GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

WATERFORD TOWNSHIP EMPLOYEES RETIREMENT SYSTEM

ACTUARIAL VALUATION REPORT

DECEMBER 31, 2015

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June 28, 2016

Pension Committee
Waterford Township Employees Retirement System
5200 Civic Center Drive
Waterford, Michigan 48329

Dear Committee Members:

The results of the December 31, 2015 Actuarial Valuation of the Waterford Township Employees Retirement System are presented in this report.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the Retirement System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The purpose of the annual valuation is to measure the System's funding progress, and to determine the Township's contribution rate for the fiscal year beginning January 1, 2017 in accordance with established funding policies. The results of the valuation may not be applicable for other purposes. A separate report issued April 26, 2016 includes calculations in accordance with GASB Statement Nos. 67 and 68.

This report should not be relied on for any purposes other than the purpose described. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results. No adjustments have been made for events after December 31, 2015.

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 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 actuary's assignment, the actuary did not perform an analysis for the potential range of such future measurements.

The valuation was based upon information, furnished by the Township Treasurer, concerning individual participants, terminated participants, retired participants and beneficiaries, plan benefits and financial transactions and assets. Data was checked for reasonableness and missing information, but was not audited. We are not responsible for the accuracy or completeness of the information provided by the Township.

This report has been prepared by individuals who have substantial experience valuing public employee retirement systems and are independent of the plan sponsor and plan administrator. We certify that the information contained in this report is accurate and fairly presents the actuarial position of the Waterford Township Employees Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. The actuarial assumptions used for the valuation produce results which are reasonable.

Computed employer contributions shown on page A-1 are based on the Board's policy, which includes a 17-year, level dollar amortization of unfunded actuarial accrued liabilities. Payment of the computed employer contributions is not a guarantee of benefit security. In addition, the ability of the plan sponsor to pay the computed contributions when due was beyond the scope of the project. The Board is encouraged to consider benefit security when adopting the employer contribution and is always free to adopt a higher contribution or more aggressive funding policy.

Brad Lee Armstrong is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Brad Lee Armstrong, ASA, EA, FCA, MAAA

Kenneth G. Alberts

BLA/KGA:sc:ah

SECTION A

VALUATION RESULTS

COMPUTED CONTRIBUTIONS FOR THE FISCAL YEAR BEGINNING JANUARY 1

Contributions for	Contributions Expressed as Percents of Covered Payroll		
	2017	**2016**	**2015**
Normal Cost			
Age and service pensions	15.94 %	16.03 %	15.71 %
Death-in-service	0.61 %	0.62 %	0.62 %
Disability pensions	0.96 %	0.96 %	1.00 %
Total	17.51 %	17.61 %	17.33 %
Member's Contributions			
Gross contributions@	0.26 %	0.25 %	0.33 %
Less prospective refunds	0.02 %	0.02 %	0.03 %
Available for pensions	0.24 %	0.23 %	0.30 %
Township's Normal Cost	17.27 %	17.38 %	17.03 %
Unfunded Actuarial Accrued Liabilities*	3.34 %	6.69 %	10.05 %
Township's Total Contribution Rate	**20.61 %**	**24.07 %**	**27.08 %**
Township's Dollar Contribution^	**$989,146**	**$1,249,587**	**$1,555,154**

* *Amortized as a level dollar over a period of 17 years in 2017, 18 years in 2016 and 19 years in 2015.*

^ *The dollar contribution payable at the end of 2017, prorated using the payroll amounts shown on page B-9 projected to the contribution year and adjusted for the timing of payments, is $565,548 for General members, $343,217 for Water Department members, and $80,381 for the 51st District Court employees.*

The dollar contribution payable at the end of 2016, prorated using the payroll amounts shown on page B-9 projected to the contribution year and adjusted for the timing of payments, is $737,962 for General members, $419,054 for Water Department members, and $92,571 for the 51st District Court employees.

The dollar contribution payable at the end of 2015, prorated using the payroll amounts shown on page B-9 projected to the contribution year and adjusted for the timing of payments, is $931,728 for General members, $475,511 for Water Department members, and $147,915for the 51st District Court employees.

@ *Weighted average.*

Payment Timing Alternatives	Contribution
End of Fiscal Year (current method)	$ 989,146
Middle of Fiscal Year #	$ 956,244
Beginning of Fiscal Year	$ 924,436

 # Equivalent to making 12 monthly contributions in the amount of $79,687.

ACTUARIAL BALANCE SHEET - DECEMBER 31, 2015

Present Resources and Expected Future Resources

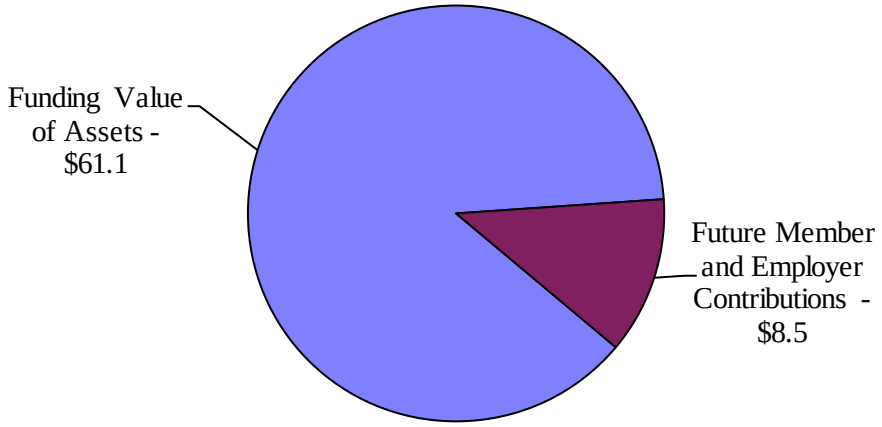
A.	Valuation assets	
	1. Net assets from System financial statements (market value)	$59,740,412
	2. Valuation adjustment	1,384,658
	3. Valuation assets	61,125,070
B.	Actuarial present value of expected future employer contributions	
	1. For normal costs	6,555,038
	2. For unfunded actuarial accrued liabilities	1,849,926
	3. Total	8,404,964
C.	Actuarial present value of expected future member contributions	100,796
D.	Total Actuarial Present Value of Present and Expected Future Resources	$69,630,830

Actuarial Present Value of Expected Future Benefit Payments and Reserves

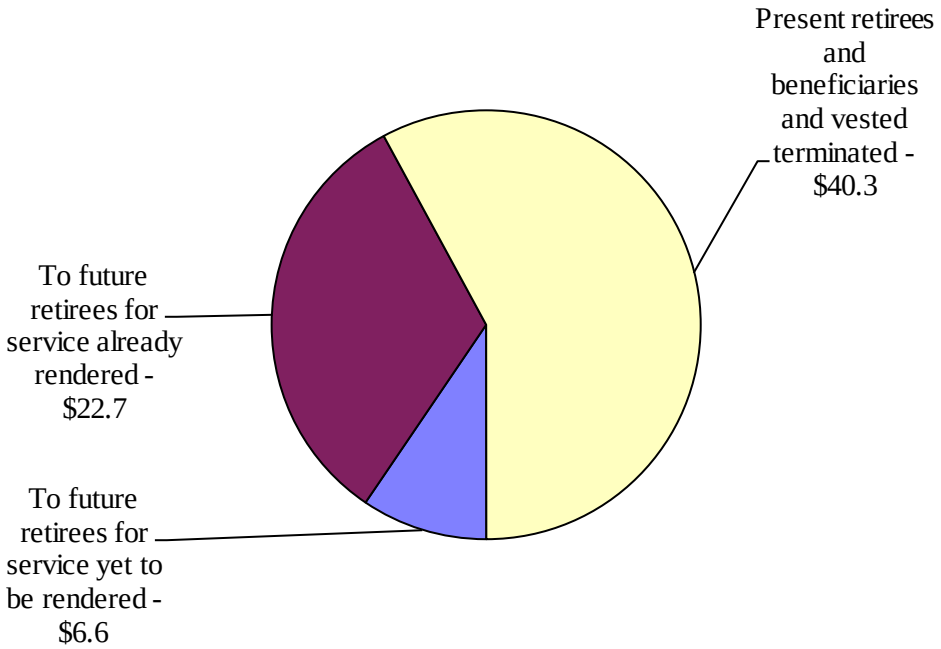
A.	To retirees and beneficiaries	$37,682,527
B.	To vested terminated members	2,608,185
C.	To present active members	
	1. Allocated to service rendered prior to valuation date	22,684,284
	2. Allocated to service likely to be rendered after valuation date	6,655,834
	3. Total	29,340,118
D.	Total Actuarial Present Value of Expected Future Benefit Payments	$69,630,830

FINANCING $69.6 MILLION OF BENEFIT PROMISES
DECEMBER 31, 2015
($ IN MILLIONS)

Sources of Funds



Uses of Funds



COMMENTS

EXPERIENCE: Overall experience during the year was more favorable than assumed, resulting in an overall gain of 2.6% of beginning of year accrued liabilities (or approximately $1.6 million).

