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Charter Township of Ypsilanti Police and Firefighter's Retirement System

**Preliminary 12/31/2019
Actuarial Valuation Results
April 29, 2020**



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Highlights and Recent Activity

- Asset Performance
 - ✓ Market value of assets returned 16.6% during 2019, resulting in asset gain of \$2.6M vs expected 6.50% return
 - ✓ Impact mitigated due to asset smoothing, return of 5.2% on an actuarial value basis
- Change in Liability
 - ✓ Update to mortality assumption increased liability
 - ✓ Minimal data movements
- Impact on Plan Funded Status
 - ✓ Funded Ratio of the plan decreased from 76.3% to 75.0%
 - ✓ Unfunded liability increased from \$8.7M to \$9.4M
 - ✓ On Market Value basis (GASB 67/68) plan moved from \$10.8M underfunded to \$8.8M underfunded
- Recommended contribution for fiscal 2021 is \$1.075 million, compared to \$1.067 million for fiscal 2020



Participant Information

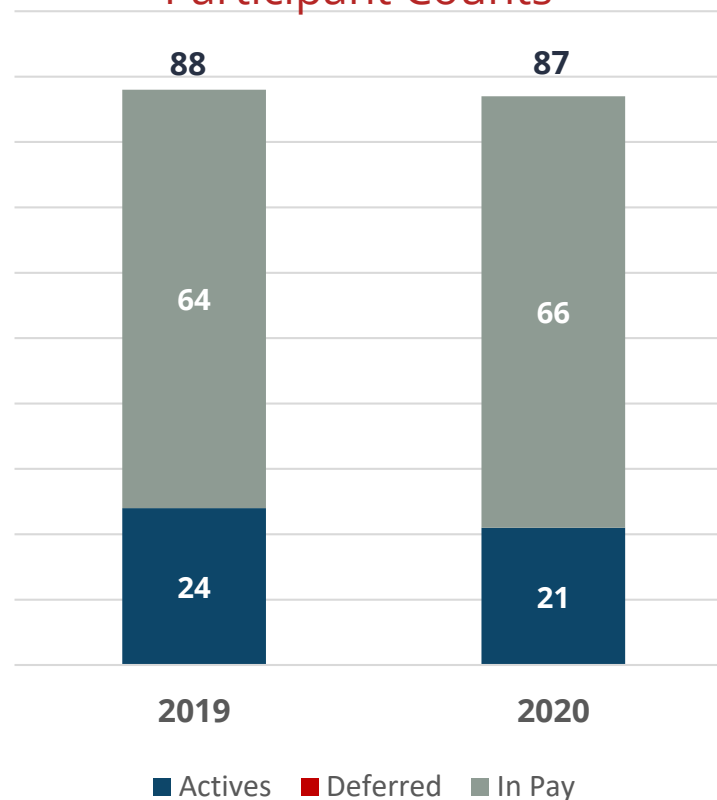
Active Demographics

	2019	2020
Average Age	41.7	40.7
Average Service	11.5	10.7
Average Plan Compensation	\$74,709	\$75,907

Inactive Demographics

	2019	2020
Average Age	69.2	69.4
Average Monthly Benefit	\$3,126	\$3,260

Participant Counts





Participant Information

Status Reconciliation

	Active	Terminated Vested	DROP	Retired	Beneficiaries	Totals
Prior Year	24	0	3	46	15	88
Active	(3)	0	3	0	0	0
DROP	0	0	0	0	0	0
Retired	0	0	0	(1)	0	(1)
Terminated Vested	0	0	0	0	0	0
Survivor	0	0	0	0	0	0
Additions	0	0	0	0	0	0
Departures	0	0	0	0	0	0
Current Year	21	0	6	45	15	87



