

***Macomb Township Act 345  
Fire Retirement System***

*Actuarial Information for GASB Statements 67/68*

*June 30, 2016*



October 4, 2016

The Retirement Board  
Macomb Township Act 345 Fire Retirement System  
Macomb Township, Michigan 48042

Dear Board Members:

This document contains actuarial information required for Plan reporting purposes pursuant to Governmental Accounting Standards Board Statements No. 67/68 effective for the Fiscal Year ended June 30, 2016.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Denise M. Jones'.

Denise M. Jones  
Senior Consultant

A handwritten signature in blue ink that reads 'Sandra W. Rodwan'.

Sandra W. Rodwan  
Member, American Academy of Actuaries

**Net Pension Liability**

The components of the net pension liability at June 30, 2016 were as follows:

Total pension liability	\$2,726,731
Plan fiduciary net position	2,461,901
Township's net pension liability	264,830
Plan fiduciary net position as a percentage of the total pension liability	90.29%
Covered Payroll	\$506,370
Township's net pension liability as a percentage of projected covered payroll	52.3%

**Actuarial assumptions.** The total pension liability was determined based on the annual actuarial valuation as of June 30, 2016. The following actuarial assumptions were applied to compute the total pension liability:

Actuarial Cost Method	Entry Age
Inflation	3.00%
Salary Increases	3.0%-6.8% (includes inflation)
Cost of living assumption adjustments	None

Mortality rates were based on the RP 2014 Healthy Annuitant Mortality Table.

**Discount rate.** The discount rate used to measure the total pension liability was 5.0%. The projection of cash flows used to determine the discount rate assumed that member contributions will be made at the current contribution rate and that Township Contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the 5.0% long term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

**Sensitivity of the net pension liability to changes in the discount rate.** The following presents the Township’s net pension liability, calculated using the discount rate of 5.0%, as well as what the Township’s net pension liability would be if it were calculated using a discount rate that is 1% lower (4.0%) or 1% higher (6.0%) than the current rate:

	<b>1% Decrease Rate 4.0%</b>	<b>Computed GASB 67/68 Rate 5.0%</b>	<b>1% Increase Rate 6.0%</b>
Township’s net pension liability	\$608,488	\$264,830	\$(20,933)

**Schedule of Changes in the City's Net Pension Liability and Related Ratios**

	<b>Year Ended</b> <b>6/30/2016</b>
Total pension liability	
Service cost	\$132,825
Interest	138,699
Changes in benefit terms	-
Differences between expected and actual experience	(175,330)
Changes of assumptions	-
Benefit payments, including refunds of member contributions	(154,056)
Net change in total pension liability	(57,862)
Total pension liability-beginning	2,784,593
Total pension liability-ending (a)	2,726,731
Plan fiduciary net position	
Contributions-employer	230,009
Contributions-member	32,417
Net investment income	(78,706)
Benefit payments, including refunds of member contributions	(154,056)
Administrative Expense	(5,612)
Other	-
Net change in plan fiduciary net position	24,052
Plan fiduciary net position-beginning	2,437,849
Plan fiduciary net position-ending (b)	2,461,901
City's net pension liability-ending (a)-(b)	264,830
Plan fiduciary net position as a percentage of the total pension liability	90.29%
Covered Payroll	\$506,370
City's net pension liability as a percentage of covered employee payroll	52.3%

**Additional Required Disclosures**

	<u>06/30/2016</u>
Total expected remaining service lives	
Active Participants	92.4
Inactive Participants	0
(a) Total expected remaining service lives	92.4
Number of Participants	
Active	7
Inactive	4
(b) Total	11
(c) Average of expected remaining service lives of all active and inactive participants (a)/(b)	8.4
(d1) Difference between expected and actual demographic experience	\$(175,330)
(d2) Portion allocated to expense (d1)/(c)	(20,873)
(d3) Deferred portion (d1)-(d2)	(154,457)
(e1) Changes in assumptions	-
(e2) Portion allocated to expense (e1)/(c)	-
(e3) Deferred portion (e1)-(e2)	-
(f1) Difference between expected and actual investment experience	203,167
(f2) Portion allocated to expense (f1)/(5)	40,633
(f3) Deferred portion (f1)-(f2)	162,534
(g) Total Deferred Portion	\$8,077

