

**CITY OF ALLEN PARK EMPLOYEES RETIREMENT SYSTEM**  
**66<sup>TH</sup> ANNUAL ACTUARIAL VALUATION**  
**DECEMBER 31, 2014**

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June 10, 2015

The Board of Trustees  
City of Allen Park Employees Retirement System  
Allen Park, Michigan

Dear Board Members:

The results of the **66<sup>th</sup> Annual Actuarial Valuation** of the benefits provided by the City of Allen Park Employees Retirement System are presented in this report. The purposes of the valuation are to measure the System's funding progress and to determine an employer contribution rate for the next fiscal year. The results of the valuation may not be applicable for other purposes. Information required by the Governmental Accounting Standard Board Statement No. 67 and Statement No. 68 will be provided in a separate report.

The valuation was based upon information, furnished by your onsite Plante Moran contracted staff, concerning Retirement System benefits, financial transactions, and individual members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not otherwise audited. We are not responsible for the accuracy or completeness of the data provided. This information is summarized in Section B.

The date of the valuation was December 31, 2014.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and 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 of the potential range of such future measurements.

To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the Retirement System Ordinance. The actuarial assumptions used for the valuation are reasonable.

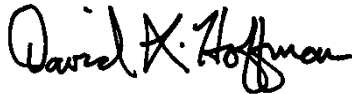
The Board of Trustees  
June 10, 2015  
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David Kausch is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The actuary is independent of the plan sponsor.

Respectfully submitted,



David T. Kausch, FSA, EA, MAAA



David L. Hoffman

DLH:clh

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## **SECTION A**

### **VALUATION RESULTS**

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**COMPUTED CONTRIBUTIONS FOR THE FISCAL  
YEAR BEGINNING JULY 1, 2015**

Contributions for	% of Active Member Payroll				Weighted Average
	General Members	Police-Fire Members	Water Department Members	Court Members	
Normal Cost					
Age and service	16.62 %	17.60 %	16.62 %	16.62 %	
Death before retirement	0.23 %	0.27 %	0.23 %	0.23 %	
Disability	1.63 %	1.75 %	1.63 %	1.63 %	
Future refunds	0.67 %	0.35 %	0.67 %	0.67 %	
Service Purchases	0.43 %	0.00 %	0.43 %	0.43 %	
Total	19.58 %	19.97 %	19.58 %	19.58 %	
Member Contributions	6.55 %#	7.53 %#	6.55 %#	6.55 %#	
City's Normal Cost	13.03 %	12.44 %	13.03 %	13.03 %	12.54 %
Unfunded Actuarial Accrued Liabilities*	71.85 %	21.42 %	71.85 %	71.85 %	35.31 %
<b>City's Total Contribution</b>	<b>84.88%</b>	<b>33.86%</b>	<b>84.88%</b>	<b>84.88%</b>	<b>47.85%</b>

\* Amortized as a level percent-of-payroll over a period of 24 years for the Police-Fire Members. Amortized as a level dollar amount over a period of 18 remaining years for the General (including Administrative and Appointees), Water Department, and Court Members (starting amortization period of 20 years). Total payroll as of December 31, 2014 was \$5,250,588 (\$1,490,451 for General groups, \$3,760,137 for Police-Fire groups).

# Weighted average of various contribution rates.

## COMPUTED CONTRIBUTIONS FOR THE FISCAL YEAR BEGINNING JULY 1, 2015

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### DETERMINING EMPLOYER DOLLAR CONTRIBUTIONS

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollars -- and then promptly contributed to the Retirement System.

There are alternate recommended administrative procedures for making contributions, described as follows:

**Procedure 1:** At the end of each payroll period, multiply the active member payroll for the period by the employer contribution percent, and then promptly contribute the dollar amount so determined. This procedure should be closely monitored as the payroll of closed groups decline.

**Procedure 2:** During each fiscal month, contribute the monthly dollar amount shown in the table below.

	Projected Annual Payroll	%	Dollar Contributions	
			Annual	Monthly
<b>General, Water &amp; Court</b>	\$1,484,403	84.88%	<b>\$1,259,962</b>	<b>\$104,997</b>
<b>Police &amp; Fire</b>	\$3,930,606	33.86%	<b>\$1,330,903</b>	<b>\$110,909</b>
<b>Total</b>	\$5,415,009	47.85%	<b>\$2,590,865</b>	<b>\$215,906</b>

For either procedure, if contributions are made on a later schedule, interest should be added at the rate of 0.583% (0.00583) for each month of delay.