Asset Reconciliation

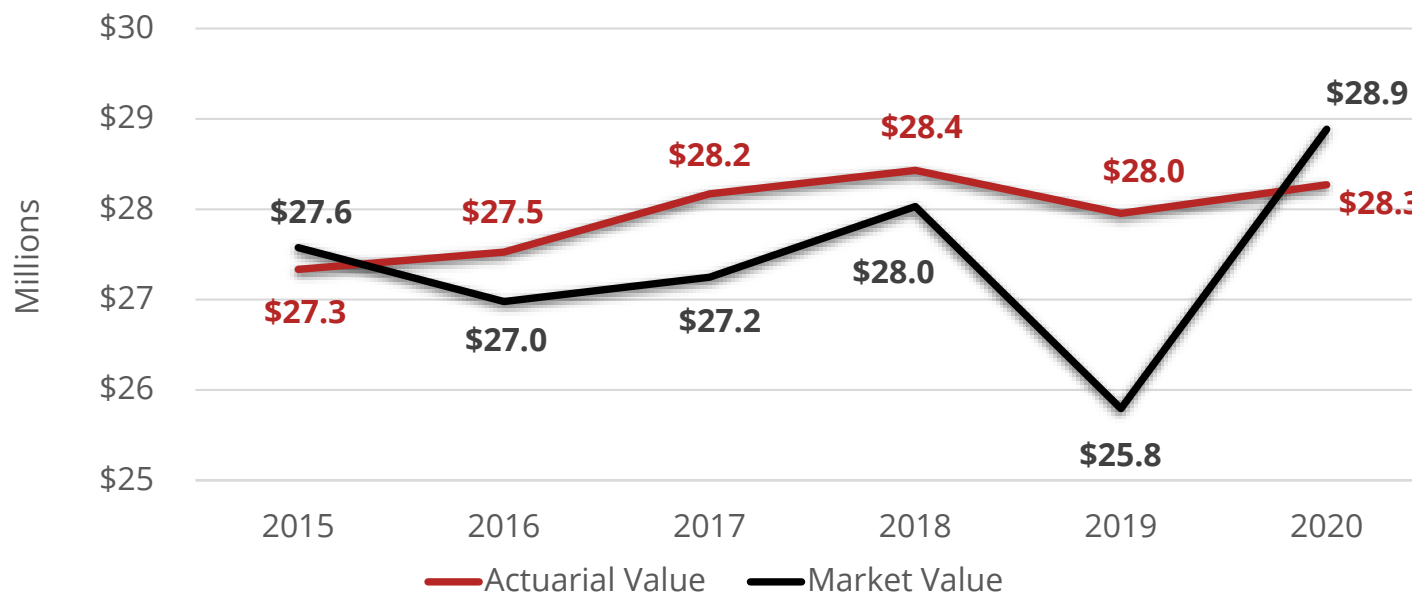
Market Value of Assets	January 1, 2019	January 1, 2020
Market Value of Assets, BOY	\$28,029,742	\$25,793,581
Employer Contributions	786,578	998,711
Employee Contributions	102,184	97,837
Investment Income	(800,839)	4,200,535
Benefit Payments	(2,305,353)	(2,187,399)
Administrative Expenses	(18,731)	(17,448)
Market Value of Assets, EOY	\$25,793,581	\$28,885,817
Return on Market Value ¹	-2.93%	16.64%

Market Value Gain/(Loss)	January 1, 2019	January 1, 2020
Expected Return on Market Value	6.50%	6.50%
Expected Investment Income	\$ 1,775,285	\$ 1,640,563
Expected Market Value of Assets, EOY	\$28,369,705	\$26,325,845
Asset Gain/(Loss) (Market Value Basis)	\$(2,576,124)	\$2,559,972

¹Assumes mid-year timing

Assets (\$ millions)

Actuarial Value of Assets



	1/1/2016	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Market Value (MVA)	\$26,978,205	\$27,248,380	\$28,029,742	\$25,793,581	\$28,885,817
Actuarial Value (AVA)	\$27,526,195	\$28,170,351	\$28,429,784	\$27,953,456	\$28,271,231
AVA / MVA	102.0%	103.4%	101.4%	108.4%	97.9%
MVA Return	2.99%	5.81%	9.36%	(2.93%)	16.64%
AVA Return	5.97%	7.08%	7.13%	3.46%	5.20%