Experience gains related to:

- Pay increases (average pays for members active at the beginning and end of the year increased by about 1% for members versus an expected average increase of 6%); and
- Investment return (8.8% recognized return on Funding Value of Assets versus 7.0% assumed).

Funded status on a Funding Value of Assets basis improved during the year from 93.8% to 97.1%. On a Market Value of Assets basis, the funding status decreased from 99.1% to 94.9%.

ASSETS: The rate of return on a Market Value of Assets basis for the year ending December 31, 2015 was approximately 0.5%. The Funding Value of Assets rate of return, however, recognizes ¼ of the gains and losses (with respect to 7.0% assumed) from this year and the past three years in an effort to smooth market volatility. Overall, the aggregate recognized investment return for the year produced an 8.8% recognized rate of return net of investment expenses. (See page B-14.) The Funding Value of assets currently exceeds the Market Value of Assets. This difference will be recognized over the next three years. Unless offset by future gains, it will put upward pressure on the computed employer contribution in future valuations and downward pressure on the 97.1% funded status.

RESERVE TRANSFERS: The present value of future benefit payments to current retirees and beneficiaries as of December 31, 2015 is $37,682,527. The December 31, 2015 balance in the Reserve for Retired Benefit Payments was not reported to us. **We recommend an amount be transferred between the Reserve for Employer Contributions and the Reserve for Retired Benefit Payments effective December 31, 2015 so that the Reserve for Retired Benefit Payments is equal to $37,682,527. For purposes of this valuation, it was assumed that this transfer would be made.**

UNFUNDED ACTUARIAL ACCRUED LIABILITY: Actuarial accrued liabilities exceeded accrued assets by $1,849,926. The manner in which this Unfunded Actuarial Accrued Liability (UAAL) is amortized is a matter of Board policy. In compliance with Board policy, the UAAL was amortized as a level dollar amount over a closed 17-year period.

COMMENTS

FUTURE OUTLOOK: There are several special areas of concern that are particular to closed plans that we will monitor going forward, including:

- The active population: as the active population decreases, the contribution rate tends to increase and become less stable relative to payroll. At some point in the future, it will be better to report contributions only as a dollar amount rather than both a percent-of-payroll and dollar amount.
- Asset allocation: as the plan matures and the active population shrinks, the non-investment cash flow will increase and the asset base will decrease. As this happens, asset allocation may need to change to maintain liquidity and investment time horizon preferences of the Board. If this happens, we recommend reviewing the assumed rate of return to ensure the assumption is reflective of the current asset allocation.
- Negative cash flow: As the negative cash flow continues to increase and the asset base begins to decrease, we will recommend changing from the use of a smoothed funding value of asset method to the market value of asset method. This may be done in stages by reducing the smoothing period when the non-investment cash flow becomes 5% to 10% of the asset base (these cash flows represented about 3% of assets for the FY 2015) but could approach 5% in 2017 due to the redirection in Township contributions over the next two years. Shown below is a five-year projection of retirement benefit payments.

Year	Expected Benefit Payments
2016	$3,935,884
2017	3,809,404
2018	3,929,769
2019	4,097,028
2020	4,230,762

PLAN CHANGES: There were no reported plan changes.

METHODS AND ASSUMPTIONS: There were no method or assumption changes.

RECOMMENDATION: The last experience study was performed in 2000 and rates of mortality were updated in 2013. Given that the plan has been closed for several years and the active demographic assumptions have less of an impact on results, a full experience study may not be warranted. However, we recommend that an abbreviated experience study be performed, concentrating on economic assumptions, as well as amortization policy We recommend that mortality rates also be studied with or before the December 31, 2018 valuation.

CONCLUSION: The Waterford Township Employees Retirement System is in sound financial condition in accordance with actuarial principles of level dollar funding, presuming continued timely receipt of contributions. The computed employer contribution for FY 2017 is 20.61% of covered payroll or $989,146 if paid at the end of the fiscal year.

OTHER OBSERVATIONS

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.0% on the actuarial value of assets), it is expected that:

1) The unfunded actuarial accrued liabilities will be fully amortized after 17 years; and
2) The funded status of the plan will increase gradually towards a 100% funded ratio.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. With regard to any funded status measurements presented in this report:

1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).

Risks to Future Employer Contribution Requirements

There are ongoing risks to future employer contribution requirements to which the Retirement System is exposed, such as:

- Actual and Assumed Investment Rate of Return
- Actual and Assumed Mortality Rates
- Amortization Policy

DERIVATION OF EXPERIENCE GAIN (LOSS)
YEAR ENDED DECEMBER 31, 2015

Actual experience will never (except by coincidence) exactly match assumed experience. It is expected that gains and losses will largely cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below, along with a year-by-year comparative schedule.

		Year Ending December 31, 2015
(1)	UAAL* at start of year	$ 3,861,120
(2)	Total normal cost	881,430
(3)	Actual contributions	1,572,719
(4)	Interest accrual	300,514
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	3,470,345
(6)	Increase from benefit changes	none
(7)	Change from actuarial assumptions and methods	0
(8)	Expected UAAL after changes: (5) + (6) + (7)	3,470,345
(9)	Actual UAAL at end of year	1,849,926
(10)	Gain (loss): (8) - (9)	$ 1,620,419

* *Unfunded Actuarial Accrued Liability.*

Valuation Date December 31	Experience Gain (Loss) as a % of Beginning Accrued Liability
2006	4.8 %
2007	2.4 %
2008	(21.8)%
2009	(1.1)%
2010	0.3 %
2011	(1.0)%
2012	1.6 %
2013	5.6 %
2014	3.4 %
2015	**2.6 %**

COMPUTED CONTRIBUTIONS - COMPARATIVE STATEMENT

Fiscal Year	Valuation Date Dec. 31	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Percent Funded	Unfunded Act. Accr. Liab. (UAAL) Dollar Amount	Financing (base) Period	% of Member Payroll	Township Contribution Rate	Dollar Contribution Recommended	Dollar Contribution Actual
		($ in Thousands)								
2000	1999#	$ 32,425	$ 36,325	112.0 %	$ (3,901)	13	(49.4)%	12.26 %	$ 1,051,557	$ 1,051,557
2001	2000#	34,816	39,317	112.9 %	(4,501)	12	(55.0)%	11.07 %	984,758	984,758
2002	2001@	36,673	41,190	112.3 %	(4,517)	11	(50.9)%	10.36 %	994,059	994,059
2003	2002	39,903	40,757	102.1 %	(854)	10	(9.1)%	14.66 %	1,487,005	1,487,005
2004	2003	44,263	41,579	93.9 %	2,683	30	28.3 %	17.35 %	1,780,444	1,780,444
2005	2004	45,462	42,863	94.3 %	2,599	29	28.8 %	17.39 %	1,696,164	1,696,164
2006	2005	46,306	43,301	93.5 %	3,005	28	36.8 %	18.08 %	1,574,175	1,574,175
2007	2006#	48,208	46,990	97.5 %	1,218	27	14.9 %	17.49 %	1,475,885	1,475,885
2008	2007	50,798	50,791	100.0 %	7	26	0.1 %	16.26 %	1,402,952	1,402,952
2009	2008	53,360	44,073	82.6 %	9,287	25	111.8 %	25.65 %	2,204,481	2,204,481
2010	2009#	55,024	45,414	82.5 %	9,610	24	118.3 %	26.27 %	2,208,556	2,208,556
2011	2010@	56,521	47,447	83.9 %	9,074	23	129.1 %	27.65 %	2,011,374	2,011,374
2012	2010@	56,521	47,447	83.9 %	9,074	22	129.1 %	28.26 %	2,017,208	2,017,208
2013	2011	58,750	49,385	84.1 %	9,366	21	150.0 %	29.19 %	1,922,105	1,922,105
2014	2012	59,651	51,527	86.4 %	8,125	20	140.9 %	28.58 %	1,729,217	1,729,217
2015	2013@	61,380	55,119	89.8 %	6,261	19	112.8 %	27.08 %	1,555,154	1,555,154
2016	2014	62,003	58,142	93.8 %	3,861	18	77.2 %	24.07 %	1,249,587	N/A
2017	**2015**	**62,975**	**61,125**	**97.1 %**	**1,850**	**17**	**40.5 %**	**20.61 %**	**989,146**	**N/A**