It is our understanding that at the August 7, 2014 Board Meeting, the Board adopted to contribute based on Procedure 2 outlined above.

## VALUATION ASSETS AND ACTUARIAL ACCRUED LIABILITIES

*In financing the actuarial accrued liabilities*, valuation assets of \$80,950,032 were distributed as follows:

Reserves for	Present Assets Applied to			
	Member Actuarial Accrued Liabilities	Retired Life Liabilities*	Contingency Reserve	Totals
Members' Contributions				
General, Water and Court Members	\$ 2,507,409			\$ 2,507,409
Police & Fire	3,592,225			3,592,225
Totals	6,099,634			6,099,634
Employer Contributions				
General, Water and Court Members	(4,776,200)			(4,776,200)
Police & Fire	2,360,079			2,360,079
Totals	(2,416,121)			(2,416,121)
Retired Benefit Payments				
General, Water and Court Members		\$28,565,743		28,565,743
Police & Fire		48,700,776		48,700,776
Totals		77,266,519		77,266,519
<b>Totals</b>	<b>\$3,683,513</b>	<b>\$77,266,519</b>	<b>\$ none</b>	<b>\$80,950,032</b>

\* Based on the assumption that a reserve transfer will be made from the Employer Contribution Reserve to the Retiree Reserve, setting the Retiree Reserve equal to retired life liabilities.

Assets were applied against actuarial accrued liabilities in determining unfunded actuarial accrued liabilities as follows:

	Retired Lives	Active and Deferred Members	Total
Computed Actuarial Accrued Liabilities	\$77,266,519	\$27,101,500	\$104,368,019
Applied Assets	77,266,519	3,683,513	80,950,032
Unfunded Actuarial Accrued Liabilities	\$ 0	\$23,417,987	\$23,417,987



**DERIVATION OF EXPERIENCE GAIN (LOSS)  
YEAR ENDED DECEMBER 31, 2014**

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Actual experience will never (except by coincidence) coincide exactly with assumed experience. Gains and losses often 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.

(1)	UAAL* at start of year	\$ 24,391,752
(2)	Normal cost from last valuation	1,114,793
(3)	Actual contributions	5,454,518
(4)	Interest accrual: [(1) x .075] + [(2) - (3)] x .0375	1,666,642
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	21,718,669
(6)	Change from benefit modifications	(286,479)
(7)	Change from revised actuarial assumptions	6,927,822
(8)	Expected UAAL after changes: (5) + (6) + (7)	28,360,011
(9)	Actual UAAL at end of year	23,417,987
(10)	Gain (loss): (8) - (9)	4,942,024
(11)	Gain (loss) as percent of actuarial accrued liabilities at start of year (\$99,790,536)	5.0%

\* *Unfunded actuarial accrued liability.*

<b>Valuation Date December 31</b>	<b>Experience Gain (Loss) as % of Beginning Accrued Liability</b>
2004	(0.8%)
2005	(2.6%)
2006	1.0%
2007	(1.5%)
2008	(11.6%)
2009	(4.1%)
2010	(4.4%)
2011	(5.8%)
2012	1.7%
2013	5.5%
2014	5.0%

**SUMMARY STATEMENT OF SYSTEM  
RESOURCES AND OBLIGATIONS**

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**PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES**

