service exceeds their continuous service before the break in service.

Members who transfer from an eligible employee to an ineligible employee may recommence participation if they transfer back to an eligible employee on or after August 1, 2012 and they did not have a termination date between transfers.

2. Credited Service

All periods of service during which the employee is a member of the bargaining unit represented by ATU 757, working either as a full-time employee or mini-run operator, is entitled to payment for services rendered to TriMet and is eligible to participate in this Plan. Continuous service includes periods of layoff due to reduction in force of less than five years, authorized leave of absences if certain requirements are met, and time while serving as an officer of the ATU 757.

Continuous service is measured using elapsed time. Each twelve month period of continuous service equals one year of continuous service and partial years are based on the number of days worked divided by 365.25.

3. Vesting Service

All continuous service plus any period of service (not already counted as continuous service) when an employee is entitled to payment for services rendered to TriMet, excluding service preceding a permanent break in service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

4. Normal Retirement

Eligibility

For participants who earn at least 10 years of vesting service, the Normal Retirement Age is determined from the following schedule:

Severance from Service Date	Normal Retirement Age
December 1, 1994 to November 30, 1998	62
December 1, 1998 to November 30, 2000	61
December 1, 2000 to November 30, 2002	60
December 1, 2002 to November 30, 2004	59
On or after December 1, 2004	58

Benefit

The normal retirement benefit for participants retiring or terminating after February 1, 1992 is determined by multiplying continuous service times the benefit rate in effect on the date of retirement or termination of employment, whichever is earlier. Mini-run operators receive 75% of the benefit rate shown below.

Effective Beginning	Benefit Rate	Effective Beginning	Benefit Rate
February 1, 1992	$42.00	September 1, 2006	$66.26
September 1, 1992	43.26	September 1, 2007	68.25
September 1, 1993	44.13	September 1, 2008	70.84
September 1, 1994	44.57	September 1, 2009	72.96
September 1, 1995	47.02	February 1, 2010	72.96
September 1, 1996	48.43	February 1, 2011	75.52
September 1, 1997	50.27	February 1, 2012	78.97
September 1, 1998	51.93	February 1, 2013	78.97
September 1, 1999	53.49	February 1, 2014	78.97
September 1, 2000	55.49	February 1, 2015	81.34
September 1, 2001	57.15	February 1, 2016	83.78
September 1, 2002	58.87	February 1, 2017	86.29
September 1, 2003	60.64	February 1, 2018	89.10
September 1, 2004	62.45	February 1, 2019	92.00
September 1, 2005	64.33		

Beginning December 1, 2009, benefit rates are adjusted on February 1 each year by the amount of any specified general wage adjustment under the Working and Wage Agreement during the preceding twelve months.

A benefit derived from unused sick leave is added to the above benefit as described below.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Unused Sick Leave

Vested participants who terminate after becoming eligible for early retirement will have unused accumulated sick leave up to the maximum accumulated sick leave converted to a monthly benefit at a rate of $.30 per hour for each hour of unused accrued sick leave.

Severance from Service Date	Maximum Accumulated Sick Leave
December 1, 1998	1,400 hours
December 1, 2003	1,450 hours
December 1, 2004	1,500 hours
December 1, 2005	1,550 hours
December 1, 2006	1,600 hours
December 1, 2007	1,650 hours
December 1, 2008	1,700 hours

5. Early Retirement

Eligibility

A participant may retire prior to his normal retirement date if he has 10 years of vesting service and is at least 55 years of age.

30 & Out: From December 1, 2003 to December 1, 2009, an active participant may retire with unreduced benefits after he has earned 30 years of continuous service, regardless of age.

Benefit

The normal retirement benefit will be reduced according to the following table:

	Percent Reduction from Normal Retirement Age				
	62	61	60	59	58
Age at Retirement / Effective	12/01/1994 through 11/30/1998	12/01/1998 through 11/30/2000	12/01/2000 through 11/30/2002	12/01/2002 through 11/30/2004	12/01/2004 to Current
62	0.00%	0.00%	0.00%	0.00%	0.00%
61	10.12	0.00	0.00	0.00	0.00
60	19.06	9.95	0.00	0.00	0.00
59	26.98	18.76	9.78	0.00	0.00
58	34.01	26.59	18.48	9.63	0.00
57	40.28	33.56	26.22	18.21	9.49
56	45.87	39.78	33.13	25.87	17.97
55	50.87	45.34	39.31	32.72	25.55

APPENDIX C – SUMMARY OF PLAN PROVISIONS

6. Forms of Payment

The following forms of payment are available:

- Single Life Annuity
- 66 2/3% Joint and Survivor Annuity

7. Disability Retirement

Eligibility

An active participant who becomes disabled after 10 years of continuous service may receive a disability benefit if he becomes permanently disabled from performing the participant's occupation while employed with TriMet prior to reaching Social Security retirement age (62). Disability benefits are paid from the Plan until the participant reaches age 62.

