

Actuarial Valuation

As of January 1, 2020

Fairview Township Police Pension Plan

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
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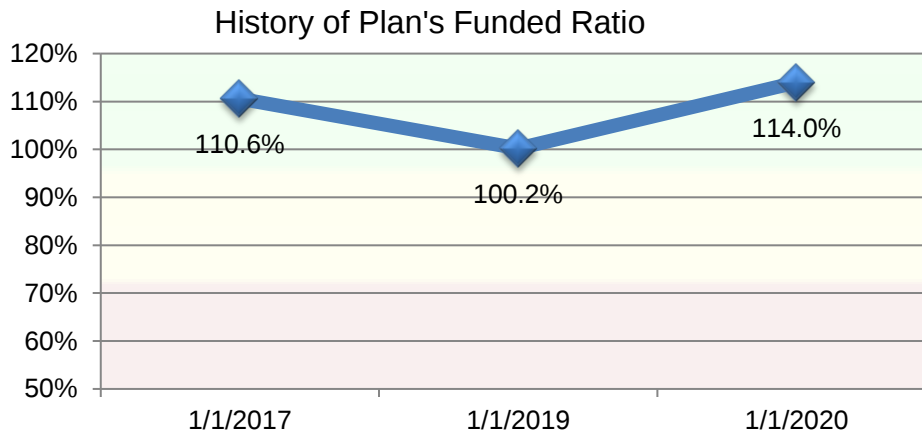
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Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Executive Summary

The purpose of the valuation report is to determine the actuarial status of the Plan.

The Summary of Principal Plan Benefit Provisions (SPPB) may be found following the Actuarial Certification. This summary represents our understanding of the current plan provisions in effect at January 1, 2020. Following the SPPB is a summary of the Actuarial Assumptions and Methods used in this valuation report.



	1/1/2017	1/1/2019	1/1/2020
Market Value of Assets (MVA)	\$ 9,715,625	\$ 9,999,021	\$11,768,771
Actuarial Accrued Liability (AAL)	\$ 8,780,911	\$ 9,976,885	\$10,323,419
Unfunded Actuarial Accrued Liability (UAAL)	\$ (934,714)	\$ (22,136)	\$ (1,445,352)
Normal Cost	\$ 266,222	\$ 302,172	\$ 344,571
W-2 Payroll	\$ 1,158,670	\$ 1,398,195	\$ 1,576,367
Percentage of W-2 Payroll	23.0%	21.6%	21.9%
Average Age	36.2	36.8	35.7
Interest	7.00%	7.00%	7.00%
Salary Scale	5.00%	5.00%	5.00%
Average Life Expectancy*	83.33	85.16	85.16
Mortality Basis	RS 2017 Small Plan Combined Static	PubS-2010	PubS-2010
Participant Counts:			
Active	14	16	18
DROP	1	0	0
Vested Former	1	1	2
Receiving Benefits	11	12	12
Total	27	29	32

*Based on a male currently aged 60.

Fairview Township Police Pension Plan
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Executive Summary

History of Investment Results

The following is a summary of the net dollar-weighted rates of investment return for the past six calendar years:

	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Market Value of Assets	8.0%	1.1%	6.2%	16.9%	(7.7%)	19.6%

Components of Financial Requirements

There are three cost components that make up the financial requirement of a Plan's Minimum Municipal Obligation.

1. Normal Cost – This is the cost of pension and other benefits earned during the current year.
2. Administrative Expenses – Examples of administrative expenses paid from the plan assets are expenses for: investment advisory services, actuarial services and trustee services.
3. Amortization of the Unfunded Actuarial Accrued Liability – The amount of this cost is comprised of the amortization of the various gains and losses, plan amendments, and changes in actuarial assumptions that have occurred in the Plan over time. The amortization of the Unfunded Actuarial Accrued Liability is \$0 since the Actuarial Value of Assets is greater than the Actuarial Accrued Liability.