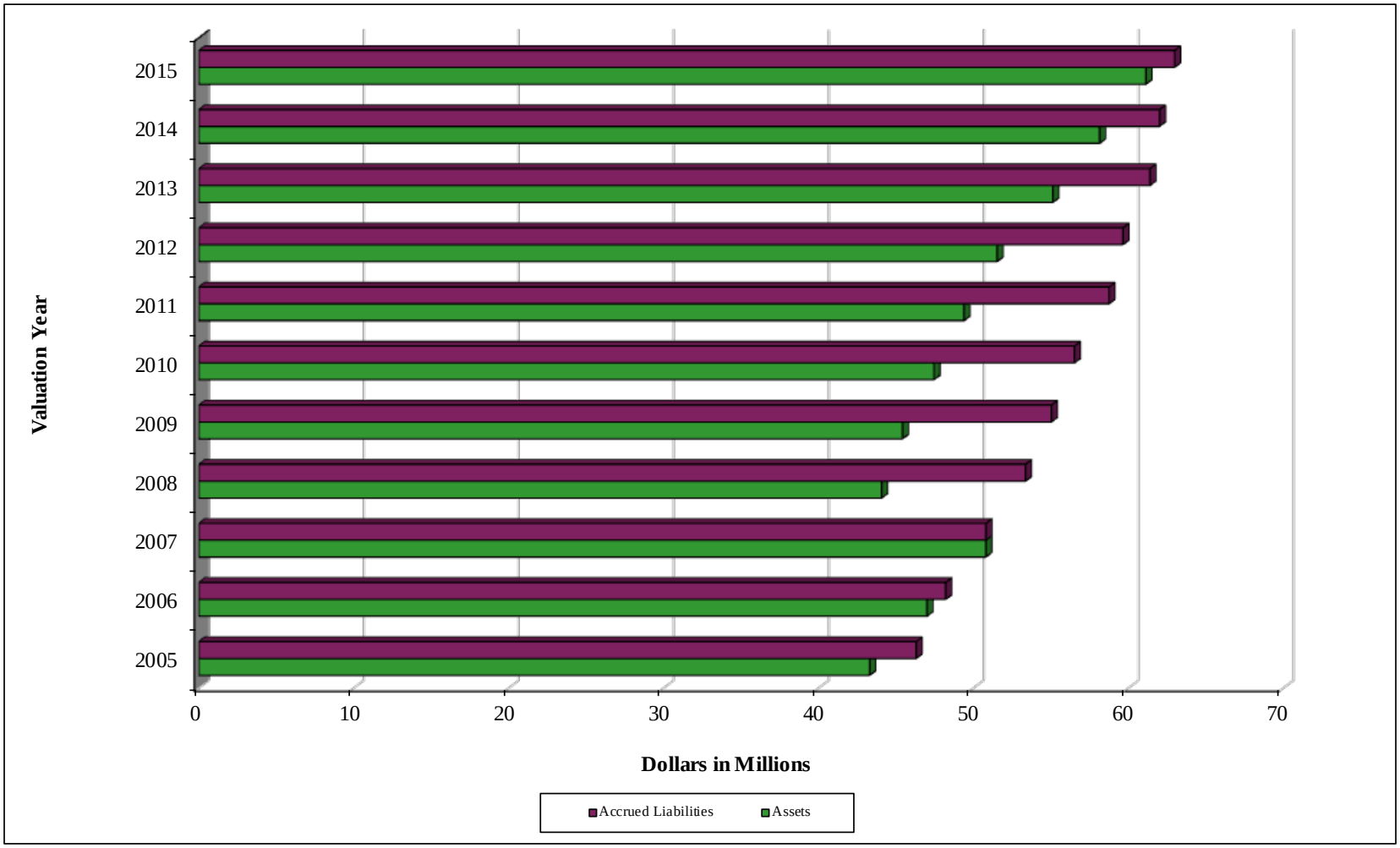
 # Changes in assumptions. @ Changes in methods.

The Ratio of Valuation Assets to AAL is a traditional measure of a Retirement System's funding progress. Except in years when the System is amended or actuarial assumptions are revised, this ratio can be expected to increase gradually toward 100%. This ratio is the most appropriate of those described for assessing need for future contributions above the amounts needed to fund the normal cost.

The Ratio of UAAL to Valuation Payroll is another relative index of condition. Unfunded Actuarial Accrued Liabilities (UAAL) represent debt, while active member payroll represents the System's capacity to collect contributions to pay toward debt. The lower the ratio, the greater the financial strength and vice-versa.

None of these funding progress indicators are appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

FUNDING VALUE OF ASSETS & ACCRUED LIABILITIES



2005 Funding Value of Assets equaled 93.5% of accrued liabilities
2015 Funding Value of Assets equaled 97.1% of accrued liabilities

The funded status would be different if based on the Market Value of Assets.

SECTION B

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA

BRIEF SUMMARY OF BENEFIT PROVISIONS
DECEMBER 31, 2015

Eligibility	Amount
REGULAR RETIREMENT	
Management, Elected Officials before January 1, 1999 (Court Supervisors before April 1, 2002): Sum of age and credited service equals 75 or more, age 55 with 25 years of service or age 60 with 5 years of service.	**Management, Court Supervisors, Elected Officials, Dispatchers and CSI**: Straight life pension equals total service times 2.5% of final average salary (FAS). Management, Court Supervisors, Elected Officials hired on or after January 1, 1999 and CSI have a maximum benefit of 75% of FAS.
Dispatchers: 25 years of service regardless of age, or age 60 with 8 years of service.	**Teamsters hired on or prior to July 1, 2006**: Straight life pension equals total service times 2.375% of FAS.
Crime Scene Investigators (CSI): 25 years of service regardless of age, or age 60 with 10 years of service.	**All Others**: Straight life pension equals total service times 2.25% of FAS. CSO has a maximum benefit of 75% of FAS.
All Others: Age 55 with 25 years of service, or age 60 with 8 years of service. Community Service Officers (CSO) may also retire with 30 years of service regardless of age.	**Type of Final Average Salary (FAS)**: Highest 3 years out of the last 5 years of service. **CSI**: Highest 3 years out of the last 10 years of service.
DEFERRED RETIREMENT	
8 or more years of service (5 years for Management & Administrative before January 1, 1999 and Court Supervisors before April 1, 2002). Benefit begins at age 60 (55 with 25 or more years of service at time of termination). **CSI**: Benefit begins at the date retirement would have occurred had the member remained in employment.	Computed as a regular retirement but based upon service and final average salary at termination date.
NON-DUTY DEATH-IN-SERVICE SURVIVOR'S PENSION *	
Payable to the survivors of a member who dies with 10 years of service.	Pension payable to surviving spouse, computed as a regular retirement but actuarially reduced in accordance with a 100% joint and survivor election.

* *Death and disability benefits for CSI members are the same as those for Police members in the Waterford Township Policemen and Firemen Retirement System.*

BRIEF SUMMARY OF BENEFIT PROVISIONS
DECEMBER 31, 2015
(CONTINUED)

DUTY DEATH-IN-SERVICE SURVIVOR'S PENSION *

Payable to survivors of a member who died as a result of a job related injury. No age or service requirements.

Upon termination of worker's compensation the same amount is continued to widow or dependent, widower and unmarried children under 18 years old.

NON-DUTY DISABILITY *

Payable upon the total and permanent disability of a member with 10 or more years of service.

Computed as a regular retirement with a minimum benefit of 10% of final average salary at time of disability.

DUTY DISABILITY *

Payable upon the total and permanent disability of a member as a result of a job related injury. No age or service requirements. Must be in receipt of worker's compensation.

Computed as a regular retirement with a minimum benefit of 10% of FAS. Based on service and FAS at time of disability.

MEMBER CONTRIBUTIONS

Dispatchers and CSI	5.00% of annual earnings. Annuity withdrawal based on ML Bond index.
Others	None

TOWNSHIP CONTRIBUTIONS

Actuarially determined amounts which are sufficient to cover both (i) normal costs of the plan, and (ii) financing of unfunded accrued benefit values over a selected period of future years.

COMPENSATION

Covered compensation includes base pay plus longevity pay (Overtime is included for Crime Scene Investigators).

* *Death and disability benefits for CSI members are the same as those for Police members in the Waterford Township Policemen and Firemen Retirement System.*

PARTICIPATION

Full-time employees of the Township not covered by Act 345 participate in WTERS except Firefighters. However, members hired after the dates below are not eligible to participate and are, instead, covered by a separate defined contribution plan.

Members of	Hire Date
Mgmt / Elected	1/1/2005
Court	1/1/2005
Dispatch	7/1/2006
Teamster	7/1/2006

DEFERRED RETIREMENT OPTION PLAN (DROP)

Employees in the Dispatch Union are eligible to participate in the DROP.