Benefit

A benefit payable during the period of disability is determined from the table below. If the participant is entitled to disability benefits under Social Security, the benefits shown below are doubled. Participants who are mini-run operators on the date they become permanently disabled will receive 75% of the amounts below.

Effective	10 Years of Continuous Service	15 Years of Continuous Service	20 Years of Continuous Service
February 1, 1992	$388.60	$468.38	$544.07
February 1, 1993	400.26	482.43	560.39
February 1, 1994	408.27	492.08	571.60
February 1, 1995	434.80	524.06	608.75
February 1, 1996	441.76	532.45	618.49
February 1, 1997	457.22	551.08	640.14
February 1, 1998	472.31	569.27	661.26
February 1, 1999	481.76	580.66	674.49
February 1, 2000	502.72	605.92	703.83
February 1, 2001	519.71	626.40	727.62
February 1, 2002	533.90	643.50	747.48
February 1, 2003	545.01	656.88	763.03
February 1, 2004	569.92	686.90	797.90
February 1, 2005	586.50	706.89	821.12
February 1, 2006	602.28	725.91	843.21
February 1, 2007	620.47	747.83	868.67
February 1, 2008	643.37	775.42	900.72
February 1, 2009	669.62	807.06	937.47

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Effective	10 Years of Continuous Service	15 Years of Continuous Service	20 Years of Continuous Service
February 1, 2010	674.51	812.95	944.31
February 1, 2011	698.19	841.49	977.46
February 1, 2012	730.10	879.95	1,022.13
May 1, 2013	745.43	898.43	1,043.59
May 1, 2014	755.64	910.74	1,057.89
May 1, 2015	766.98	924.40	1,073.76
May 1, 2016	766.98	924.40	1,073.76
May 1, 2017	774.50	933.46	1084.28
May 1, 2018	793.32	956.14	1,110.63
May 1, 2019	817.12	984.82	1,143.95

Disability benefits increase at the same time and percentage as post-retirement benefit increases for participants who retired before August 1, 2012.

The disabled participant's retirement benefit at age 62 is calculated using service that includes continuous service during disability as if the participant remained in active employment from the date of disability to age 62, and the benefit rate in effect at age 62.

8. Vesting

A participant who terminates employment with at least ten years of vesting service as of the date of termination will be 100% vested.

9. Contributions

Contributions are made to the Trust Fund by TriMet. There are no member contributions. The Working and Wage Agreement between the ATU and TriMet establishes a minimum amortization period of 40 years. The necessary amount will be determined in accordance with accepted actuarial principles.

10. Pre-Retirement Death Benefit

Married Employee or Domestic Partner
If a vested participant, the participant's spouse or domestic partner will receive 50% of the accrued benefit. The benefit is paid to the spouse when the spouse attains age 62 (or, if later, the date of the participant's death). The payment to the domestic partner must commence no later than the December 31 of the calendar year following the participant's death. If the domestic partner is younger than age 62, the benefit is actuarially reduced to reflect the age of the domestic partner on the date of benefit commencement.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Disability
If a participant receiving disability benefits dies on or after age 55 but prior to age 62, the surviving spouse or domestic partner may elect to receive either the benefits in (a) above or the survivor portion of the 66 2/3% joint and survivor annuity.

11. Post-retirement Cost-of-Living Benefit

Prior to August 1, 2012, post-retirement benefits were increased each February 1 by the aggregate amount of any specified general wage adjustment under the Working and Wage Agreement during the preceding twelve months.

Effective August 1, 2012, post-retirement benefits are increased each May 1 during the period of the agreement as follows:

- For participants who retired before August 1, 2012, the post-retirement benefit increase is 100% of the percentage increase in the U.S. Urban Wage Earners and Clerical Workers Consumer Price Index (CPI-W) (annual average) for the previous calendar year. Annual increases will not be more than 7% per year.

- For participants who retire on or after August 1, 2012, the post-retirement benefit increase is 90% of the percentage increase in the U.S. Urban Wage Earners and Clerical Workers Consumer Price Index (CPI-W) (annual average) for the previous calendar year. Annual increases will not be more than 7% per year.

12. Changes Since the Last Valuation

The Benefit Rate was increased 3.25% to $92.00, and the temporary disability benefits were increased 3.00% to $817.12, $984.82, and $1,143.95 for members with 10, 15, and 20 years of service respectively.