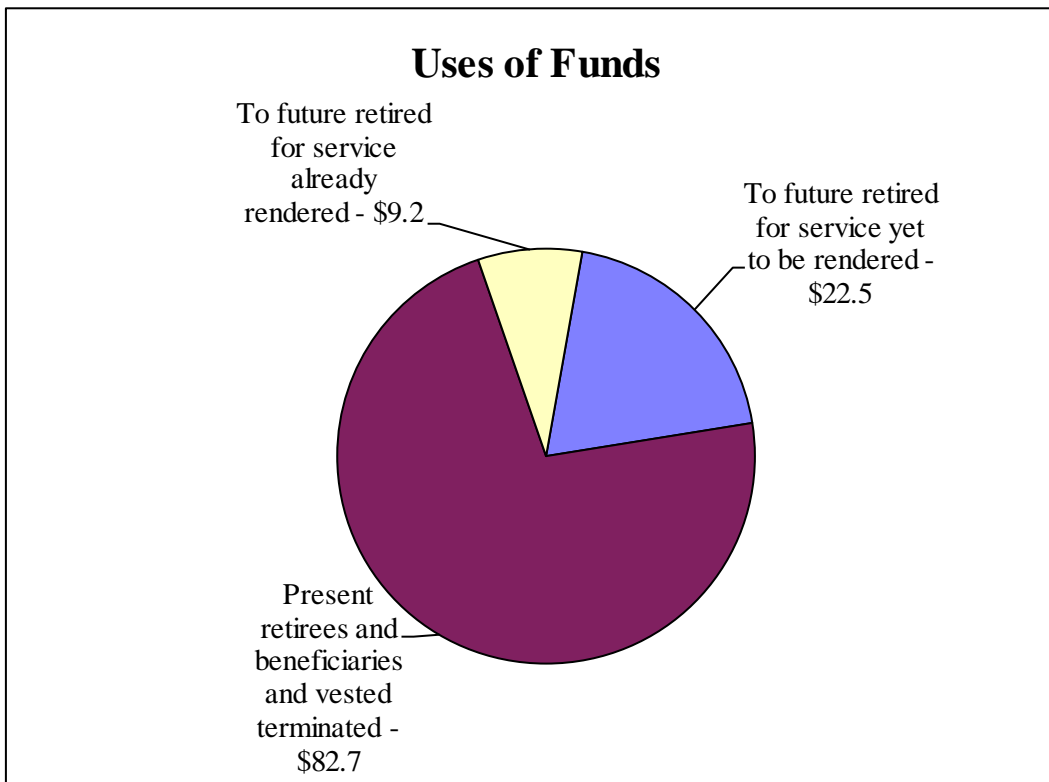
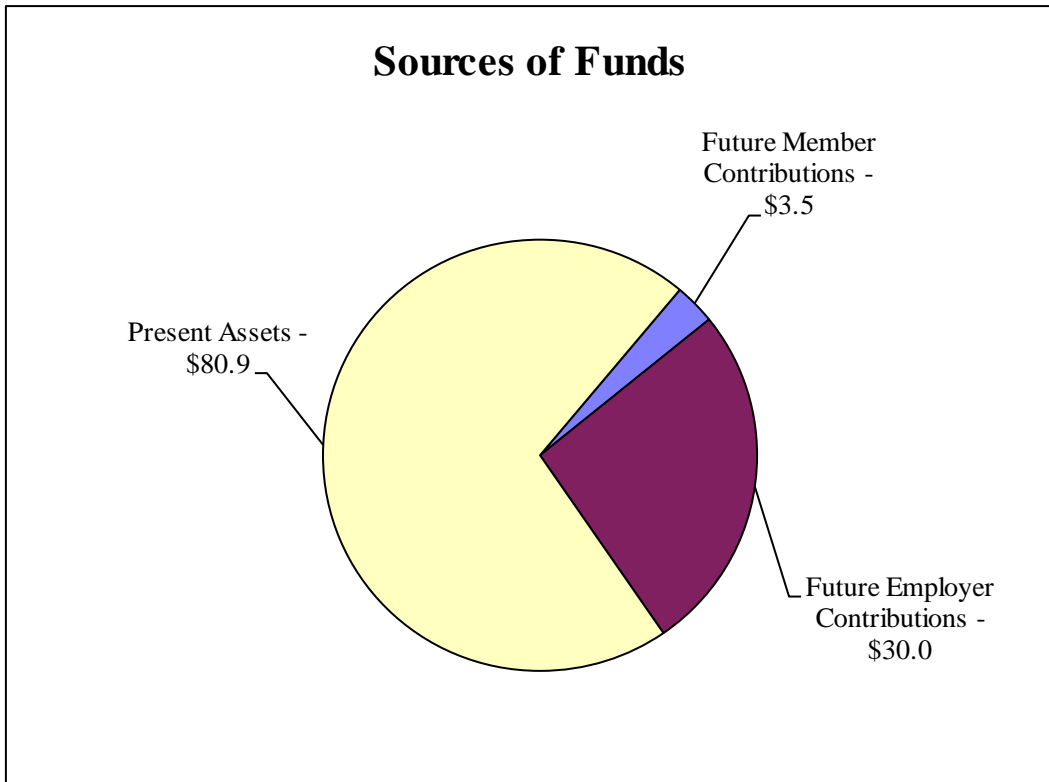
	<b>General, Water and Court Members</b>	<b>Police and Fire</b>	<b>Totals</b>
A. Actuarial value of System assets	\$26,296,952	\$54,653,080	\$80,950,032
B. Present value of expected future employer contributions			
1. For normal costs	2,113,192	4,431,298	6,544,490
2. For unfunded actuarial accrued liability	10,869,961	12,548,026	23,417,987
3. Total	12,983,153	16,979,324	29,962,477
C. Present value of expected future member contributions	708,508	2,809,098	3,517,606
D. Total present and expected future Resources	\$39,988,613	\$74,441,502	\$114,430,115

**PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS**

A. To retirees and beneficiaries	\$29,429,457	\$48,700,776	\$78,130,233
B. To vested terminated members	1,151,584	3,408,519	4,560,103
C. To present active members			
1. Allocated to service rendered prior to valuation date - actuarial accrued liability	7,449,586	15,091,811	22,541,397
2. Allocated to service likely to be rendered after valuation date	1,957,986	7,240,396	9,198,382
3. Total	9,407,572	22,332,207	31,739,779
D. Total present value of expected future benefit payments	\$39,988,613	\$74,441,502	\$114,430,115

**FINANCING \$114.4 MILLION OF BENEFIT PROMISES  
DECEMBER 31, 2014**

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**COMPARATIVE STATEMENT**  
**(\$ IN THOUSANDS)**

Valuation Date December 31	Actuarial Accrued Liability (AAL)	Present Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Present Assets To AAL	Ratio of UAAL to Valuation Payroll	Employer Contributions As Payroll Percents	
						Gen., Court and Water Members	Police & Fire Members
1999*	\$ 54,611	\$ 62,267	\$ (7,656)	114.0 %	(82.0)%	12.16%	6.99%
2000	58,803	67,946	(9,143)	115.5 %	(88.0)%	11.79%	6.65%
2001*#	62,922	71,904	(8,982)	114.3 %	(83.4)%	10.50%	6.22%
2002*	68,118	72,436	(4,318)	106.3 %	(40.0)%	13.23%	11.43%
2003 #	73,437	73,490	(53)	100.1 %	(0.5)%	17.39%	14.69%
2004	76,844	76,064	780	99.0 %	7.1 %	17.30%	15.60%
2005	82,928	77,809	5,119	93.8 %	52.2 %	25.77%	16.46%
2006*	86,334	81,926	4,408	94.9 %	47.3 %	27.60%	14.98%
2007*#	90,176	83,991	6,185	93.1 %	69.4 %	32.71%	18.21%
2008*	96,025	79,485	16,540	82.8 %	181.3 %	38.93%	31.23%
2009*	97,732	77,077	20,654	78.9 %	224.4 %	51.99%	28.02%
2010#	98,700	74,681	24,018	75.7 %	313.5 %	79.02%	30.30%
2011	99,812	70,080	29,732	70.2 %	419.4 %	95.58%	36.81%
2012#	101,346	72,804	28,541	71.8 %	419.6 %	77.92%	36.53%
2013*	99,791	75,399	24,392	75.6 %	421.0 %	79.22%	31.01%
2014	97,727	80,950	16,777	82.8 %	319.5 %	66.82%	25.54%
2014#	104,654	80,950	23,704	77.3 %	451.5 %	83.39%	34.68%
2014*	104,368	80,950	23,418	77.6 %	446.0 %	84.88%	33.86%

# Revised actuarial assumptions or methods.

\* Retirement System was amended.

**The Ratio of Valuation Assets to AAL** is a traditional measure of a 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%.