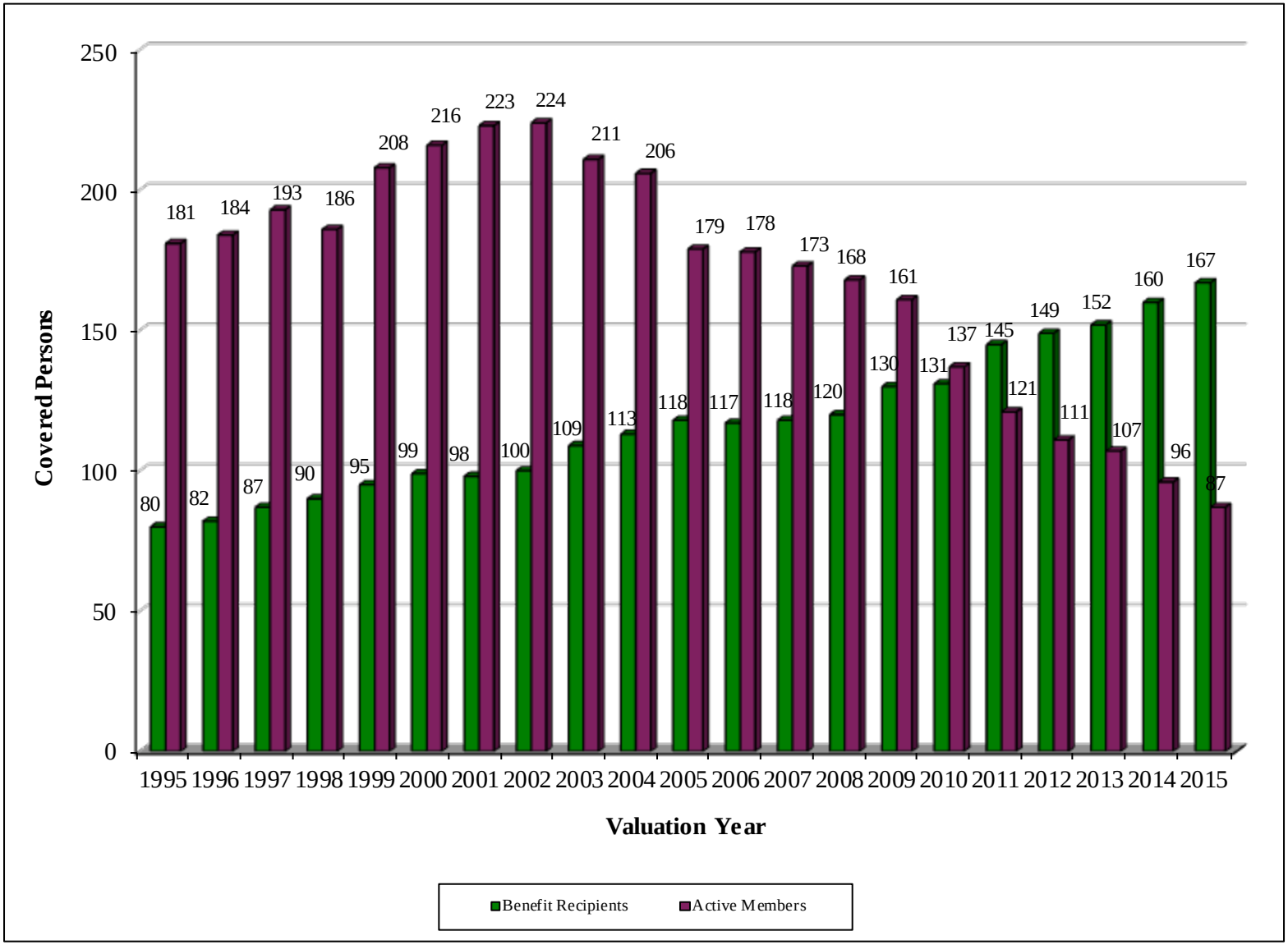
Effective January 1, 2008, any member of the Waterford Township Dispatchers Association hired on or before June 30, 2006 may participate in the DROP after attaining the minimum requirements for a normal service retirement. A monthly amount equal to the amount that would have been paid had the member retired and current member contributions accumulate in a DROP account. The account is credited with the system's prior calendar year's market rate of return (but not greater than 4% interest) each year. Additions cease at the earlier of 5 years of DROP participation or separation from service, although interest on the DROP account will continue to accrue during such time. Participants may continue in covered employment after 5 years of participation or until their 33rd year of service, but do not accumulate additional service credit. Upon actual retirement the member may receive the DROP account balance in the form of a lump sum or as an additional annuity. Member contributions continue during the DROP period. Upon exit from the DROP, the original monthly amount established upon entry in the DROP continues in addition to any other benefits or adjustments. Member contributions made during the DROP period are added to the DROP account.

RETIREE AND BENEFICIARY COMPARATIVE SCHEDULE

Year Ended	Added to Rolls		Removed from Rolls		Rolls End of Year				Average Pension	Expected Removals	
						Active	Annual Pensions				
	No.	Annual* Pensions	No.	Annual* Pensions	No.	Per Retired	Dollars	% of Pay		No.	Annual Pensions
1996	4	$ 86,779	2	$ 3,477	82	2.2	$ 957,599	15.7 %	$ 11,678	1.7	$ 13,598
1997	7	124,093	2	4,892	87	2.2	1,076,800	16.6 %	12,377	1.8	15,271
1998	8	94,667	5	34,801	90	2.1	1,136,666	17.3 %	12,630	2.0	17,631
1999	5	78,770			95	2.2	1,215,436	15.4 %	12,794	2.1	19,728
2000	4	90,878			99	2.2	1,306,314	16.0 %	13,195	2.5	25,172
2001	6	72,178	7	24,863	98	2.3	1,353,630	15.3 %	13,813	2.8	28,349
2002	4	137,119	2	23,399	100	2.2	1,467,350	15.6 %	14,674	2.6	30,263
2003	13	377,721	4	26,795	109	1.9	1,818,276	19.2 %	16,681	2.7	36,026
2004	4	174,733			113	1.8	1,993,009	22.1 %	17,637	2.9	41,604
2005	5	59,049			118	1.5	2,052,057	25.1 %	17,390	3.2	47,208
2006	5	113,420	6	84,511	117	1.5	2,080,966	25.5 %	17,786	3.6	52,435
2007	5	77,708	4	53,942	118	1.5	2,104,732	25.2 %	17,837	3.8	51,782
2008	2	53,185			120	1.4	2,157,917	26.0 %	17,983	4.0	55,663
2009	7	125,987	6	64,620	121	1.3	2,219,284	27.3 %	18,341	4.4	61,920
2010	19	555,597	9	136,752	131	1.0	2,638,129	37.5 %	20,138	4.4	64,759
2011	22	542,808	8	104,703	145	0.8	3,076,234	49.3 %	21,215	4.4	66,524
2012	8	172,719	4	40,500	149	0.7	3,208,453	55.6 %	21,533	4.5	70,959
2013	11	148,540	8	124,954	152	0.7	3,232,039	58.2 %	21,263	4.6	75,786
2014	13	274,305	5	38,803	160	0.6	3,467,540	69.4 %	21,672	3.8	62,458
2015	**12**	**263,901**	**5**	**65,339**	**167**	**0.5**	**3,666,102**	**80.2 %**	**21,953**	**4.0**	**70,415**

** Includes post-retirement adjustments.*

ACTIVE MEMBERS & BENEFIT RECIPIENTS



RETIREES AND BENEFICIARIES DECEMBER 31, 2015
TABULATED BY ATTAINED AGES

Attained Ages	No.	Annual Pensions
41	1	$ 17,022
45	1	30,784
48	1	9,215
49	2	74,150
52	1	9,296
53	1	19,027
54	3	106,597
55	4	143,234
56	1	25,653
57	3	129,963
58	6	236,076
59	4	118,350
60	9	252,485
61	8	194,499
62	9	167,312
63	6	127,683
64	12	232,664
65	3	31,317
66	11	222,255
67	1	37,746
68	6	104,521
69	5	111,646
70	4	135,240
71	5	110,837
72	5	78,486
73	6	69,070
74	4	70,489
75	1	8,435
76	3	64,250
77	3	45,192
78	4	74,186
79	5	138,018
80	3	51,371
81	2	32,180
82	5	53,391
83	4	88,004
84	1	8,118
85	5	90,389
86	1	10,713
87	3	44,300
88	2	28,788
89	1	25,084
90	1	31,444
92	1	6,622
Totals	**167**	**$3,666,102**