Note: The summary of major plan provisions is designed to outline principal plan benefits. If TriMet should find the plan summary not in accordance with the actual provisions, the actuary should immediately be alerted so the proper provisions are valued.

APPENDIX D – DETERMINATION OF GASB 67/68 DISCOUNT RATE

Fiscal Year Ending	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2020	$ 574,919,893	$ 25,246,427	$ 42,123,175	$ 300,000	$ 38,236,843	$ 595,979,988	$ 42,123,175	$ 0
2021	595,979,988	25,760,144	44,703,564	309,000	39,589,490	616,317,058	44,703,564	0
2022	616,317,058	25,497,859	47,053,999	318,270	40,875,195	635,317,843	47,053,999	0
2023	635,317,843	25,751,359	49,338,062	327,818	42,090,018	653,493,340	49,338,062	0
2024	653,493,340	26,331,367	51,557,879	337,653	43,262,098	671,191,274	51,557,879	0
2025	671,191,274	26,198,519	53,615,739	347,782	44,383,643	687,809,914	53,615,739	0
2026	687,809,914	22,406,614	55,433,441	358,216	45,318,822	699,743,692	55,433,441	0
2027	699,743,692	19,218,000	57,232,469	368,962	45,958,411	707,318,673	57,232,469	0
2028	707,318,673	16,501,736	58,736,764	380,031	46,329,237	711,032,850	58,736,764	0
2029	711,032,850	14,209,193	60,029,203	391,432	46,460,548	711,281,957	60,029,203	0
2030	711,281,957	12,253,706	61,177,590	403,175	46,373,927	708,328,825	61,177,590	0
2031	708,328,825	10,591,307	62,100,403	415,270	46,088,363	702,492,821	62,100,403	0
2032	702,492,821	9,159,680	63,001,532	427,728	45,616,574	693,839,814	63,001,532	0
2033	693,839,814	7,929,397	63,611,351	440,560	44,970,981	682,688,280	63,611,351	0
2034	682,688,280	6,890,288	63,977,974	453,777	44,171,145	669,317,961	63,977,974	0
2035	669,317,961	5,995,276	64,110,102	467,390	43,234,096	653,969,842	64,110,102	0
2036	653,969,842	5,202,234	64,019,593	458,042	42,175,085	636,869,527	64,019,593	0
2037	636,869,527	4,509,661	63,702,170	448,882	41,008,664	618,236,800	63,702,170	0
2038	618,236,800	3,920,949	63,147,695	439,904	39,750,116	598,320,266	63,147,695	0
2039	598,320,266	3,403,982	62,418,776	431,106	38,413,078	577,287,444	62,418,776	0
2040	577,287,444	2,952,987	61,509,851	422,484	37,008,852	555,316,948	61,509,851	0
2041	555,316,948	2,566,231	60,391,605	414,034	35,550,409	532,627,949	60,391,605	0
2042	532,627,949	2,230,019	59,127,986	405,753	34,049,965	509,374,193	59,127,986	0
2043	509,374,193	1,935,936	57,687,608	397,638	32,518,662	485,743,544	57,687,608	0
2044	485,743,544	1,678,468	56,161,796	389,686	30,965,965	461,836,495	56,161,796	0