Pub-2010 Mortality Study

- Current mortality assumption is RP-2006 projected generationally with SOA Scale MP-18
 - Based on data from private plans, but many public plans have adopted
 - Projects people will live longer and that life expectancy will grow over time
- In January 2019, Society of Actuaries released Public Retirement Plans Mortality Tables (Pub-2010)
 - ✓ Mortality experience analyzed for Teachers, Public Safety, and General Employees
 - ✓ Based on 35 different pension systems and 78 plans
 - ✓ 46 million life years and 580 thousand deaths
 - ✓ Indicates public pension plan employees live longer than private sector employees
 - ✓ Michigan PA 202 Actuarial Assumptions requires a version of Pub-2010 to be used
 - ✓ We are recommending moving to Pub-2010 Mortality this year to align with PA 202 assumptions



Public Pension Mortality Study – Life Expectancy Comparison

Age 55 life expectancies based on current ages

Current Age	Males		Females	
	Current	Public Safety	Current	Public Safety
25	87.2	88.1	89.5	90.1
35	86.3	87.2	88.6	89.2
45	85.3	86.3	87.7	88.3
55	84.4	85.5	86.8	87.4

Current Mortality – RP-2006 Total Mortality table with generational improvements based on the MP-2019 improvement scale

Public Safety Mortality – New SOA Public Safety base table with generational improvements based on the MP-2019 improvement scale



Funding Results Summary

Valuation Date	January 1, 2019	January 1, 2020 with RP-2006	January 1, 2020 with Pub-2010
Funding rate	6.50%	6.50%	6.50%
Entry Age Accrued Liability	\$36,633,362	\$37,256,974	\$37,705,326
Actuarial Value of Assets	27,953,456	28,271,231	28,271,231
Unfunded Accrued Liability	\$8,679,906	\$8,985,743	\$9,434,095
Funded Ratio	76.31%	75.88%	74.98%

Recommended Township Contribution	Mid - 2020	Mid - 2021	Mid - 2021
Employer Normal Cost	\$440,789	\$361,921	\$369,287
Unfunded Amortization	626,287	669,554	705,382
Township Contribution with Interest	\$1,067,076	\$1,031,475	\$1,074,669
Percent of Expected Payroll (without DROP)	56.10%	60.99%	63.55%
Percent of Expected Payroll (with DROP)	48.83%	46.12%	48.05%



Plan Experience and Impact on Unfunded Accrued Liability

Source	Impact	Key Reason(s)
12/31/2018	\$8,679,906	
Expected change	-44,570	Interest, Normal Cost and Contributions
12/31/2019 Expected	\$8,635,336	
Changes due to:		
Amendments	0	
Assumption Changes	365,397	Mortality Updates (Including PubS-2010)
Retirement	205,715	3 retirements
Mortality	93,936	1 death
Assets	372,896	Return on AVA of 5.2% vs. assumption of 6.5%
Salary	-290,208	Salary increases were less than expected
Other Experience	51,023	
Total	\$798,759	
12/31/2019 Actual	\$ 9,434,095	



Actuarial Standards of Practice

- ASOP 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions, is the latest ASOP released related to pension plans:
 - ✓ Applicable for any measurement date on or after November 1, 2018
 - ✓ Requires the actuary to identify risks that may reasonably be anticipated to significantly affect the plan's future financial condition
 - ✓ Indicates the actuary should assess and potentially quantify such risks



ASOP 51 – Identify Key Risks

Risk	Definition	Assessment	Commentary
Investment	Potential that investment returns will be different than expected	High	Plan's contribution and funded status is very dependent on the asset returns. Poor asset performance leads to an increase in the unfunded and contribution requirements.
Longevity	Potential that mortality experience will be different than expected	Moderate	If plan population lives longer than expected, would result in higher liabilities; see projections with modified mortality assumption. If active members die at young age on duty, could result in high costs to plan.
Demographic	Potential that participants withdraw/retire/become disabled at rates different than assumed	Low-Moderate	If participants elect subsidized early retirement or become disabled at young ages, will result in increased liabilities and contribution requirements; could perform experience study or sensitivity test to better quantify impact
Interest rate	Potential that interest rates will be different than expected	Low - Moderate	If interest rates remain low and a lower discount rate is used, liabilities and contribution requirements will increase; sensitivity testing would better quantify impact



Important Information Regarding Cost Projection Information

The cost projections contained in this report are based on data as of January 1, 2020. Assumptions used in measuring the liabilities are consistent with the January 1, 2020 actuarial report unless stated otherwise. Reasonable actuarial techniques and assumptions were used to produce the cost projections.