Average Age Now: 68.8

Average Age at Retirement: 57.7

RETIREES AND BENEFICIARIES DECEMBER 31, 2015
TABULATED BY TYPE OF PENSION

Type of Pension Being Paid	No.	Annual Pensions
Age and Service Pensions		
Regular	73	$ 1,679,923
100% Joint and Survivor	48	1,092,695
50% Joint and Survivor	27	626,410
Survivor Beneficiary	13	172,752
Totals	161	3,571,780
Casualty Benefits		
Non-Duty Death	0	0
Non-Duty Disability	5	73,105
Duty Disability	2	21,217
Survivor Beneficiary of Disability Pension	0	0
Totals	7	94,322
Total Pensions Being Paid*	**168**	**$ 3,666,102**

** One member has two different pension types due to an EDRO.*

VESTED TERMINATED MEMBERS DECEMBER 31, 2015
TABULATED BY ATTAINED AGES

Attained Ages	No.	Annual Pensions
35	1	$ 7,500
42	1	8,718
43	3	48,925
44	2	17,824
46	1	29,463
48	1	25,624
49	1	12,276
51	2	18,306
52	4	75,011
53	1	13,602
54	4	48,224
55	3	33,616
56	2	17,043
57	2	18,083
59	1	6,492
62	1	11,328
67	1	15,495
Totals	**31**	**$407,530**

ACTIVE MEMBERS DECEMBER 31, 2015
BY TOWNSHIP DEPARTMENT

Department	Number of Members	Annual Payroll	Valuation Payroll
General			
Dispatch	6	$ 316,793	$ 316,793
CSI	0	0	0
General Union	31	1,448,430	1,448,430
Management and Admin Pre 1/1/1999	7	540,362	540,362
Management and Admin Post 1/1/1999	5	308,921	308,921
Total General	49	2,614,506	2,614,506
Water			
Water Union	28	1,336,766	1,336,766
Water Management Pre 1/1/1999	2	175,594	175,594
Water Management Post 1/1/1999	1	74,319	74,319
Total Water	31	1,586,679	1,586,679
51st District Court			
Court Union	5	265,977	265,977
Court Supervisors Pre 4/1/2002	1	59,921	59,921
Court Supervisors Post 4/1/2002	1	45,701	45,701
Total 51st District Court	7	371,599	371,599
Totals	**87**	**$4,572,784**	**$4,572,784**

ACTIVE MEMBERS DECEMBER 31, 2015
BY TOWNSHIP DEPARTMENT

Comparative Schedule

Valuation Date	Active Members				Valuation	Average			
Dec. 31	Gen.	Water	Court	Total	Payroll	Age	Service	Pay	% Incr.
1980	117	36	N/A	153	$2,596,759	40.0 yrs.	7.7 yrs.	$16,972	12.0 %
1985	114	31	N/A	145	3,270,861	42.0	9.9	22,558	6.0 %
1990	110	36	30	176	4,605,296	42.3	10.1	26,166	6.0 %
1991	109	37	33	179	4,910,061	41.9	10.1	27,431	4.8 %
1992	103	40	34	177	5,242,635	42.3	10.4	29,619	8.0 %
1993	95	39	32	166	4,739,798	41.7	10.1	28,553	(3.6)%
1994	98	40	31	169	5,191,073	42.4	10.4	30,716	7.6 %
1995	105	44	32	181	5,565,897	41.2	9.8	30,751	0.1 %
1996	108	45	31	184	6,086,705	42.4	10.2	33,080	7.6 %
1997	113	49	31	193	6,487,465	42.2	9.8	33,614	1.6 %
1998	112	46	28	186	6,563,277	42.3	10.5	35,286	5.0 %
1999	127	51	30	208	7,892,467	41.6	9.7	37,945	7.5 %
2000	135	49	32	216	8,185,631	41.8	9.7	37,896	(0.1)%
2001	141	50	32	223	8,871,473	42.3	10.0	39,782	5.0 %
2002	140	50	34	224	9,378,252	43.2	10.6	41,867	5.2 %
2003	125	53	33	211	9,487,946	43.4	10.6	44,967	7.4 %
2004	124	51	31	206	9,018,029	44.2	11.3	43,777	(2.6)%
2005	112	48	19	179	8,167,274	44.8	12.6	45,627	4.2 %
2006	109	51	18	178	8,153,092	45.2	13.1	45,804	0.4 %
2007	105	50	18	173	8,336,466	45.9	14.0	48,188	5.2 %
2008	101	50	17	168	8,303,833	46.7	15.0	49,428	2.6 %
2009	98	48	15	161	8,122,841	47.7	15.9	50,452	2.1 %
2010	87	39	11	137	7,028,413	48.5	16.6	51,302	1.7 %
2011	73	38	10	121	6,245,774	47.9	16.7	51,618	0.6 %
2012	66	35	10	111	5,766,161	48.3	17.5	51,947	0.6 %
2013	63	34	10	107	5,551,391	49.3	18.3	51,882	(0.1)%
2014	56	33	7	96	4,999,601	49.2	19.1	52,079	0.4 %
2015	**49**	**31**	**7**	**87**	**$4,572,784**	**49.2**	**19.9**	**$52,561**	**0.9 %**

ACTIVE MEMBERS ADDED TO AND REMOVED FROM ROLLS

Year	No. Added During Year	Removed During Year										Active Members End of Year
		Normal Retirement		Disabled		Died-in-Service		Terminations				
								Vested	Other	Total		
	A	A	E	A	E	A	E	A	A	A	E	
2006	5	3	3.8	0	0.4	0	0.3	1	2	3	5.7	178
2007	0	3	5.3	0	0.5	0	0.3	2	0	2	5.4	173
2008	0	2	5.4	0	0.5	0	0.4	3	0	3	4.3	168
2009	0	3	5.4	0	0.5	0	0.4	3	1	4	4.3	161
2010	0	13	6.4	0	0.5	0	0.4	7	4	11	3.6	137
2011	4*	17	6.6	2	0.5	0	0.4	0	1	1	2.7	121
2012	0	5	4.4	0	0.4	0	0.3	4	1	5	2.5	111
2013	0	3	4.3	0	0.4	0	0.3	1	0	1	2.2	107
2014	0	9	5.1	0	0.4	0	0.2	1	1	2	1.9	96
2015	0	**8**	**4.1**	**0**	**0.4**	**0**	**0.2**	**1**	**0**	**1**	**1.7**	**87**
10 Yr. Totals	9	66	50.8	2	4.5	0	3.2	23	10	33	34.3	

** Re-hired from lay-off.*

A = Actual
E = Expected

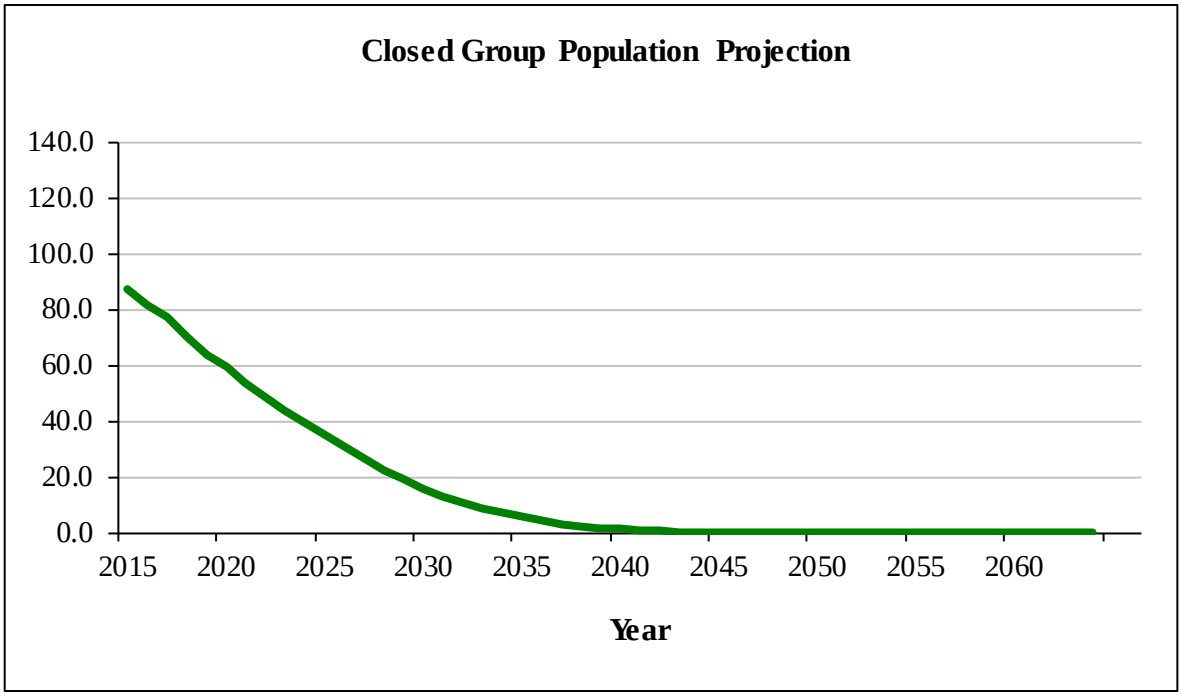
ALL ACTIVE MEMBERS DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No	Valuation Payroll
35-39			6	2				8	$ 416,632
40-44		1	3	8	5			17	884,226
45-49		1	1	8	8	3		21	1,035,165
50-54		1	1	3	8	7	1	21	1,090,706
55-59			2	4	4	1	3	14	708,609
60							1	1	93,178
61						1		1	74,387
62			1	1	1			3	195,564
67			1					1	74,318
Total		**3**	**15**	**26**	**26**	**12**	**5**	**87**	**$4,572,785**