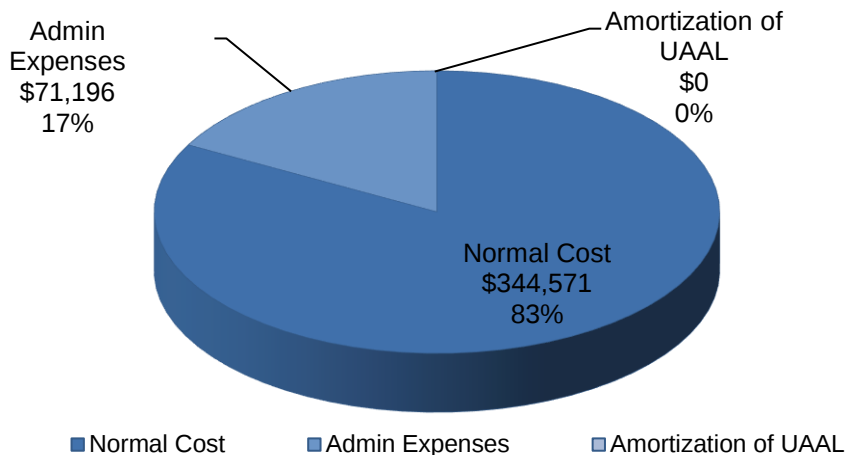


Illustration of Minimum Municipal Obligation

Financial Requirements	
Normal Cost	\$ 344,571
Administrative Expenses	\$ 71,196
Amortization of Unfunded Actuarial	
Accrued Liability (UAAL)	\$ 0
Total Financial Requirements	\$ 415,767
Expected Member Contributions	\$ (63,055)
10% Negative Unfunded	
Actuarial Accrued Liability	\$ (144,535)
Minimum Municipal Obligation (not less than \$0)	<u>\$ 208,177</u>

Please note that the figures shown above are for illustrative purposes only. The actual minimum municipal obligation is determined through the annual budgeting process.

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Actuarial Certification

In preparing this report, we have relied upon the data furnished to us. The data with respect to receipts and disbursements and assets of the Plan was furnished by BNY Mellon, N.A. The data with respect to participants and beneficiaries was furnished by Fairview Township. The data has been reviewed and has been determined to be reasonable and consistent.

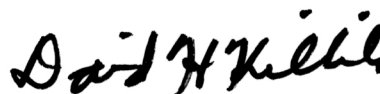
The information as contained in this report is a projection of liabilities based upon stated assumptions and is not an exact statement of the Plan's ultimate benefits and liabilities. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as at the end of an amortization period or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the assignment, an analysis of the potential range of such future measurements was not performed.

I certify that all costs, liabilities, rates of interest, and other factors under the Plan in Section 2 of the report have been determined on the basis of actuarial assumptions and methods, each of which is reasonable (taking into account the experience of the Plan and reasonable expectations) or which, in the aggregate, result in a total contribution equivalent to that which would be determined if each such assumption and method were reasonable, and which, in combination, offer my best estimate of anticipated experience under the Plan.

I am a member of the American Academy of Actuaries, a Fellow of the Society of Actuaries, and an Enrolled Actuary under ERISA, and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

5/22/2020

Date



David H. Killick, FSA, EA, MAAA
Partner & Consulting Actuary
Enrolled Actuary No. 20-03880

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Summary of Principal Plan Benefit Provisions

Eligibility

All full-time members of the police force join the Plan upon employment.

Normal Retirement

A member is eligible for normal retirement after attainment of age 50 and completion of 25 years of vesting service.

The normal retirement pension is payable monthly during the member's lifetime, with payments continuing after the member's death to the surviving spouse, or eligible child, equal to 50% of the amount payable to the member at the time of the member's death.

The amount of monthly pension is equal to 50% of average monthly compensation, plus a service increment of \$100 per month for each completed year of benefit service in excess of 25 years, up to a maximum of \$300 additional per month.

Average monthly compensation is based upon the last 36 months of employment.

Late Retirement

If a member continues working after his normal retirement date, his pension does not start until he actually retires. The monthly late retirement pension is equal to the benefit accrued to the late retirement date.

Early Retirement

A member is eligible for early retirement after completion of 20 years of vesting service. The monthly early retirement pension is equal to the actuarial equivalent of the benefit accrued at the early retirement date.

Disability Retirement

If an active member is disabled in the line of duty, he is eligible for a disability pension. The monthly disability pension is equal to 75% of the member's monthly salary at the time the disability was incurred.