The following pages show cost projections under specific economic scenarios and are meant to be used for illustration purposes only. Actual results will vary from projections shown in this report due to actual participant data, actual asset returns, and any assumption changes that may be warranted. Depending on the use of this information, additional cost projections may be necessary to quantify the sensitivity of the results.

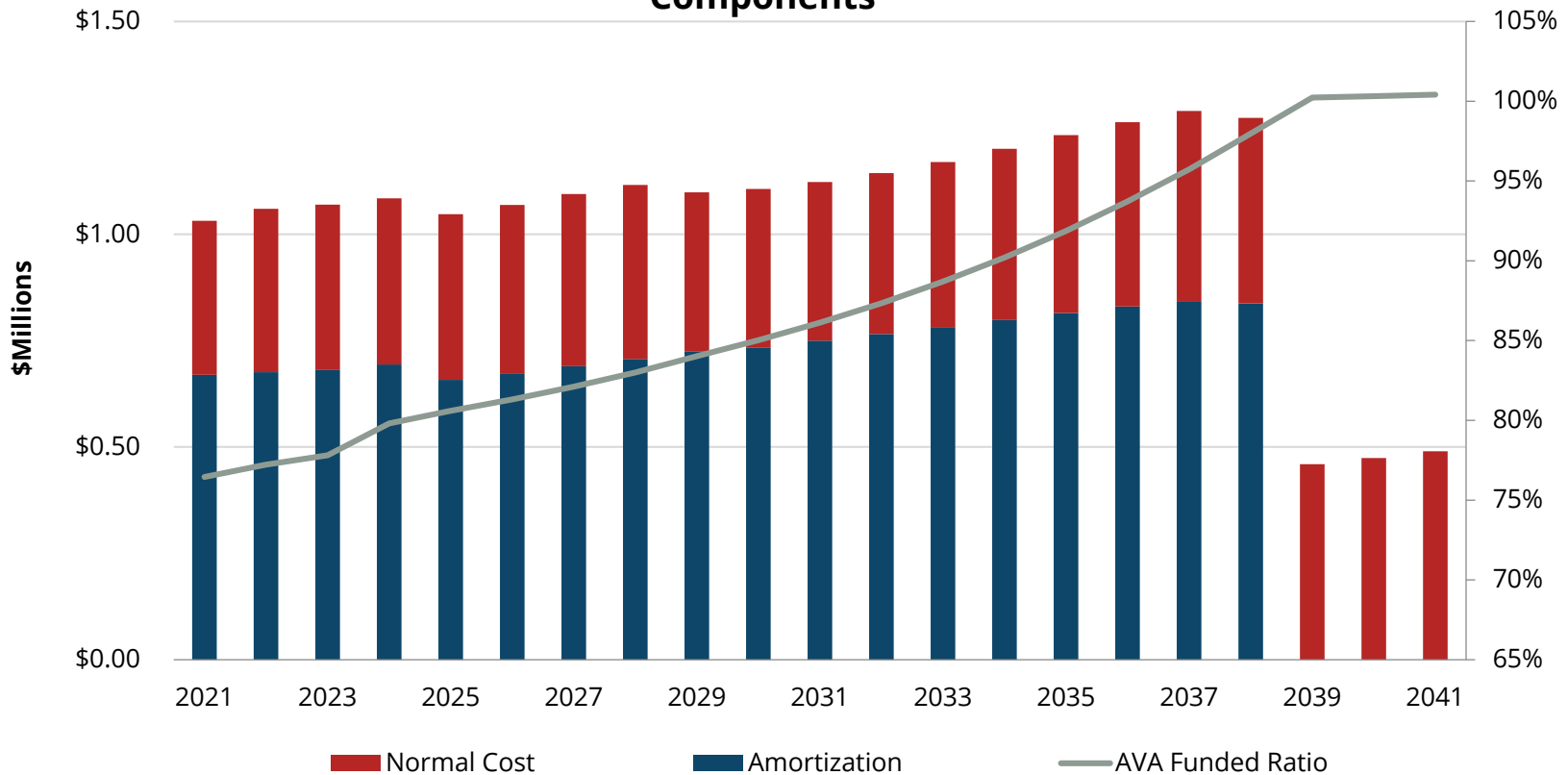
These projections reflect numerous assumptions and one should focus on the general trend of the results rather than the absolute dollar amounts.