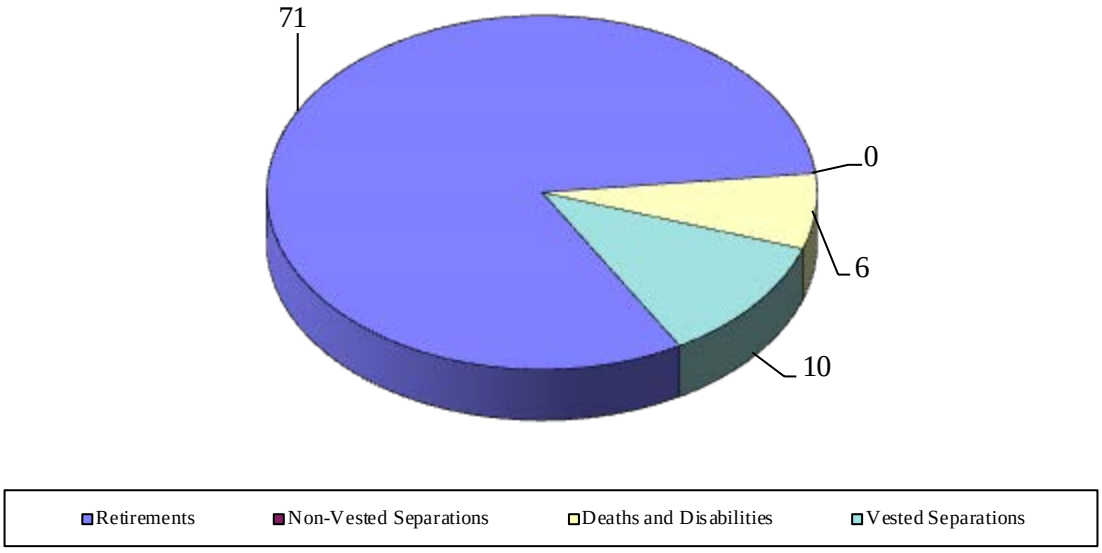
While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 49.2 years
Service: 19.9 years
Annual Pay: $52,561

EXPECTED DEVELOPMENT OF PRESENT POPULATION
DECEMBER 31, 2015



Expected Terminations from Active Employment for Current Active Members



The charts show the expected future development of the present population in simplified terms. The Retirement System presently covers 87 active members. 81 people are expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. 6 people are expected to become eligible for death-in-service or disability benefits. Within 8 years, over half of the covered membership is expected to terminate.

DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS

Year Ended December 31:	2012	2013	2014	2015	2016	2017	2018
A. Funding Value Beginning of Year	$ 49,384,643	$ 51,526,549	$ 55,119,221	$ 58,141,962			
B. Market Value End of Year	51,202,428	59,859,497	61,438,239	59,740,412			
C. Market Value Beginning of Year	47,142,583	51,202,428	59,859,497	61,438,239			
D. Non-Investment Net Cash Flow	(1,063,256)	(1,368,361)	(1,735,139)	(2,017,928)			
E. Investment Income							
E1. Market Total: B - C - D	5,123,101	10,025,430	3,313,881	320,101			
E2. Amount for Immediate Recognition (7.0%)	3,419,711	3,558,966	3,797,616	3,999,310			
E3. Amount for Phased-In Recognition: E1-E2	1,703,390	6,466,464	(483,735)	(3,679,209)			
F. Phased-In Recognition of Investment Income							
F1. Current Year: 0.25 x E3	425,848	1,616,616	(120,934)	(919,802)			
F2. First Prior Year	(961,267)	425,848	1,616,616	(120,934)	$ (919,802)		
F3. Second Prior Year	320,870	(961,267)	425,848	1,616,616	(120,934)	$ (919,802)	
F4. Third Prior Year		320,870	(961,266)	425,846	1,616,616	(120,933)	$ (919,803)
F5. Total Recognized Investment Gain (Loss)	(214,549)	1,402,067	960,264	1,001,726	575,880	(1,040,735)	(919,803)
G. Funding Value End of Year							
G1. Preliminary Funding Value End of Year: A+D+E2+F5	51,526,549	55,119,221	58,141,962	61,125,070			
G2. Upper Corridor Limit: 125% x B	64,003,035	74,824,371	76,797,799	74,675,515			
G3. Lower Corridor Limit: 75% x B	38,401,821	44,894,623	46,078,679	44,805,309			
G4. Funding Value End of Year	**51,526,549**	**55,119,221**	**58,141,962**	**61,125,070**			
H. Difference between Market & Funding Value	$(324,121)	$ 4,740,276	$3,296,277	$(1,384,658)	$ (1,960,538)	$ (919,803)	$ 0
I. Recognized Rate of Return	**6.56%**	**9.76%**	**8.77%**	**8.75%**			
J. Market Value Rate of Return	10.99%	19.85%	5.62%	0.53%			
K. Ratio of Funding Value to Market Value	100.63%	92.08%	94.63%	102.32%			

The Funding Value of Assets recognizes assumed investment income (line E2) fully each year. Differences between actual and assumed investment income (line E3) are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than Market Value. The Funding Value of Assets is *unbiased* with respect to Market Value. At any time, it may be either greater or lesser than Market Value. If assumed rates are exactly realized for 3 consecutive years, it will become equal to Market Value.

SUMMARY OF CURRENT ASSET INFORMATION

Balance Sheet

Valuation Assets		Reserve for	
Cash & Equivalents	$ 1,675,132	Employee Contributions*	$ 263,027
Common Stock	43,896,465	Employer Contributions*	30,849,164
Bonds	14,331,039	Retired Benefit Payments*	30,326,048
Real Estate	294,330	Undistributed Investment	(1,697,827)
Other Assets	305,811		
Accounts Payable	(762,365)		
Market Adjustment	1,384,658	Market Adjustment	1,384,658
Funding Value of Assets	$61,125,070	Total Reserves	$61,125,070

** As of January 1, 2015.*

Receipts and Disbursements

	2015	2014
Funding Value - January 1	$58,141,962	$55,119,221
Receipts		
Employee Contributions	17,565	17,609
Employer Contributions	1,555,154	1,729,217
Recognized Investment Income	5,402,150	5,164,146
Total	6,974,869	6,910,972
Disbursements		
Benefit Payments	3,590,647	3,481,965
Transfer to DC Plan	-	-
Administrative & Investment Expense	401,114	406,266
Other	-	-
Total	3,991,761	3,888,231
Funding Value of Assets	$61,125,070	$58,141,962

Valuation assets are equal to the funding value of assets. See page B-14.

SECTION C

SUMMARY OF ACTUARIAL COST METHOD AND ASSUMPTIONS

BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

Benefit Promises Made Which Must Be Paid For. A retirement system is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the Retirement System acquires a unit of service credit they are, in effect, handed an "IOU" which reads: "The Employees Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire."

The principal related financial question is: When shall the money required to cover the "IOU" be contributed? This year, when the benefit of the member's service is received? Or, some future year when the "IOU" becomes a cash demand?

The Constitution of the State of Michigan is directed to the question:

> "Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities."

This Retirement System meets this constitutional requirement by having as its ***financial objective to establish and receive contributions, expressed as percents of active member payroll, which will achieve progress towards 100% funded status and will remain approximately level from year to year*** and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

> ***Normal Cost*** (the current value of benefits likely to be paid on account of members' service being rendered in the current year)
>
> ... plus ...
>
> Interest on the Unfunded Actuarial Accrued Liability (the difference between the actuarial accrued liability and current system assets).

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time.

Invested assets are a by-product of level percent-of-payroll contributions, not the objective. Investment income becomes the major contributor to the Retirement System, and the amount is directly related to the amount of contributions and investment performance.