Deferred Retirement Option Program

An active member who has met the eligibility requirements for normal retirement may elect to participate in the deferred retirement option program for a period of not less than three months nor more than 24 months. His monthly pension shall be calculated as of his date of participation in the deferred retirement option program and shall be accumulated with interest earned on the DROP account and distributed in a lump sum at retirement.

Postretirement Cost-of-Living Increase

An annual cost-of-living increase equal to the percentage increase in the "Wage Earner Index" in the Consumer Price Index during the preceding calendar year is made to retirees, with a maximum total cost-of-living increase of 30%, and a maximum pension benefit of 75% of the compensation used for computing retirement benefits.

Fairview Township Police Pension Plan
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Summary of Principal Plan Benefit Provisions

Death Benefits

If a member is eligible for retirement at the time of death, a monthly death benefit is payable to his surviving spouse, or eligible child, equal to 50% of the monthly benefit the member would have been receiving had he been retired at the time of death.

Vesting

A member's benefits vest upon completion of 12 years of vesting service. The vested benefit is a deferred monthly pension beginning at normal retirement equal to the benefit accrued to the date of termination.

Accrued Pension

The benefit accrued at any date other than the normal retirement date is equal to the projected normal retirement benefit multiplied by the ratio of the number of years of benefit service to date to the total number of years of benefit service projected at normal retirement.

Contributions

Members contribute 4.0% of compensation.

Member contributions are credited with 4.0% annual interest.

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Actuarial Assumptions and Methods

Interest

7.00%

Salary

5.00% Annual Increase

Withdrawal

Table D-1: Rates of withdrawal at selected ages:

<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
20	5.5000%	35	2.5000%	50	0.0000%
25	5.0000%	40	1.0000%	55	0.0000%
30	4.0000%	45	0.5000%	60	0.0000%

Mortality

PubS-2010 mortality table, including rates for disabled retirees and contingent survivors.

Incorporated into the table are rates projected generationally using Scale MP-2018 to reflect mortality improvement.

Disability

SOA 1987 Group LTD Table - Males, 3-month elimination. Sample rates are shown below.

<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
20	0.1444%	35	0.2123%	50	0.7536%
25	0.1534%	40	0.2931%	55	1.2612%
30	0.1708%	45	0.4561%	60	1.8818%

100% of disabilities are assumed to be service-related.

Retirement

It is assumed that all members enter the Deferred Retirement Option Program (DROP) upon meeting the eligibility requirements for normal retirement. It is also assumed that participation in the DROP continues for 24 months.

Preretirement Death Benefit

Liabilities computed on the assumption that all participants will have spouses of the same age at the date of eligibility for the benefit.

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Actuarial Assumptions and Methods

Expenses

Provision for administrative expenses added to annual contribution requirement, per Act 205 of 1984.

Inflation

Moderate inflation based on long term historical average rates is a component of the actuarial assumptions used herein. Provision is not made for advance funding of sharply higher rates of inflation experienced in some years. The effects of such higher rates are reflected in the funding after their occurrence.

Cost-of-Living Increase

3.00% per year

Actuarial Value of Assets

Market Value as determined by the trustee.

Actuarial Cost Method

Entry Age Normal (required by Act 205 of 1984)

Fairview Township Police Pension Plan
Actuarial Valuation
as of January 1, 2020

Section 1

Summary of Plan Assets and Summary of Plan Membership

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Receipts and Disbursements

Market Value at 1/1/2019		\$ 9,999,020.76
Receipts		
Employer Contributions Received	\$ 75,487.05	
Employee Contributions		
Received	\$ 61,975.24	
Receivable at 1/1/2019	(3,472.60)	
Receivable at 12/31/2019	<u>3,976.88</u>	
Total Employee Contributions		62,479.52
State Contributions Received		156,892.95
Investment Income		
Income Received	\$ 14,043.14	
Accrued Income at 1/1/2019	(44.15)	
Accrued Income at 12/31/2019	<u>100.70</u>	
Total Investment Income		14,099.69
Change in Market Value	<u>1,911,042.51</u>	
Total Receipts		2,220,001.72
Disbursements		
Monthly Benefit Payments	\$ (382,829.64)	
Administrative Expenses	<u>(67,421.78)</u>	
Total Disbursements		<u>(450,251.42)</u>
Market Value at 12/31/2019		<u><u>\$ 11,768,771.06</u></u>
Approximate Net Dollar-Weighted Rate of Investment Return		<u>19.59%</u>