**SCHEDULE OF CITY CONTRIBUTIONS**

**LAST 10 FISCAL YEARS**

**(Dollar Amounts in Thousands)**

**Year Ended June 30**

	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>	<b>2008</b>	<b>2007</b>
Actuarially determined contribution	\$230	\$105	\$137	\$133	\$98	\$93	\$185	\$176	\$146	\$139
Contributions in relation to the actuarially determined contribution	230	219	212	N/A	205	33	215	N/A	139	153
Contribution excess (deficiency)	-	114	75	N/A	107	(60)	30	N/A	(7)	14
Covered employee payroll	\$506	\$626	\$609	N/A	\$521	N/A	\$476	N/A	\$638	N/A
Actuarially determined contributions as a percentage of covered employee payroll	45.45%	34.98%	22.42%	N/A	18.82%	N/A	38.82%	N/A	22.88%	N/A

**Notes to Schedule**

Valuation date: June 30, 2016  
 Actuarially determined contribution rates are calculated bi-annually as of June 30.  
 Covered employee payroll is as of June 30 of the current fiscal year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, closed
Remaining amortization period	5 years as of the June 30, 2016 actuarial valuation
Asset valuation method	Market
Inflation	3.0%
Salary increases	6.8% - 3.0%, including inflation
Investment rate of return	5.0%, net of pension plan investment expense, including inflation
Mortality Table	1971 Group Annuity Mortality Table projected to 1984.

**Table 1**  
**Projection of Total Contributions\***  
**Assuming 5 Year Closed Amortization of UAAL**

<b>Year Beg. 7/1</b>	<b>Projected Entry Age AAL</b>	<b>Projected Funding Value of Assets</b>	<b>UAAL</b>	<b>5 Year Closed Amortization</b>	<b>Projected Employer Normal Cost</b>	<b>Employer Contribution</b>	<b>Employee Contribution</b>	<b>Total Contributions</b>
2016	\$2,475,492	\$2,461,901	\$13,591	\$2,851	\$75,813	\$78,664	\$27,008	\$105,672
2017	2,462,878	2,523,571	(60,693)	(15,764)	77,410	61,646	27,538	89,184
2018	2,532,625	2,571,951	(39,326)	(13,490)	79,471	65,981	28,187	94,168
2019	2,609,948	2,628,426	(18,478)	(9,418)	82,054	72,636	28,950	101,586
2020	2,695,608	2,695,574	34	34	84,592	84,626	29,698	114,324
2021	2,790,548	2,779,960	10,588	10,690	88,311	99,001	26,476	125,477
2022	2,892,473	2,880,772	11,701	11,814	90,971	102,785	27,256	130,041
2023	3,005,043	2,992,403	12,640	12,762	93,631	106,393	28,034	134,427
2024	3,128,546	3,114,942	13,604	13,735	96,214	109,949	28,787	138,736
2025	3,263,301	3,248,748	14,553	14,693	98,565	113,258	29,476	142,734
2026	3,409,917	3,394,475	15,442	15,591	87,529	103,120	26,169	129,289
2027	3,532,214	3,513,227	18,987	19,170	89,642	108,812	26,776	135,588
2028	3,666,015	3,646,054	19,961	20,154	91,675	111,829	27,352	139,181
2029	3,811,318	3,790,460	20,858	21,059	93,617	114,676	27,902	142,578
2030	3,968,935	3,947,193	21,742	21,952	83,148	105,100	23,802	128,902
2031	4,092,106	4,065,204	26,902	27,162	84,502	111,664	24,178	135,842
2032	4,226,030	4,198,134	27,896	28,165	65,054	93,219	17,037	110,256
2033	4,284,453	4,247,235	37,218	37,577	66,113	103,690	17,312	121,002
2034	4,351,677	4,313,318	38,359	38,729	43,361	82,090	10,685	92,775



**Table 1**  
**(Continued)**  
**Projection of Total Contributions\***  
**Assuming 5 Year Closed Amortization of UAAL**