If contributions to the Retirement System are less than the preceding amount, the difference, plus investment earnings not realized thereon, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate; that is:

B = C + I - E

The aggregate amount of Benefit payments to any group of members and their beneficiaries cannot exceed the sum of:

The aggregate amount of Contributions received on behalf of the group

... plus ...

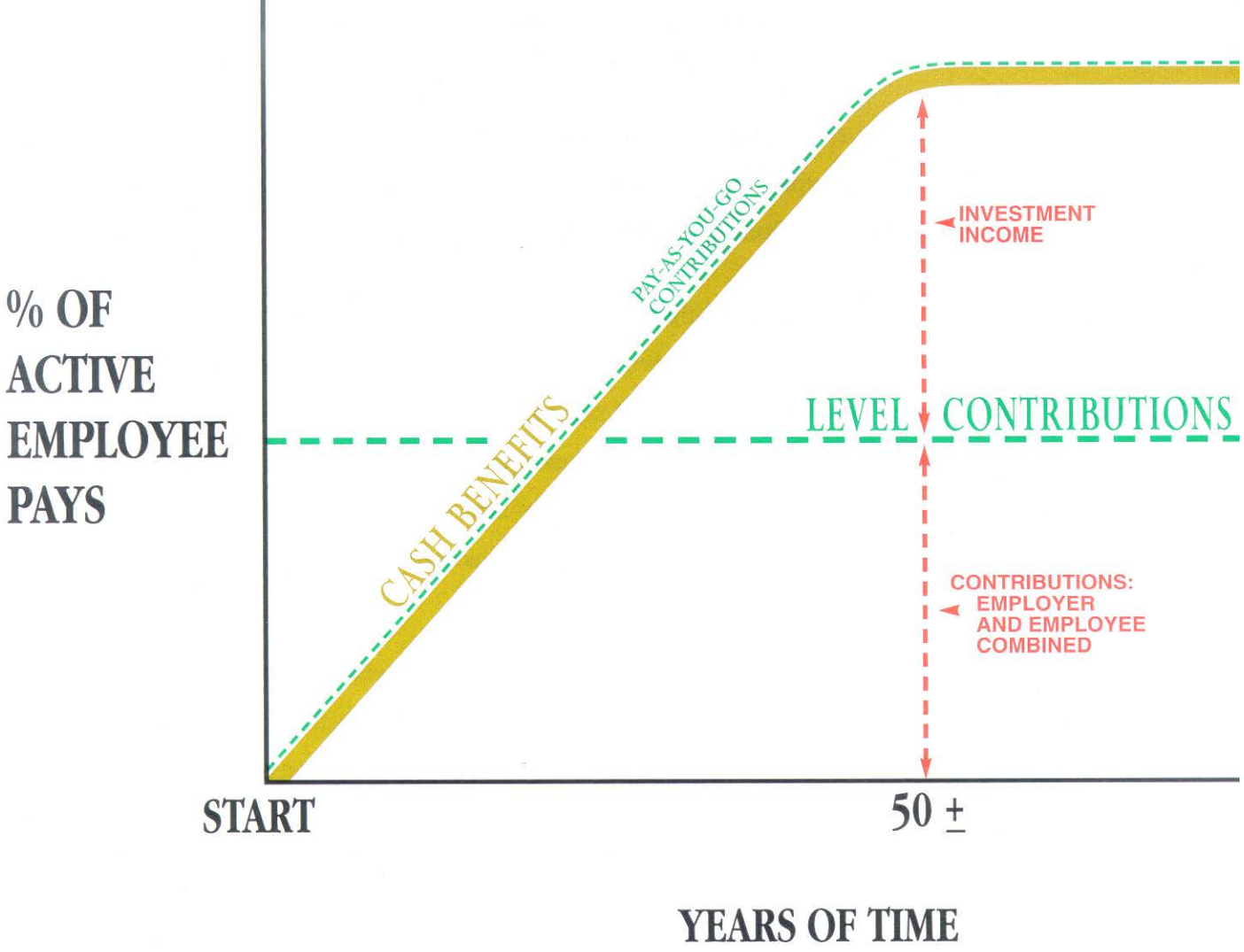
Investment earnings on contributions received and not required for immediate payment of benefits

... minus ...

The Expenses of operating the program.

There are retirement systems designed to defer the bulk of contributions far into the future. Lured by artificially low present contributions, the inevitable consequence of a relentlessly increasing contribution rate -- to a level greatly in excess of the level percent-of-payroll rate -- is ignored. ***This method of financing is prohibited in Michigan by the State constitution***.

Computed Contribution Rate Needed to Finance Benefits. From a given schedule of benefits and from the data furnished, the actuary calculates the contribution rate by means of an actuarial valuation - the technique of assigning monetary values to the risks assumed in operating a retirement system.



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

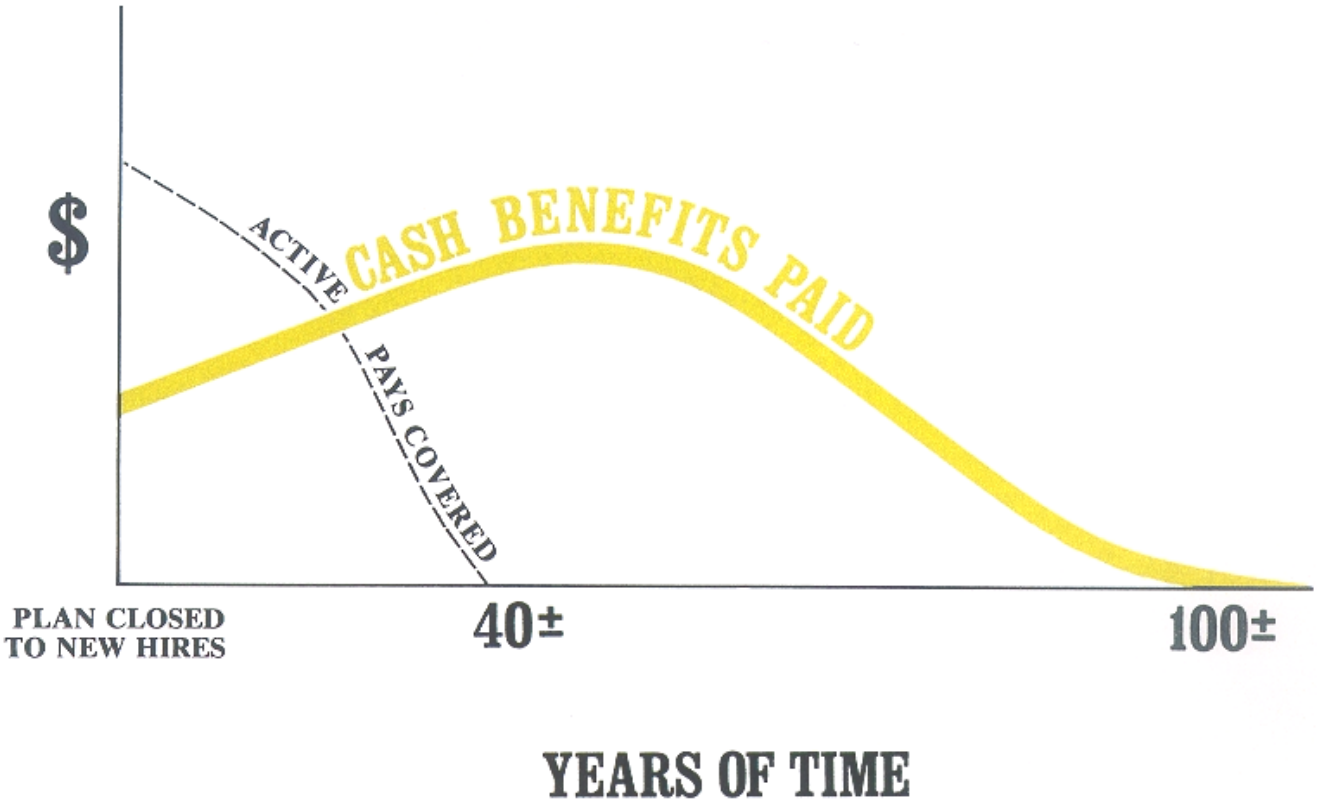
Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

A CLOSED PENSION PLAN



A plan becomes closed when no new hires are admitted to active membership. The persons covered by the plan at the time of closing continue their normal activities and continue to be covered by the plan, until the last survivor dies.

CASH BENEFITS LINE. After a pension plan becomes closed, the usual pattern is for cash benefits to continue to increase for decades of time. Eventually the cash benefits will peak, and then gradually decrease over more decades of time, ultimately to zero. The last cash benefit is likely to occur a century after the time the plan is closed.

The precise amounts of cash benefits cannot be known now, and must be estimated by assumptions of future experiences in a variety of financial risk areas.