**The Ratio of UAAL to Valuation Payroll** is another relative index of condition. Unfunded actuarial accrued liabilities 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.

## COMMENTS AND RECOMMENDATIONS

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### EXPERIENCE

Overall actuarial experience was favorable during the year ended December 31, 2014, resulting in a gain of \$4.9 million (see page A-4). On a market value basis, this year's investments slightly underperformed compared to assumptions (see page B-10); the result of this and the phase-in of 2011-2013 investment gains and losses yielded an asset gain on a funding value basis of \$1.5 million. The remaining experience gain was mostly due to significant pay decreases and retiree mortality experience.

### ACTUARIAL ASSUMPTIONS

Subsequent to the December 31, 2013 actuarial valuation, the Board of Trustees elected to have the actuarial assumptions updated in conjunction with the December 31, 2014 actuarial valuation based on the "Scenario 2" of the Assumption Review dated December 11, 2014. This valuation reflects our recommended assumption changes to mortality, retirement rates, the rate of return, wage inflation, and price inflation. The complete summary of assumptions is shown on pages C-7 through C-11.

The change in actuarial assumptions increased the Unfunded Actuarial Accrued Liability by \$6,927,822 as of December 31, 2014. Additional information about the impact of the assumption changes is on page A-7.

### BENEFIT CHANGES

Benefit changes made for the December 31, 2014 valuation includes the removal of unused sick leave in FAC for Lieutenants & Sergeants. The complete summary of benefits is shown on pages B-1 through B-3.

The change in benefits decreased the Unfunded Actuarial Accrued Liability by \$286,479 as of December 31, 2014. Additional information about the impact of the benefit changes is on page A-7.

### FUNDING POLICY

The remaining amortization periods are 24 years for Police and Fire and 18 years for General, Water and Court. We recommend that the Board adopt a written Funding Policy to assist in plan governance.

## COMMENTS AND RECOMMENDATIONS

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### **FUNDED STATUS**

The ratio of the Actuarial Value of Assets to Actuarial Accrued Liability is 70.8% for General, Water and Court, and 81.3% for Police and Fire. Before the changes in actuarial assumptions and benefits, the ratio was 75.8% for General, Water, and Court, and 86.7% for Police and Fire.

The funded status for the System as a whole is 77.6%, based on the actuarial value of assets. On the basis of the market value of assets, the funded status would be 82.2%. This indicates that deferred gains should increase the funded status as they become recognized (absent future losses).

The funded status is not appropriate for assessing the need for or the amount of future contributions. The funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

### **ASSET ALLOCATION**

The Retirement System does not provide information allocating the market value of assets between General, Court, and Water and Police and Fire. The allocation of the actuarial value of assets is shown on page B-11. We recommend that the System allocate a full reconciliation of the market value of assets each year.

### **NEW GASB REPORTING STANDARDS**

The new GASB No. 67 reporting disclosures required for the plan this year will be issued in a separate report. This report contains GASB No. 25 schedules for the last time.

### **RESERVE TRANSFERS**

The actuarial present value of retirement allowances currently being paid to retired members is less than the balance in the Reserve for Retired Benefit Payments. In order to fully fund retired life liabilities, we recommend a transfer in the amount of \$44,277,334 from the Reserve for Employer Contributions to the Reserve for Retired Benefit Payments. The transfer was assumed to have been made as of December 31, 2014 for purposes of this valuation. Our understanding is that this is a bookkeeping entry only, and does not affect funding or benefits. If the System elects to allocate reserves between groups, additional information on retiree liability by group is shown on page A-5.

## COMMENTS, RECOMMENDATIONS AND CONCLUSION

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### ASSET CORRIDOR

On May 9, 2012, the Board elected to utilize a corridor in the Funding Value of Assets beginning in the December 31, 2012 valuation. This corridor limits the divergence of the Funding Value relative to the Market Value at 25% (i.e., the Funding Value would be limited to the range of 75% to 125% of the Market Value of Assets). As of December 31, 2014, the ratio of the Funding Value to the Market Value is 94.3%; therefore, the corridor did not affect the December 31, 2014 valuation.