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Assets and Liabilities

Assets

Cash	\$	0.00
Money Markets		38,998.39
Mutual Funds		<u>11,725,695.09</u>
Total Assets in Fund	\$	11,764,693.48
Employee Contributions Receivable		3,976.88
Accrued Income		<u>100.70</u>
Total Assets	\$	11,768,771.06

Liabilities

Total Liabilities		<u>0.00</u>
Net Assets	\$	<u><u>11,768,771.06</u></u>

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Summary of Plan Membership

Active Members	Number of Members	Annual Payroll
Active Members as of 1/1/2019	16	
New Members During the Period	3	
Returned to Active	0	
Members No Longer Active:		
Retired with Disability Benefit	0	
Retired with Service Retirement Benefit	0	
Elected DROP Benefit	0	
Separated with Deferred Benefit	(1)	
Separated with Refund of Contributions	0	
Separated with Neither Deferred Benefit nor Refund of Contributions	0	
Deceased	0	
Total	(1)	
Active Members as of 1/1/2020	18	\$ 1,576,367
Vested Former Members	Number of Members	Annual Benefit
Vested Former Members as of 1/1/2019	1	
Separated with Deferred Benefit	1	
Beneficiary of Deceased Participant	0	
Returned to Active	0	
Retired with Service Retirement Benefit	0	
Deceased or Paid in Full	0	
Vested Former Members as of 1/1/2020	2	\$ 60,794
Retired Members		
Retired Members as of 1/1/2019	11	
Retired with Service Retirement Benefit	0	
Retired from DROP Benefit	0	
Deceased or Paid in Full	0	
Retired Members as of 1/1/2020	11	\$ 372,076
Spouse Beneficiaries of Deceased Members		
Spouse Beneficiaries of Deceased Members as of 1/1/2019	1	
Additional Spouse Beneficiaries of Deceased Members	0	
Deceased	0	
Spouse Beneficiaries of Deceased Members as of 1/1/2020	1	\$ 14,577

Fairview Township Police Pension Plan
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Section 2

Act 205 Funding Calculations

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Unfunded Actuarial Accrued Liability and Normal Cost

Unfunded Actuarial Accrued Liability

Actuarial Present Value of Future Benefits

Active Members Retirement Pension Benefits	\$ 7,857,637	
Active Members Vested Withdrawal Benefits	98,247	
Active Members Disability Benefits	780,670	
Active Members Preretirement Death Benefits	9,192	
Active Members Refund of Member Contributions	29,771 ¹	
Refund of Employee Contributions to Terminated Members	2,390	
Vested Former Members Benefits	692,011	
Retired Members Benefits	4,398,908	
Surviving Spouses Benefits	<u>110,772</u>	
Total		\$ 13,979,598
Actuarial Present Value of Future Normal Costs		<u>(3,656,179)</u>
Actuarial Accrued Liability		\$ 10,323,419
Actuarial Value of Assets		<u>(11,768,771)</u>
Unfunded Actuarial Accrued Liability		<u><u>\$ (1,445,352)</u></u>
Normal Cost		
Normal Cost		<u><u>\$ 344,571</u></u>
Normal Cost as a Percentage of Annual Payroll		<u>21.9%</u>

¹ Accumulated Member Contributions Without Interest as of 1/1/2020 = \$372,675
Accumulated Member Contributions With Interest as of 1/1/2020 = \$454,103

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Analysis of the Change in the Unfunded Actuarial Accrued Liability

Unfunded Actuarial Accrued Liability at 1/1/2019	\$	(22,136)
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Additions

Normal Cost	\$	302,172	
Administrative Expenses		67,422	
Interest on Unfunded Actuarial Accrued Liability, Normal Cost, and Administrative Expenses		<u>21,962</u>	
Total			391,556

Contributions

Employer Contributions	\$	(75,487)	
Employee Contributions		(62,480)	
State Contributions		(156,893)	
Interest on Contributions		<u>(4,759)</u>	
Total			(299,619)

Modification in the Benefit Plan	0
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Change in Actuarial Assumptions	0
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Actuarial Gain