APPENDIX D – DETERMINATION OF GASB 67/68 DISCOUNT RATE

Fiscal Year Ending	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2045	461,836,495	1,455,743	54,516,035	381,892	29,399,741	437,794,052	54,516,035	0
2046	437,794,052	1,260,293	52,750,778	374,254	27,829,245	413,758,559	52,750,778	0
2047	413,758,559	1,091,306	50,906,048	366,769	26,262,731	389,839,779	50,906,048	0
2048	389,839,779	945,058	49,007,535	359,434	24,706,630	366,124,499	49,007,535	0
2049	366,124,499	819,066	47,021,466	352,245	23,167,840	342,737,694	47,021,466	0
2050	342,737,694	715,315	44,950,627	345,200	21,654,770	319,811,951	44,950,627	0
2051	319,811,951	630,932	42,821,946	338,296	20,175,380	297,458,020	42,821,946	0
2052	297,458,020	560,826	40,669,347	331,530	18,735,851	275,753,820	40,669,347	0
2053	275,753,820	502,253	38,494,232	324,899	17,341,304	254,778,246	38,494,232	0
2054	254,778,246	456,244	36,303,741	318,401	15,996,863	234,609,210	36,303,741	0
2055	234,609,210	419,587	34,122,609	312,033	14,706,859	215,301,013	34,122,609	0
2056	215,301,013	389,393	31,970,384	305,793	13,474,212	196,888,441	31,970,384	0
2057	196,888,441	365,605	29,850,086	299,677	12,301,168	179,405,451	29,850,086	0
2058	179,405,451	346,593	27,773,878	293,683	11,189,562	162,874,045	27,773,878	0
2059	162,874,045	330,864	25,754,323	287,810	10,140,412	147,303,188	25,754,323	0
2060	147,303,188	317,221	23,800,832	282,054	9,153,971	132,691,494	23,800,832	0
2061	132,691,494	305,531	21,916,573	276,412	8,230,036	119,034,076	21,916,573	0
2062	119,034,076	295,173	20,107,825	270,884	7,368,048	106,318,588	20,107,825	0
2063	106,318,588	285,727	18,379,393	265,467	6,567,001	94,526,457	18,379,393	0
2064	94,526,457	277,057	16,733,685	260,157	5,825,557	83,635,228	16,733,685	0
2065	83,635,228	269,051	15,172,447	254,954	5,142,137	73,619,015	15,172,447	0
2066	73,619,015	261,614	13,696,790	249,855	4,514,955	64,448,940	13,696,790	0
2067	64,448,940	254,666	12,307,329	244,858	3,942,039	56,093,457	12,307,329	0
2068	56,093,457	248,142	11,004,208	239,961	3,421,252	48,518,683	11,004,208	0
2069	48,518,683	241,986	9,787,119	235,161	2,950,316	41,688,705	9,787,119	0

APPENDIX D – DETERMINATION OF GASB 67/68 DISCOUNT RATE

Fiscal Year Ending	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2070	41,688,705	236,151	8,655,321	230,458	2,526,829	35,565,905	8,655,321	0
2071	35,565,905	230,597	7,607,720	225,849	2,148,288	30,111,222	7,607,720	0
2072	30,111,222	225,293	6,642,848	221,332	1,812,104	25,284,439	6,642,848	0
2073	25,284,439	220,209	5,758,784	216,905	1,515,624	21,044,583	5,758,784	0
2074	21,044,583	215,323	4,953,277	212,567	1,256,157	17,350,219	4,953,277	0
2075	17,350,219	210,615	4,223,911	208,316	1,030,987	14,159,593	4,223,911	0
2076	14,159,593	206,067	3,568,202	204,150	837,376	11,430,684	3,568,202	0
2077	11,430,684	201,666	2,983,580	200,067	672,573	9,121,276	2,983,580	0
2078	9,121,276	197,399	2,467,242	196,065	533,821	7,189,189	2,467,242	0
2079	7,189,189	193,257	2,016,014	192,144	418,378	5,592,665	2,016,014	0
2080	5,592,665	189,229	1,626,324	188,301	323,544	4,290,813	1,626,324	0
2081	4,290,813	185,309	1,294,155	184,535	246,691	3,244,124	1,294,155	0
2082	3,244,124	181,490	1,014,995	180,844	185,303	2,415,078	1,014,995	0
2083	2,415,078	177,766	783,871	177,228	137,012	1,768,758	783,871	0
2084	1,768,758	174,132	595,531	173,683	99,635	1,273,312	595,531	0
2085	1,273,312	170,584	444,643	170,209	71,199	900,243	444,643	0
2086	900,243	167,118	325,940	166,805	49,956	624,572	325,940	0
2087	624,572	163,730	234,356	163,469	34,387	424,863	234,356	0
2088	424,863	160,417	165,136	160,200	23,203	283,148	165,136	0
2089	283,148	157,177	113,933	156,996	15,336	184,732	113,933	0
2090	184,732	154,007	76,898	153,856	9,922	117,907	76,898	0
2091	117,907	150,905	50,735	150,779	6,279	73,576	50,735	0
2092	73,576	147,868	32,702	147,763	3,884	44,864	32,702	0
2093	44,864	144,896	20,584	144,808	2,348	26,716	20,584	0
2094	26,716	141,985	12,649	141,912	1,386	15,526	12,649	0

APPENDIX D – DETERMINATION OF GASB 67/68 DISCOUNT RATE

Fiscal Year Ending	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2095	15,526	139,135	7,587	139,073	798	8,799	7,587	0
2096	8,799	136,343	4,442	136,292	448	4,856	4,442	0
2097	4,856	133,609	2,539	133,566	245	2,605	2,539	0
2098	2,605	130,930	1,418	130,895	130	1,352	1,418	0
2099	1,352	128,306	775	128,277	66	672	775	0
2100	672	125,736	415	125,711	32	314	415	0
2101	314	123,218	218	123,197	15	131	218	0
2102	131	120,750	113	120,733	6	41	113	0
2103	41	118,333	58	118,319	1	(2)	56	2
2104	(2)	115,964	29	115,952	(1)	(20)	10	20
2105	(20)	113,644	14	113,633	(1)	(25)	0	14
2106	(25)	111,370	7	111,360	(2)	(24)	0	7
2107	(24)	109,141	3	109,133	(1)	(21)	0	3
2108	(21)	106,957	1	106,951	(1)	(17)	0	1
2109	(17)	104,816	1	104,812	(1)	(14)	0	1
2110	(14)	102,719	0	102,715	(1)	(11)	0	0