Baseline Projection (RP-2006 Mortality)

Paid 2021 - 2041	
Present Value of Contributions	\$ 12.8M
Present Value of Amortization Payments	\$ 8.0M

Current Year Projected Contribution Components

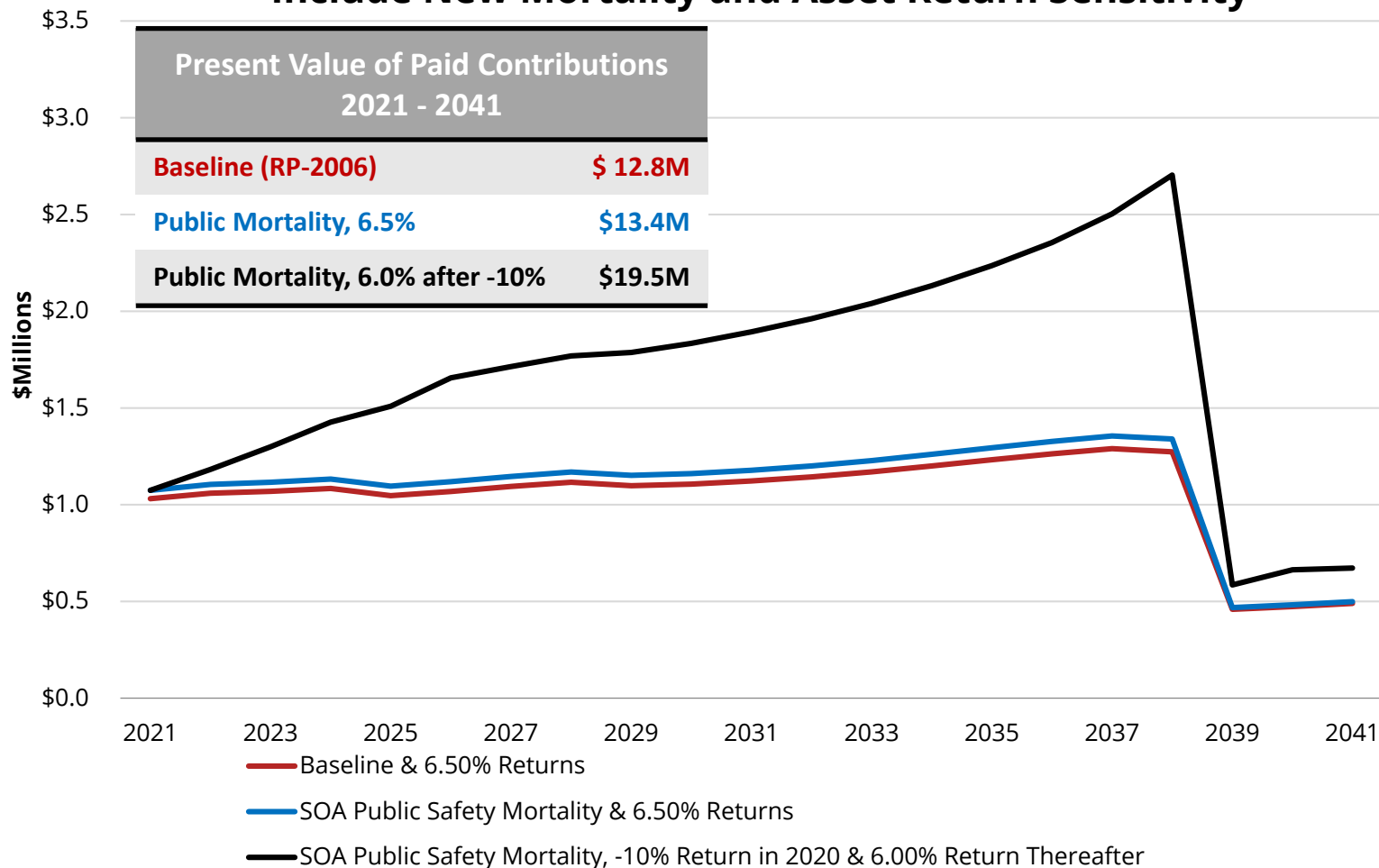




Projected Contributions

Varying Assumptions and Returns

Projected Contributions Include New Mortality and Asset Return Sensitivity





Certification

This report has been prepared for the primary purpose of summarizing the actuarial valuation for the Charter Township of Ypsilanti Police and Firefighter's Retirement System as of January 1, 2020. To the best of our knowledge, the reports summarized herein present fair positions of the funded status of the plan in accordance with the Actuarial Standards of Practice as described by the American Academy of Actuaries, and are based on the plan provisions and assumptions summarized within each report.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such facts 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 the end of an amortization period or other additional cost or contribution requirement based on the plan's funded status); and changes in plan provisions of applicable law. The scope of our assignment did not include an analysis of the potential range of future measurements.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States.

To our knowledge there have been no significant events prior to the current year's measurement date or as of the date of this report which could materially affect the results contained herein.

Nyhart



Nick H. Meggos, EA, FCA



Scott Gavin, FSA, EA, MAAA

April 29, 2020
Date

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High Level Summary of Plan Provisions

Benefit Component	Description
Status of the Plan	Act 345 of the Public Acts of 1937 and most recently amended for Township of Ypsilanti 8/8/2018.
Formula	<p>Employees hired before 1/1/2014: 3.00% of Average Compensation times credited service (up to 25 years) plus 1% times Average Compensation times credited service in excess of 25 years.</p> <p>Employees hired on or after 1/1/2014: 2.35% of Average Compensation times credited service (up to 25 years) plus 1% times Average Compensation times credited service in excess of 25 years.</p>