<b>Year Beg. 7/1</b>	<b>Projected Entry Age AAL</b>	<b>Projected Funding Value of Assets</b>	<b>UAAL</b>	<b>5 Year Closed Amortization</b>	<b>Projected Employer Normal Cost</b>	<b>Employer Contribution</b>	<b>Employee Contribution</b>	<b>Total Contributions</b>
2035	\$4,337,314	\$4,289,175	\$48,139	\$48,603	\$22,419	\$71,022	\$5,796	\$76,818
2036	4,253,666	4,196,977	56,689	57,236	22,741	79,977	5,879	85,856
2037	4,173,593	4,115,763	57,830	58,388	23,050	81,438	5,959	87,397
2038	4,097,418	4,038,874	58,544	59,109	23,347	82,456	6,036	88,492
2039	4,025,417	3,966,537	58,880	59,448	23,629	83,077	6,109	89,186
2040	3,957,811	3,899,016	58,795	59,362	-	59,362	-	59,362
2041	3,793,688	3,724,617	69,071	69,737	-	69,737	-	69,737
2042	3,630,793	3,561,951	68,842	69,506	-	69,506	-	69,506
2043	3,469,220	3,401,041	68,179	68,837	-	68,837	-	68,837
2044	3,309,021	3,241,705	67,316	67,965	-	67,965	-	67,965
2045	3,150,231	3,083,851	66,380	67,020	-	67,020	-	67,020
2046	2,992,876	2,927,394	65,482	66,114	-	66,114	-	66,114
2047	2,836,964	2,772,253	64,711	65,335	-	65,335	-	65,335
2048	2,682,517	2,618,352	64,165	64,784	-	64,784	-	64,784
2049	2,529,565	2,465,679	63,886	64,502	-	64,502	-	64,502
2050	2,378,174	2,314,260	63,914	64,531	-	64,531	-	64,531
2051	2,228,477	2,164,202	64,275	64,895	-	64,895	-	64,895
2052	2,080,686	2,015,713	64,973	65,600	-	65,600	-	65,600
2053	1,935,090	1,869,120	65,970	66,606	-	66,606	-	66,606
2054	1,792,034	1,724,846	67,188	67,836	-	67,836	-	67,836

**Table 1**  
**(Continued)**  
**Projection of Total Contributions\***  
**Assuming 5 Year Closed Amortization of UAAL**

<b>Year Beg. 7/1</b>	<b>Projected Entry Age AAL</b>	<b>Projected Funding Value of Assets</b>	<b>UAAL</b>	<b>5 Year Closed Amortization</b>	<b>Projected Employer Normal Cost</b>	<b>Employer Contribution</b>	<b>Employee Contribution</b>	<b>Total Contributions</b>
2055	\$1,651,935	\$1,583,387	\$68,548	\$69,209	\$ -	\$69,209	\$ -	\$69,209
2056	1,515,252	1,445,313	69,939	70,614	-	70,614	-	70,614
2057	1,382,487	1,311,240	71,247	71,934	-	71,934	-	71,934
2058	1,254,171	1,181,805	72,366	73,064	-	73,064	-	73,064
2059	1,130,855	1,057,656	73,199	73,905	-	73,905	-	73,905
2060	1,013,058	939,436	73,622	74,332	-	74,332	-	74,332
2061	901,281	827,731	73,550	74,260	-	74,260	-	74,260
2062	795,961	723,067	72,894	73,597	-	73,597	-	73,597
2063	697,478	625,877	71,601	72,292	-	72,292	-	72,292
2064	606,135	536,488	69,647	70,319	-	70,319	-	70,319
2065	522,138	455,114	67,024	67,671	-	67,671	-	67,671
2066	445,598	381,821	63,777	64,392	-	64,392	-	64,392
2067	376,517	316,551	59,966	60,544	-	60,544	-	60,544
2068	314,797	259,100	55,697	56,234	-	56,234	-	56,234
2069	260,245	209,159	51,086	51,579	-	51,579	-	51,579
2070	212,590	166,313	46,277	46,723	-	46,723	-	46,723
2071	171,468	130,084	41,384	41,783	-	41,783	-	41,783
2072	136,451	99,928	36,523	36,875	-	36,875	-	36,875
2073	107,039	75,245	31,794	32,101	-	32,101	-	32,101
2074	82,694	55,397	27,297	27,560	-	27,560	-	27,560

**Table 1**  
**(Continued)**  
**Projection of Total Contributions\***  
**Assuming 5 Year Closed Amortization of UAAL**