Investment Gain	\$	(1,236,210)	
Experience Gain		<u>(278,943)</u>	
Total			<u>(1,515,153)</u>

Unfunded Actuarial Accrued Liability at 1/1/2020	\$	<u><u>(1,445,352)</u></u>
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Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Illustration of Minimum Municipal Obligation

Financial Requirements

Normal Cost	\$	344,571	
Administrative Expenses		<u>71,196</u>	¹
Total	\$		415,767
Expected Member Contributions			(63,055)
10% of Negative Unfunded Actuarial Accrued Liability			<u>(144,535)</u>
Minimum Municipal Obligation	\$		<u><u>208,177</u></u>

¹ Total Administrative Expenses for Plan Year 1/1/2018 to 12/31/2018 - \$ 74,969

Total Administrative Expenses for Plan Year 1/1/2019 to 12/31/2019 - \$ 67,422

² This is not an actual MMO.

Fairview Township Police Pension Plan
Actuarial Valuation
as of January 1, 2020

Section 3

Supplemental Information

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Supplemental Information

Schedule of Funding Progress

Valuation Date	Market Value of Assets (a)	Entry Age Actuarial Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Net Position as a % of Total Liability (b-a)/b	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
1/1/2011	\$ 6,571,653	\$ 7,034,498	\$ 462,845	6.6%	93.4%	\$ 1,129,831	41.0%
1/1/2012	6,650,380	7,407,977	757,597	10.2%	89.8%	1,140,865	66.4%
1/1/2013	7,387,669	7,444,278	56,609	0.8%	99.2%	1,050,246	5.4%
1/1/2014	8,608,240	7,991,734	(616,506)	-7.7%	107.7%	1,043,932	-59.1%
1/1/2015	9,253,290	8,289,274	(964,016)	-11.6%	111.6%	1,134,166	-85.0%
1/1/2016	9,300,796	8,526,067	(774,229)	-9.1%	109.1%	1,134,341	-68.3%
1/1/2017	9,715,625	8,780,911	(934,714)	-10.6%	110.6%	1,158,670	-80.7%
1/1/2018	11,156,550	9,284,819	(1,871,731)	-20.2%	120.2%	1,221,965	-153.2%
1/1/2019	9,999,021	9,976,885	(22,136)	-0.2%	100.2%	1,398,195	-1.6%
1/1/2020	11,768,771	10,323,419	(1,445,352)	-14.0%	114.0%	1,576,367	-91.7%

Schedule of Interest Rate Sensitivity Testing

Interest Rate ¹	Market Value of Assets (a)	Entry Age Actuarial Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Net Position as a % of Total Liability (b-a)/b	Funded Ratio (a/b)
6.00%	\$ 11,768,771	\$ 11,752,606	\$ (16,165)	-0.1%	100.1%
7.00%	11,768,771	10,323,419	(1,445,352)	-14.0%	114.0%
8.00%	11,768,771	9,151,032	(2,617,739)	-28.6%	128.6%

¹ Valuation interest rate is 7.00%

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Supplemental Information

Schedule of Contributions from the Employer and Other Contributing Entities

Year	Actuarially ¹ Determined Contribution	Contributions ² From Employer	Contribution Deficiency/ (Surplus)
2010	\$ 139,987	\$ 151,643	\$ (11,656)
2011	218,312	284,964	(66,652)
2012	216,035	216,035	0
2013	313,626	313,626	0
2014	279,909	279,909	0
2015	272,974	272,974	0
2016	143,083	143,083	0
2017	167,863	167,863	0
2018	172,259	172,259	0
2019	232,380	232,380	0

¹ Minimum Municipal Obligation under Act 205 of 1984

² Includes general municipal pension system State aid

Fairview Township Police Pension Plan
Actuarial Valuation as of January 1, 2020
Appendix

Pension Plan Risks

Measuring pension obligations and calculating actuarially determined contributions requires the use of assumptions regarding future economic and demographic experience. Future experience may differ from the assumptions used in these calculations resulting in a different outcome than expected. This uncertainty inherent in pension plans results in required contribution and funding level volatility. In many cases when discussing risks, the focus is on downside risk, there is also upside risk. It is essential that the entity taking on the risk understands the risk, bears the potential loss or reaps the potential reward.