### CONCLUSION

The Retirement System's financial objective is to meet long-term benefit obligations through contributions that remain approximately level from year-to-year as a dollar amount for General, Water and Court, and as a percent of active member payroll for Police and Fire. Continued receipt of these contributions is the best guarantee that the System will be able to pay all promised benefits when due.

The System is not well funded. This valuation assumes that the plan sponsor will be able to make future contributions on a timely basis. Failure to receive employer contributions on a timely basis could jeopardize the sustainability of the fund. We did not perform an analysis of the ability of the plan sponsor to make future contributions.

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**SECTION B**

**BENEFIT PROVISIONS AND VALUATION DATA**

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# SUMMARY OF BENEFIT PROVISIONS EVALUATED DECEMBER 31, 2014

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## Regular Retirement

### *Eligibility*

General: Age 53 with 10 (8 for Administrative/Appointees) or more years of service. Closed to new AFSCME hires effective October 2005 and Administrative/Appointee new hires effective January 2008.

Police & Fire: Age 52 with 10 or more years of service if hired before December 31, 2012; age 55 with 25 or more years of service if hired on or after January 1, 2013.

By ordinance definition, normal retirement age is equal to the eligibility age plus 5 years.

### *Annual Amount*

Administrative/Appointees: 2.9% of FAC times service. Maximum benefit is 75% of FAC.

Police hired before December 16, 2008: 2.9% of FAC times service accrued before July 1, 2013 plus 2.25% of FAC times service accrued after July 1, 2013. Maximum benefit is 75% of FAC (80% for Police Chief).

Police hired after December 16, 2008 and before January 1, 2013: 2.5% of FAC times service accrued before July 1, 2013 plus 2.25% of FAC times service accrued after July 1, 2013. Maximum benefit is 75% of FAC.

Police hired after January 1, 2013: 2.0% of FAC times service. Maximum benefit is 75% of FAC.

Lieutenants & Sergeants: 2.9% of FAC times service accrued before July 1, 2013 plus 2.25% of FAC times service accrued after July 1, 2013. Maximum benefit is 75% of FAC.

Fire hired before July 1, 2008: 2.9% of FAC times service accrued before July 1, 2013 plus 2.50% of FAC times service accrued after July 1, 2013. Maximum benefit is 75% of FAC (80% for Fire Chief).

Fire hired after July 1, 2008 and before January 1, 2013: 2.5% of FAC times service. Maximum benefit is 75% of FAC.

Fire hired after January 1, 2013: 2.0% of FAC times service. Maximum benefit is 75% of FAC.

General: 2.9% of FAC times service accrued before April 1, 2014 plus 2.5% of FAC times service accrued after April 1, 2014. Maximum benefit is 75% of FAC.

*In the event of any discrepancy between what is outlined in this Summary of Benefits and individual contracts, the provisions within the contracts shall supersede.*

# SUMMARY OF BENEFIT PROVISIONS EVALUATED DECEMBER 31, 2014

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## ***Type of Final Average Compensation***

Average of the covered compensations paid during the highest 3 consecutive years (5 consecutive for Police or Fire members hired on or after January 1, 2013) of service out of the last 10 years of service.

Firefighters hired after July 1, 2008 and Police hired after December 16, 2008 shall not have their overtime included in the FAC. Police and Fire members hired on or after January 1, 2013 shall include base wages only. Prospectively commencing July 1, 2013, Fire hired on or before December 31, 2012 shall have overtime and lump sum payments excluded from FAC.

## ***Annuity Withdrawal***

Up to 2 Police and Fire members and 3 Lieutenants and Sergeants may elect to withdraw 50% of their accumulated contributions at retirement. The benefit otherwise payable is actuarially reduced based upon PBGC assumptions. This is not available to Police and Fire members hired on or after January 1, 2013.

## **Deferred Retirement (Vested Benefit)**

### ***Eligibility***

Termination at any age with 10 (8 for Administrative/Appointees) or more years of service.

### ***Annual Amount***

Computed in the same manner as regular retirement based upon service and FAC at time of termination.

## **Duty Disability Retirement**

### ***Eligibility***

No age or service requirements.

### ***Annual Amount***

To normal retirement age (retirement eligibility age plus 5 years): 66 2/3% of final compensation at time of disability. At normal retirement age the benefit is recomputed based on a regular retirement formula with additional service credit granted from the date of disability to the date of recomputation and a final average compensation based upon the pay of the rank during the 3 years preceding normal retirement date. Worker's compensation payments are offset.