<b>Year Beg. 7/1</b>	<b>Projected Entry Age AAL</b>	<b>Projected Funding Value of Assets</b>	<b>UAAL</b>	<b>5 Year Closed Amortization</b>	<b>Projected Employer Normal Cost</b>	<b>Employer Contribution</b>	<b>Employee Contribution</b>	<b>Total Contributions</b>
2075	\$62,848	\$39,750	\$23,098	\$23,321	\$ -	\$23,321	\$ -	\$23,321
2076	46,928	27,673	19,255	19,441	-	19,441	-	19,441
2077	34,371	18,562	15,809	15,962	-	15,962	-	15,962
2078	24,645	11,865	12,780	12,903	-	12,903	-	12,903
2079	17,269	7,087	10,182	10,280	-	10,280	-	10,280
2080	11,801	3,813	7,988	8,065	-	8,065	-	8,065
2081	7,851	1,676	6,175	6,235	-	6,235	-	6,235
2082	5,068	379	4,689	4,734	-	4,734	-	4,734
2083	3,160	-	3,160	3,190	-	3,190	-	3,190
2084	1,894	-	1,894	1,912	-	1,912	-	1,912
2085	1,085	-	1,085	1,095	-	1,095	-	1,095
2086	587	-	587	593	-	593	-	593
2087	298	-	298	301	-	301	-	301
2088	139	-	139	140	-	140	-	140
2089	59	-	59	60	-	60	-	60
2090	22	-	22	22	-	22	-	22
2091	7	-	7	7	-	7	-	7
2092	2	-	2	2	-	2	-	2
2093	-	-	-	-	-	-	-	-
2094	-	-	-	-	-	-	-	-

**Table 1**  
**(Continued)**  
**Projection of Total Contributions\***  
**Assuming 5 Year Closed Amortization of UAAL**

<b>Year Beg. 7/1</b>	<b>Projected Entry Age AAL</b>	<b>Projected Funding Value of Assets</b>	<b>UAAL</b>	<b>5 Year Closed Amortization</b>	<b>Projected Employer Normal Cost</b>	<b>Employer Contribution</b>	<b>Employee Contribution</b>	<b>Total Contributions</b>
2095	\$ -	\$-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2096	-	-	-	-	-	-	-	-
2097	-	-	-	-	-	-	-	-
2098	-	-	-	-	-	-	-	-
2099	-	-	-	-	-	-	-	-
2100	-	-	-	-	-	-	-	-
2101	-	-	-	-	-	-	-	-
2102	-	-	-	-	-	-	-	-
2103	-	-	-	-	-	-	-	-
2104	-	-	-	-	-	-	-	-
2105	-	-	-	-	-	-	-	-
2106	-	-	-	-	-	-	-	-
2107	-	-	-	-	-	-	-	-
2108	-	-	-	-	-	-	-	-
2109	-	-	-	-	-	-	-	-
2110	-	-	-	-	-	-	-	-
2111	-	-	-	-	-	-	-	-
2112	-	-	-	-	-	-	-	-
2113	-	-	-	-	-	-	-	-
2114	-	-	-	-	-	-	-	-
2115	-	-	-	-	-	-	-	-

\*The Projection of Contributions uses the plan's actuarial valuation interest and mortality assumptions.

**Table 2: Projection of the Pension Plan's Fiduciary Net Position**

<b>Year Beg. 7/1</b>	<b>Projected Beginning Fiduciary Net Position (a)</b>	<b>Projected Total Contributions* (b)</b>	<b>Projected Benefit Payments** (c)</b>	<b>Projected Administrative Expense*** (d)</b>	<b>Projected Investment Earnings**** (e)</b>	<b>Projected Fiduciary Ending Net Position (a)+(b)+( c)+(d)+(e)</b>
2016	\$2,461,901	\$105,672	\$(159,987)	\$(5,612)	\$121,597	\$2,523,571
2017	2,523,571	89,184	(159,490)	(5,595)	124,281	2,571,951
2018	2,571,951	94,168	(158,955)	(5,576)	126,838	2,628,426
2019	2,628,426	101,586	(158,724)	(5,568)	129,854	2,695,574
2020	2,695,574	114,324	(157,948)	(5,540)	133,550	2,779,960
2021	2,779,960	125,477	(157,217)	(5,515)	138,067	2,880,772
2022	2,880,772	130,041	(156,180)	(5,478)	143,248	2,992,403
2023	2,992,403	134,427	(155,397)	(5,451)	148,960	3,114,942
2024	3,114,942	138,736	(154,715)	(5,427)	155,212	3,248,748
2025	3,248,748	142,734	(153,647)	(5,390)	162,030	3,394,475
2026	3,394,475	129,289	(172,951)	(6,067)	168,481	3,513,227
2027	3,513,227	135,588	(171,367)	(6,011)	174,617	3,646,054
2028	3,646,054	139,181	(170,183)	(5,970)	181,378	3,790,460
2029	3,790,460	142,578	(168,652)	(5,916)	188,723	3,947,193
2030	3,947,193	128,902	(199,323)	(6,992)	195,424	4,065,204
2031	4,065,204	135,842	(197,528)	(6,929)	201,545	4,198,134
2032	4,198,134	110,256	(258,087)	(9,053)	205,985	4,247,235
2033	4,247,235	121,002	(254,776)	(8,937)	208,794	4,313,318
2034	4,313,318	92,775	(315,662)	(11,073)	209,817	4,289,175