The following are examples of risks that may significantly affect the plan's future financial condition:

1. Investment risk is the potential that investment returns will be different than expected. Investment returns less than expected will lead to lower asset values, a reduction to the plan's funded status, and higher contribution requirements. The reverse is true if investment returns are higher than expected.
2. Asset/liability mismatch risk is the potential that changes in asset values do not match changes in the value of liabilities. If there is a change in asset values relative to liabilities which reduces the plan's funded status, higher contributions may be required in order for the Plan to meet its benefit payment obligations as they become due.
3. Interest rate risk is the potential that interest rates will be different than expected. A decrease in the interest rates used to value plan liabilities results in an increase in liabilities and vice versa. The interest rates used for valuing liabilities for contribution determination is based on the expected long term rate of investment return for the plan's assets. A change to the investment allocation could warrant a change to the interest rate used, a lower long-term return would result in higher contribution requirement and vice versa. An illustration of the impact of a 1% change to the interest rates is provided in Section 3 of this report.
4. Longevity and other demographic risks are the potential that mortality or other demographic experience will be different than anticipated. This can lead to actuarial gains or losses. For example, if fewer participants die than expected, this will create an actuarial loss and may result in a higher required contribution.
5. Contribution risk is the potential of actual future contributions deviating from expected future contributions. For example, if actual contributions are not made in accordance with the plan's funding policy or there are material changes in the anticipated number of employees or covered payroll, it may impact future contributions.

There are a variety of different maturity measures that can help assess this risk. A mature plan may have more difficulty recovering from adverse experience. A plan that is closed to new entrants will mature over time as the member population ages. There are a number of ways to measure plan maturity. The following maturity measures are relevant to this plan:

1. The ratio of the retired members' liability to the total accrued liability is 43.68%. To the extent that the expected benefit payment streams for retired members are not supported by investments that provide matching income streams (asset/liability mismatch), the risk of a larger funding shortfall with respect to the retired member liability rises as this percentage increases.
2. The ratio of prior year contributions reduced by prior year benefit payments to market value of assets is -0.75%. A negative percentage indicates negative cash flow, which leads to lower asset values and may amplify investment risk. If the plan experiences lower than expected investment returns in combination with negative cash flow, the plan will be more underfunded (or less overfunded), and may have higher contribution requirements than would otherwise be the case if it had positive cash flow. A positive percentage indicates positive cash flow, which leads to higher asset values and may mitigate the effect of investment risk.

Negative cash flow is expected for a mature or well-funded plan. It does not indicate that a plan had been poorly managed.

3. Duration measures the sensitivity of the liability to interest rate changes. The duration of the plan's liability is 18.49 years. This means for every 1% decrease in the interest rate, the present value of future benefits liability will increase by approximately 18.49% and vice versa. The lower the duration, the less sensitive the liabilities are to a change in interest rate.

Fairview Township Police Pension Plan
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Appendix

Supplemental Information for Assumptions for Act 205 Funding Calculations

In accordance with regulations under Act 205 of 1984, all actuarial assumptions are selected jointly by the actuary and the governing body of the pension plan.

Interest Rates

The interest rate assumption is the long term expected rate of return on pension plan investments. It is based on the Plan's current asset allocation, expected long term inflation, and historical long term expected real rates of return on the Plan's major asset classes.

Salary

Based on expected long term salary increases for active participants, considering the effects of future inflation.

Withdrawal

Historical rates of withdrawal were considered as well as future expectations of withdrawal for the affected population.

Mortality

Uses the most recent study of public sector data prepared by the Society of Actuaries and takes into account the occupational makeup of the participant group.

Disability

Based on the Society of Actuaries Group LTD Table – Males, 3-month elimination (1987).

Retirement

Due to the plan size and design, use of a single retirement age was assumed. The use of retirement rates is not expected to produce materially different results.

Survivor Death Benefit

A conservative assumption was made of percent married compared to current marital statistics for the general population.

Expenses

Expected expenses are determined by averaging the two prior year's expenses.

Inflation

Moderate inflation based on long term historical average rates is a component of the actuarial assumptions used herein.

Cost-of-Living Increase

Based on expected future inflation using long term historical averages, and taking into consideration annual COLA limits per Plan provisions.