METHODOLOGY

Actuarial Cost Method. Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using the individual entry-age actuarial cost method having the following characteristics:

i) the annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement or termination;

ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

Financing of Unfunded Actuarial Accrued Liabilities. Unfunded actuarial accrued liabilities (the portion of total liabilities not covered by present assets or expected future normal cost contributions) were amortized by level (principal or interest combined) dollar contributions over a closed period of 17 years. Level dollar amortization was used since the plan is closed to new hires. There is a 1-year lag between the valuation date and the contribution effective date. Unfunded liabilities were projected to the contribution effective date based on the valuation assumed rate of return and the adopted contributions and then amortized.

Asset Valuation Method. Last year's valuation assets are increased by contributions and reduced by refunds, benefit payments and expenses. An amount equal to the assumed investment return for the year is then added. Differences between actual return on a market value basis and an assumed return are phased-in over a four-year period.

ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

The actuary calculates the contribution requirements and benefit values of the System by applying actuarial assumptions to the benefit provisions and people information furnished, using the actuarial cost method described on the previous page. All actuarial assumptions used in this report are estimates of future experience not market measures.

The principal areas of financial risk which require assumptions about the future are:

- long-term rates of investment return to be generated by the assets of the Fund
- patterns of pay increases to members
- rates of mortality among members, retirees and beneficiaries
- rates of withdrawal of active members (without entitlement to a retirement benefit)
- rates of disability among members
- the age patterns of actual retirement

In an actuarial valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - - a period of time which can be as long as a century.

Actual experience of the System will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year to year fluctuations).

ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

Unless otherwise stated, the rationale for all assumptions is the 2000 Experience Study. Assumptions are forward looking.

Investment Return (net of investment expenses): 7% a year, compounded yearly. This rate consists of a rate of wage inflation of 4.5% a year. There is no specific assumption regarding price inflation, but a price inflation assumption of 3.0%-3.5% would be consistent with the other economic assumptions.

This assumption is used to equate the value of payments due at different points in time and was first used for the December 31, 1982 valuation. Approximate rates of investment return, for the purpose of comparisons with assumed rates, are shown below. Actual increases in average active member pay are also shown for comparative purposes.

	Year Ended December 31					5-Year
	2015	2014	2013	2012	2011	Average*
Rate of Investment Return	8.8 %	8.8 %	9.8 %	6.6 %	5.6 %	7.9 %
Increase in Average Pay	0.9 %	0.4 %	(0.1)%	0.6 %	0.6 %	0.5 %
Real Rate of Return	7.9 %	8.4 %	9.9 %	6.0 %	5.0 %	7.4 %

* *Compounded rate of increase.*

The nominal rate of return was computed using the approximate formula i = I divided by 1/2 (A + B - I), where I is recognized investment income net of expenses, A is the beginning of year asset value, and B is the end of year asset value.

These rates of return should not be used for measurement of an investment advisor's performance or for comparisons with other systems ***– to do so will mislead***.

Pay Projections. These assumptions are used to project current pays to those upon which benefits will be based. The assumptions were first used for the December 31, 1982 valuation.

Sample Ages	Percent Increase in Salary		
	Base Economic	Promotion & Longevity	Total
20	4.5%	3.2%	7.7%
25	4.5%	3.0%	7.5%
30	4.5%	2.5%	7.0%
35	4.5%	2.4%	6.9%
40	4.5%	2.1%	6.6%
45	4.5%	1.5%	6.0%
50	4.5%	1.2%	5.7%
55	4.5%	1.0%	5.5%
60	4.5%	0.0%	4.5%
Ref		192	

Probabilities of retirement for members eligible to retire were:

	Percent of Eligible Active Members Retiring Within Next Year			
Retirement Ages	**Rule of 75 for Management & Administrative Hired Before 1999**	**Others**	**Service**	**CSI and Dispatchers**
45	10%		25	35%
46	10%		26	30%
47	10%		27	30%
48	10%		28	30%
49	10%		29	30%
50	10%	20%	30	30%
51	10%	20%	31	30%
52	10%	20%	32	30%
53	10%	20%	33	30%
54	10%	20%	34	40%
55	10%	20%	35	100%
56	10%	20%	36	100%
57	10%	20%	37	100%
58	10%	20%	38	100%
59	10%	20%	39	100%
60	10%	20%	40	100%
61	10%	20%	41	100%
62	30%	20%	42	100%
63	10%	20%	43	100%
64	10%	25%	44	100%
65	100%	30%	45	100%
66	100%	25%	46	100%
67	100%	25%	47	100%
68	100%	25%	48	100%
69	100%	40%	49	100%
70	100%	100%	50	100%
Ref	572	210	Ref	358

Probabilities of retirement (continued): Management, and Elected Officials before January 1, 1999 and members of Court Supervisors before April 1, 2002 are eligible to retire once the sum of their age and credited service equals 75 or more or at age 60 with 5 years of service. Dispatchers and CSI are eligible to retire once they have completed 25 years of service regardless of age (30 years for CSO). All other members are eligible for retirement after attaining age 55 with 25 years of service. All members are eligible at age 60 with 8 (10 years for CSI) or more years of service. Retirement probabilities for Dispatch are adjusted due to the DROP plan as follows:

- Probabilities are multiplied by 50% for each of the first 5 years of eligibility.
- Probabilities are multiplied by 150% for each of the next 5 years of eligibility.
- Resulting probabilities cannot be more than 100%.
- Probabilities are 100% upon attainment of 33 years of service.

Withdrawal Rates: Separations from active employment before retirement, death or disability:

Sample Ages	Years of Service	% of Active Members Separating Within Next Year
ALL	0	10.0%
	1	8.0%
	2	7.0%
	3	6.0%
	4	5.0%
20	5 & Over	6.0%
25		6.0%
30		5.1%
35		4.4%
40		3.2%
45		2.1%
50		1.7%
55		1.7%
60		1.7%
Ref	587	85

The mortality table used to measure pre and post-retirement mortality was the RP-2000 Combined Healthy Mortality Table projected 17 years using scale BB. This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. 100% percent of pre-retirement deaths were assumed to be non-duty related and 0% were assumed to be duty related. Disability post-retirement mortality was assumed to be the same as standard post-retirement mortality set forward an additional 10 years. The membership size in this group is not sufficiently large to determine if there is a margin for mortality improvements. Based on our extensive experience with a broad cross section of public sector plans, it is our opinion this assumption provides a margin for future mortality improvement. This assumption was last updated for the December 31, 2013 valuation. The rationale for this base mortality table and projection scale is its common use by larger public sector plans covering similar employees and large enough to develop credible mortality experience.

Sample Attained Ages	Single Life Retirement Values			
	Present Value of $1 Monthly for Life		Future Life Expectancy (years)	
	Men	Women	Men	Women
45	$157.89	$160.75	37.37	40.05
50	151.53	155.21	32.66	35.29
55	143.31	147.98	28.05	30.61
60	133.15	138.76	23.61	26.04
65	120.99	127.52	19.42	21.70
70	106.84	114.52	15.53	17.68
75	90.95	99.97	12.00	14.02
80	65.26	84.14	8.93	10.76
Ref:	717 x 1.00	718 x 1.00		

Disability Rates: This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit being made after retirement.

Sample Ages	Probability of Becoming Disabled Within the Next Year		
	Men	Women	
20	0.07%	0.03%	
25	0.09%	0.05%	
30	0.10%	0.07%	
35	0.14%	0.13%	
40	0.21%	0.19%	
45	0.32%	0.28%	
50	0.52%	0.45%	
55	0.92%	0.76%	
60	1.53%	1.10%	
Ref	33 x 1.00	34 x 1.00	

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
DECEMBER 31, 2015

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year in the middle of the year (coincident with timing of decrements).
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and mortality decrements do not operate during the first five years of service. Disability and withdrawal decrements do not operate during retirement eligibility.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.
Option Factors:	Option factors are based upon 7.0% interest and the 1971 Group Annuity Mortality Table with a 90% Male/10% Female Blend.
Incidence of Contributions:	Contributions are assumed to be received at the end of the year based upon the computed dollar amount of contributions shown in the report.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Accrued Service. The service credited under the plan, which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for the future service and salary. The termination liability will generally be less than the liabilities computed on a "going-concern" basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."

Funding Value of Assets (also referred to as valuation assets or actuarial value of assets). The value of current plan assets recognized for valuation purposes.

Value of $1,000/month Retirement Benefit to an Individual Who Retires at Age 55 in an Environment of 4.5% Inflation

Age	Monthly Benefit
55	$1,000
56	957
57	916
58	876
59	839
60	802
65	644
70	517
75	415
80	333
85	267

The life expectancy of a 55-year-old male retiree is to age 83. The life expectancy for a 55-year-old female retiree is to age 86. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age.