**Table 2: Projection of the Pension Plan's Fiduciary Net Position**  
(Continued)

Year Beg. 7/1	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions* (b)	Projected Benefit Payments** (c)	Projected Administrative Expense*** (d)	Projected Investment Earnings**** (e)	Projected Fiduciary Ending Net Position (a)+(b)+(c)+(d)+(e)
2035	\$4,289,175	\$76,818	\$(363,253)	\$(12,742)	\$206,979	\$4,196,977
2036	4,196,977	85,856	(357,287)	(12,533)	202,750	4,115,763
2037	4,115,763	87,397	(350,872)	(12,308)	198,894	4,038,874
2038	4,038,874	88,492	(344,016)	(12,067)	195,254	3,966,537
2039	3,966,537	89,186	(336,738)	(11,812)	191,843	3,899,016
2040	3,899,016	59,362	(405,480)	(14,223)	185,942	3,724,617
2041	3,724,617	69,737	(396,225)	(13,899)	177,721	3,561,951
2042	3,561,951	69,506	(386,681)	(13,564)	169,829	3,401,041
2043	3,401,041	68,837	(376,968)	(13,223)	162,018	3,241,705
2044	3,241,705	67,965	(367,220)	(12,881)	154,282	3,083,851
2045	3,083,851	67,020	(357,551)	(12,542)	146,616	2,927,394
2046	2,927,394	66,114	(348,062)	(12,209)	139,016	2,772,253
2047	2,772,253	65,335	(338,829)	(11,885)	131,478	2,618,352
2048	2,618,352	64,784	(329,886)	(11,572)	124,001	2,465,679
2049	2,465,679	64,502	(321,237)	(11,268)	116,584	2,314,260
2050	2,314,260	64,531	(312,846)	(10,974)	109,231	2,164,202
2051	2,164,202	64,895	(304,647)	(10,686)	101,949	2,015,713
2052	2,015,713	65,600	(296,543)	(10,402)	94,752	1,869,120
2053	1,869,120	66,606	(288,421)	(10,117)	87,658	1,724,846
2054	1,724,846	67,836	(280,157)	(9,827)	80,689	1,583,387

**Table 2: Projection of the Pension Plan's Fiduciary Net Position**  
(Continued)

<b>Year Beg. 7/1</b>	<b>Projected Beginning Fiduciary Net Position (a)</b>	<b>Projected Total Contributions* (b)</b>	<b>Projected Benefit Payments** (c)</b>	<b>Projected Administrative Expense*** (d)</b>	<b>Projected Investment Earnings**** (e)</b>	<b>Projected Fiduciary Ending Net Position (a)+(b)+( c)+(d)+(e)</b>
2055	\$1,583,387	\$69,209	\$(271,626)	\$(9,528)	\$73,871	\$1,445,313
2056	1,445,313	70,614	(262,705)	(9,215)	67,233	1,311,240
2057	1,311,240	71,934	(253,290)	(8,885)	60,806	1,181,805
2058	1,181,805	73,064	(243,300)	(8,534)	54,621	1,057,656
2059	1,057,656	73,905	(232,673)	(8,162)	48,710	939,436
2060	939,436	74,332	(221,374)	(7,765)	43,102	827,731
2061	827,731	74,260	(209,403)	(7,345)	37,824	723,067
2062	723,067	73,597	(196,785)	(6,903)	32,901	625,877
2063	625,877	72,292	(183,591)	(6,440)	28,350	536,488
2064	536,488	70,319	(169,918)	(5,960)	24,185	455,114
2065	455,114	67,671	(155,908)	(5,469)	20,413	381,821
2066	381,821	64,392	(141,724)	(4,971)	17,033	316,551
2067	316,551	60,544	(127,560)	(4,475)	14,040	259,100
2068	259,100	56,234	(113,611)	(3,985)	11,421	209,159
2069	209,159	51,579	(100,073)	(3,510)	9,158	166,313
2070	166,313	46,723	(87,125)	(3,056)	7,229	130,084
2071	130,084	41,783	(74,921)	(2,628)	5,610	99,928
2072	99,928	36,875	(63,600)	(2,231)	4,273	75,245
2073	75,245	32,101	(53,267)	(1,868)	3,186	55,397
2074	55,397	27,560	(43,985)	(1,543)	2,321	39,750