Member Contributions	Current member contributions is 6.00% of pay
Average Final Compensation (AFC)	Average Compensation during the highest 3 years of Credited Service



High Level Summary of Plan Provisions

Benefit Component	Description
Disability - Service Connected - Non-Service	Immediately upon total and permanent disability 50% of Average Compensation up to age 55, then Normal Retirement Benefit with service credited from date of disability to age 55 Eligibility: 5 years of service and total and permanent disability Benefit: 1.5% times Average Compensation times credited service, increased to 2.35% or 3.00% after participant would have reached 25 years of service (based on date of hire)
Death (Line of Duty)	Eligibility: Expiration of workers' compensation to the survivors of a member who died in the line of duty Benefit: Same amount paid by workers' compensation
Death (Other)	Eligibility: 20 years of service Benefit: Spouse receives single life annuity actuarially reduced
Deferred Retirement Option Plan (DROP)	Eligibility: Employees hired before 1/1/2014 may participate in the DROP once eligible for retirement. Benefit: The participant's accrued benefit at the date of entering the DROP, accumulated with 5% interest per year while in the DROP. The maximum period for participation in the DROP is 5 years



Summary of Assumptions and Methods

Assumption/Method	Description
Funding Interest Rate	6.50% (net of investment expenses)
Annual Pay Increases	3.00% plus merit scale (0.50% - 3.50%)
Mortality Rates - Prior Year	RP-2006 Total Mortality with generational improvements projected beginning in 2006 based on the SOA Scale MP-18
Mortality Rates - Current Year	PubS-2010 Mortality with generational improvements projected beginning in 2010 based on the SOA Scale MP-19
Retirement Rates	Varies by service and date of hire
Withdrawal Rates	Varies by age and service
Disability	Varies by age and gender
Amortization of UAAL	18 year closed level percent (3%) of payroll amortization of Unfunded Actuarial Accrued Liability
Valuation Method	Individual Entry Age Cost Method % of pay
Asset Method	Spreads actual vs expected investment income over a period of five years