APPENDIX E – GLOSSARY OF TERMS

1. Actuarial Liability

The Actuarial Liability is the difference between the present value of future benefits and the present value of total future normal costs. This is also referred to as the "accrued liability" or "actuarial accrued liability." The Actuarial Liability represents the targeted amount of assets a plan should have as of a valuation date according to the actuarial cost method.

2. Actuarial Assumptions

Estimates of future experience with respect to rates of mortality, disability, turnover, retirement rate or rates of investment income, and salary increases. Demographic actuarial assumptions (rates of mortality, disability, turnover, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (price inflation, wage inflation, and investment income) are generally based on expectations for the future that may differ from the Plan's past experience.

3. Actuarial Cost Method

A mathematical budgeting procedure for allocating the dollar amount of the present value of future benefits between future normal cost and Actuarial Liability.

4. Actuarial Gain (Loss)

The difference between actual experience and the anticipated experience based on the actuarial assumptions during the period between two actuarial valuation dates.

5. Actuarial Present Value

The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at the discount rate and by probabilities of payment.

6. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. For GASB purposes, this date may be up to 24 months prior to the GASB 67/68 measurement date and up to 30 months prior to the employer's financial reporting date.

7. Actuarially Determined Contribution

The payment to the Plan as determined by the actuary using a contribution allocation procedure. It may or may not be the actual amount contributed to the Plan.

APPENDIX E – GLOSSARY OF TERMS

8. Amortization Method

A method for determining the amount, timing, and pattern of payments on the Unfunded Actuarial Liability.

9. Asset Valuation Method

The method used to develop the Actuarial Value of Assets from the Market Value of Assets typically by smoothing investment returns above or below the assumed rate of return over a period of time.

10. Contribution Allocation Procedure

A procedure typically using an actuarial cost method, an asset valuation method, and an amortization method to develop the Actuarially Determined Contribution.

11. Deferred Inflow of Resources

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience gains on the Total Pension Liability, assumption changes reducing the Total Pension Liability, or investment gains that are recognized in future reporting periods.

12. Discount Rate

The rate of interest used to discount future benefit payments to determine the actuarial present value. For purposes of determining an Actuarially Determined Contribution, the discount rate is typically based on the long-term expected return on assets.

13. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 67 and 68 calculations. Under this method, 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. The portion of this actuarial present value allocated to a valuation year is called the service cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

14. Funded Status or Funding Ratio

The Market or Actuarial Value of Assets divided by the Actuarial Liability. For purposes of this report, the Funded Status represents the proportion of the actual assets compared to the target established by the actuarial cost method as of the valuation date. These measures are

APPENDIX E – GLOSSARY OF TERMS

for contribution budgeting purposes and are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

15. Measurement Date

The date as of which the Total Pension Liability and Plan Fiduciary Net Position are measured. The Total Pension Liability may be projected from the actuarial valuation date to the measurement date. The measurement date must be the same as the reporting date for the plan.

16. Net Pension Liability

The liability of employers and nonemployer contributing entities to employees for benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Plan Fiduciary Net Position.

17. Normal Cost

The portion of the present value of future benefits allocated to the current year by the actuarial cost method.

18. Plan Fiduciary Net Position

The fair or Market Value of Assets.

19. Present Value of Future Benefits

The actuarial present value of all benefits both earned as of the valuation date and expected to be earned in the future by current plan members based on current plan provisions and actuarial assumptions.

20. Reporting Date

The last day of the plan or employer's fiscal year.

21. Service Cost

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 67 and 68. The service cost is the normal cost calculated under the Entry Age actuarial cost method.

22. Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 67 and 68.

APPENDIX E – GLOSSARY OF TERMS

The Total Pension Liability is the Actuarial Liability calculated under the entry age actuarial cost method.

23. Unfunded Actuarial Liability (UAL)

The Unfunded Actuarial Liability is the difference between Actuarial Liability and either the Market or the Actuarial Value of Assets. This value is sometimes referred to as "unfunded actuarial accrued liability." It represents the difference between the actual assets and the amount of assets expected by the actuarial cost method as of the valuation date.

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