**Table 2: Projection of the Pension Plan's Fiduciary Net Position**  
(Continued)

<b>Year Beg. 7/1</b>	<b>Projected Beginning Fiduciary Net Position (a)</b>	<b>Projected Total Contributions* (b)</b>	<b>Projected Benefit Payments** (c)</b>	<b>Projected Administrative Expense*** (d)</b>	<b>Projected Investment Earnings**** (e)</b>	<b>Projected Fiduciary Ending Net Position (a)+(b)+( c)+(d)+(e)</b>
2075	\$39,750	\$23,321	\$(35,787)	\$(1,255)	\$1,644	\$27,673
2076	27,673	19,441	(28,674)	(1,006)	1,128	18,562
2077	18,562	15,962	(22,608)	(793)	742	11,865
2078	11,865	12,903	(17,528)	(615)	462	7,087
2079	7,087	10,280	(13,352)	(468)	266	3,813
2080	3,813	8,065	(9,986)	(350)	134	1,676
2081	1,676	6,235	(7,325)	(257)	50	379
2082	379	4,734	(5,266)	(185)	1	-
2083	-	3,190	(3,707)	(130)	-	-
2084	-	1,912	(2,552)	(90)	-	-
2085	-	1,095	(1,716)	(60)	-	-
2086	-	593	(1,125)	(39)	-	-
2087	-	301	(720)	(25)	-	-
2088	-	140	(447)	(16)	-	-
2089	-	60	(271)	(10)	-	-
2090	-	22	(161)	(6)	-	-
2091	-	7	(90)	(3)	-	-
2092	-	2	(51)	(2)	-	-
2093	-	-	(28)	(1)	-	-
2094	-	-	(15)	(1)	-	-



**Table 2: Projection of the Pension Plan's Fiduciary Net Position  
(Continued)**

<b>Year Beg. 7/1</b>	<b>Projected Beginning Fiduciary Net Position (a)</b>	<b>Projected Total Contributions* (b)</b>	<b>Projected Benefit Payments** (c)</b>	<b>Projected Administrative Expense*** (d)</b>	<b>Projected Investment Earnings**** (e)</b>	<b>Projected Fiduciary Ending Net Position (a)+(b)+( c)+(d)+(e)</b>
2095	\$ -	\$ -	\$(7)	\$ -	\$ -	\$ -
2096	-	-	(4)	-	-	-
2097	-	-	(2)	-	-	-
2098	-	-	(1)	-	-	-
2099	-	-	-	-	-	-
2100	-	-	-	-	-	-
2101	-	-	-	-	-	-
2102	-	-	-	-	-	-
2103	-	-	-	-	-	-
2104	-	-	-	-	-	-
2105	-	-	-	-	-	-
2106	-	-	-	-	-	-
2107	-	-	-	-	-	-
2108	-	-	-	-	-	-
2109	-	-	-	-	-	-
2110	-	-	-	-	-	-
2111	-	-	-	-	-	-
2112	-	-	-	-	-	-
2113	-	-	-	-	-	-
2114	-	-	-	-	-	-
2115	-	-	-	-	-	-

\*From Table 1.

\*\*Assumed Mortality for Benefit Payout Projection was based on the RP 2014 Mortality Table.

\*\*\*Administrative expense was assumed to be 3.51% of pension payroll.

\*\*\*\*Assumed rate of return used to project the Fiduciary Net Position was 5.00%.

**Table 3: Actuarial Present Values of Projected Benefit Payments**

Year (a)	Projected Beginning Fiduciary Net Position* (b)	Projected Benefit Payments* (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of "Funded" Benefits Payments** (f)	Present Value of "Unfunded" Benefit Payments*** (g)=(e)/(1+x.xx%)^(a)	Present Value Using the Single Discount Rate**** (h) = (c)/(1 + y.yy%)^(a)
1	\$2,461,901	\$159,987	\$159,987	\$ -	\$152,369	\$ -	\$152,380
2	2,523,571	159,490	159,490	-	144,662	-	144,683
3	2,571,951	158,955	158,955	-	137,311	-	137,341
4	2,628,426	158,724	158,724	-	130,583	-	130,621
5	2,695,574	157,948	157,948	-	123,756	-	123,801
6	2,779,960	157,217	157,217	-	117,318	-	117,369
7	2,880,772	156,180	156,180	-	110,994	-	111,051
8	2,992,403	155,397	155,397	-	105,179	-	105,240
9	3,114,942	154,715	154,715	-	99,731	-	99,796
10	3,248,748	153,647	153,647	-	94,326	-	94,394
11	3,394,475	172,951	172,951	-	101,121	-	101,202
12	3,513,227	171,367	171,367	-	95,424	-	95,507
13	3,646,054	170,183	170,183	-	90,252	-	90,337
14	3,790,460	168,652	168,652	-	85,181	-	85,267
15	3,947,193	199,323	199,323	-	95,878	-	95,982
16	4,065,204	197,528	197,528	-	90,490	-	90,595
17	4,198,134	258,087	258,087	-	112,603	-	112,741
18	4,247,235	254,776	254,776	-	105,865	-	106,003
19	4,313,318	315,662	315,662	-	124,918	-	125,090
20	4,289,175	363,253	363,253	-	136,906	-	137,105
21	4,196,977	357,287	357,287	-	128,245	-	128,441
22	4,115,763	350,872	350,872	-	119,946	-	120,137
23	4,038,874	344,016	344,016	-	112,002	-	112,189
24	3,966,537	336,738	336,738	-	104,412	-	104,593

**Table 3: Actuarial Present Values of Projected Benefit Payments**  
(Continued)

Year (a)	Projected Beginning Fiduciary Net Position* (b)	Projected Benefit Payments* (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of "Funded" Benefits Payments** (f)	Present Value of "Unfunded" Benefit Payments*** (g)=(e)/(1+x.xx%)^(a)	Present Value Using the Single Discount Rate**** (h) = (c)/(1 + y.yy%)^(a)
25	\$3,899,016	\$405,480	\$405,480	\$ -	\$119,739	\$ -	\$119,957
26	3,724,617	396,225	396,225	-	111,435	-	111,645
27	3,561,951	386,681	386,681	-	103,572	-	103,775
28	3,401,041	376,968	376,968	-	96,162	-	96,358
29	3,241,705	367,220	367,220	-	89,215	-	89,403
30	3,083,851	357,551	357,551	-	82,729	-	82,909
31	2,927,394	348,062	348,062	-	76,699	-	76,871
32	2,772,253	338,829	338,829	-	71,109	-	71,274
33	2,618,352	329,886	329,886	-	65,935	-	66,093
34	2,465,679	321,237	321,237	-	61,149	-	61,300
35	2,314,260	312,846	312,846	-	56,716	-	56,860
36	2,164,202	304,647	304,647	-	52,600	-	52,737
37	2,015,713	296,543	296,543	-	48,762	-	48,893
38	1,869,120	288,421	288,421	-	45,168	-	45,293
39	1,724,846	280,157	280,157	-	41,785	-	41,903
40	1,583,387	271,626	271,626	-	38,583	-	38,695
41	1,445,313	262,705	262,705	-	35,539	-	35,645
42	1,311,240	253,290	253,290	-	32,634	-	32,733
43	1,181,805	243,300	243,300	-	29,854	-	29,947
44	1,057,656	232,673	232,673	-	27,190	-	27,277

**Table 3: Actuarial Present Values of Projected Benefit Payments**  
(Continued)

Year (a)	Projected Beginning Fiduciary Net Position* (b)	Projected Benefit Payments* (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of "Funded" Benefits Payments** (f)	Present Value of "Unfunded" Benefit Payments*** (g)=(e)/(1+x.xx%)^(a)	Present Value Using the Single Discount Rate**** (h) = (c)/(1 + y.yy%)^(a)
45	\$939,436	\$221,374	\$221,374	\$ -	\$24,638	\$ -	\$24,719
46	827,731	209,403	209,403	-	22,196	-	22,270
47	723,067	196,785	196,785	-	19,865	-	19,933
48	625,877	183,591	183,591	-	17,651	-	17,712
49	536,488	169,918	169,918	-	15,558	-	15,614
50	455,114	155,908	155,908	-	13,596	-	13,645
51	381,821	141,724	141,724	-	11,770	-	11,814
52	316,551	127,560	127,560	-	10,090	-	10,128
53	259,100	113,611	113,611	-	8,558	-	8,591
54	209,159	100,073	100,073	-	7,180	-	7,208
55	166,313	87,125	87,125	-	5,953	-	5,977
56	130,084	74,921	74,921	-	4,875	-	4,895
57	99,928	63,600	63,600	-	3,942	-	3,958
58	75,245	53,267	53,267	-	3,144	-	3,157
59	55,397	43,985	43,985	-	2,472	-	2,483
60	39,750	35,787	35,787	-	1,916	-	1,924
61	27,673	28,674	27,673	1,001	1,411	199	1,468
62	18,562	22,608	18,562	4,046	901	785	1,103
63	11,865	17,528	11,865	5,663	549	1,070	814
64	7,087	13,352	7,087	6,265	312	1,153	591

**Table 3: Actuarial Present Values of Projected Benefit Payments**  
(Continued)

Year (a)	Projected Beginning Fiduciary Net Position* (b)	Projected Benefit Payments* (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of "Funded" Benefits Payments** (f)	Present Value of "Unfunded" Benefit Payments*** (g)=(e)/(1+x.xx%)^(a)	Present Value Using the Single Discount Rate**** (h) = (c)/(1 + y.yy%)^(a)
65	\$3,813	\$9,986	\$3,813	\$6,173	\$160	\$1,106	\$421
66	1,676	7,325	1,676	5,649	67	986	294
67	379	5,266	379	4,887	14	831	201
68	-	3,707	-	3,707	-	614	135
69	-	2,552	-	2,552	-	411	89
70	-	1,716	-	1,716	-	269	57
71	-	1,125	-	1,125	-	172	35
72	-	720	-	720	-	107	22
73	-	447	-	447	-	65	13
74	-	271	-	271	-	38	7
75	-	161	-	161	-	22	4
76	-	90	-	90	-	12	2
77	-	51	-	51	-	7	1
78	-	28	-	28	-	4	1
79	-	15	-	15	-	2	-
80	-	7	-	7	-	1	-
81	-	4	-	4	-	-	-
82	-	2	-	2	-	-	-
83	-	1	-	1	-	-	-
84	-	-	-	-	-	-	-

**Table 3: Actuarial Present Values of Projected Benefit Payments**  
(Continued)

Year (a)	Projected Beginning Fiduciary Net Position* (b)	Projected Benefit Payments* (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of "Funded" Benefits Payments** (f)	Present Value of "Unfunded" Benefit Payments*** (g)=(e)/(1+x.xx%)^(a)	Present Value Using the Single Discount Rate**** (h) = (c)/(1 + y.yy%)^(a)
85	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
86	-	-	-	-	-	-	-
87	-	-	-	-	-	-	-
88	-	-	-	-	-	-	-
89	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-
91	-	-	-	-	-	-	-
92	-	-	-	-	-	-	-
93	-	-	-	-	-	-	-
94	-	-	-	-	-	-	-
95	-	-	-	-	-	-	-
96	-	-	-	-	-	-	-
97	-	-	-	-	-	-	-
98	-	-	-	-	-	-	-
99	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-
					<b>\$4,182,865</b>	<b>\$7,854</b>	<b>\$4,190,719</b>

\* From Table 2.

\*\*5.00% was the assumed rate of return used to project the plan's fiduciary net position and is the discount rate used for column (f).

\*\*\*2.68% S&P Municipal Bond 20 Year High Grade Index as of June 30, 2016 (YTW).

\*\*\*\* 5.00% was the single discount rate that produces a total actuarial present value that equals the sum of the actuarial present values of "funded" and "unfunded" benefit payments in columns (f) and (g).