*In the event of any discrepancy between what is outlined in this Summary of Benefits and individual contracts, the provisions within the contracts shall supersede.*

# SUMMARY OF BENEFIT PROVISIONS EVALUATED DECEMBER 31, 2014

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## **Non-Duty Disability Retirement**

### *Eligibility*

10 or more years of service.

### *Annual Amount*

Police and Lieutenants & Sergeants: Computed based on a regular retirement formula (with service as of the date of disability). Minimum benefit is 20% of FAC.

All other groups: To normal retirement age (or until recovered from disability): Computed in the same manner as regular retirement, but using a 2% benefit multiplier. At normal retirement age, the benefit is recomputed based on a regular retirement formula (with service as of the date of disability). Minimum benefit is 20% of FAC.

## **Duty Death Before Retirement**

### *Eligibility*

No age or service requirements.

### *Annual Amount*

To the surviving spouse until death, age 62, or remarriage, whichever occurs first, a benefit of 50% of deceased member's final compensation (75% for Lieutenants & Sergeants, and Police & Fire). If there is no surviving spouse, unmarried children under age 18 receive equal shares of 50%, (75% for Lieutenants & Sergeants, and Police & Fire) of the deceased member's final compensation.

Worker's compensation payments are offset.

## **Non-Duty Death Before Retirement**

### *Eligibility*

10 or more years of service and attainment of voluntary retirement age or 15 or more years of service.

### *Annual Amount*

Computed in the same manner as regular retirement but actuarially reduced in accordance with a 100% joint and survivor election.

## **Death after Retirement Survivor's Pension**

Payable to a surviving spouse (of a Lieutenant or Sergeant), if any, upon the death of a retired member who was receiving a straight life pension. Spouse's pension equals 70% of the straight life pension the deceased retiree was receiving.

## **Member Contributions**

6.0% of covered compensation for District Court, 7.0% for General and Firefighters, and 8.0% for Police Officers. Covered compensation includes base salary, longevity, and pay in lieu of vacation time. For Lieutenants & Sergeants and Firefighters, overtime and pay in lieu of holiday pay. For Lieutenants & Sergeants, Police Officers and Firefighters, up to 10 days of unused vacation time and 42 days of unused sick time.

*In the event of any discrepancy between what is outlined in this Summary of Benefits and individual contracts, the provisions within the contracts shall supersede.*

## RETIREES AND BENEFICIARIES COMPARATIVE STATEMENT

Year Ended December 31*	Added to Rolls		Removed from Rolls		Rolls End of Year		Average Pension	Present Value of Pension	No. Active Per Retired	Pensions as a % of Pay
	No.	Annual Pensions@	No.	Annual Pensions#	No.	Annual Pensions				
1994	16	\$ 443,553	1	\$ 3,381	119	\$1,752,568	\$14,727	\$17,491,543	1.5	25.3 %
1995	9	252,846	4	16,282	124	1,989,132	16,041	20,738,167	1.4	27.6 %
1996	7	132,618	8	51,593	123	2,070,157	16,830	21,301,094	1.5	26.9 %
1997	5	170,333	2	10,980	126	2,229,510	17,695	22,967,013	1.6	24.7 %
1998	2	73,587	1	4,932	127	2,298,165	18,096	23,408,199	1.6	25.5 %
1999	11	336,451	2	20,391	136	2,614,225	19,222	26,706,290	1.5	28.0 %
2000	3	89,448	7	55,293	132	2,648,380	20,063	26,867,023	1.6	25.5 %
2001	6	133,560	7	148,237	131	2,633,703	20,105	26,856,381	1.6	24.5 %
2002	11	348,496	3	75,278	139	2,906,921	20,913	29,833,759	1.5	27.0 %
2003	10	365,532	4	54,369	145	3,218,084	22,194	35,766,859	1.3	30.5 %
2004	4	131,904	2	23,681	147	3,326,306	22,628	37,196,728	1.3	31.3 %
2005	28	1,128,076	2	21,063	173	4,433,319	25,626	51,215,945	0.9	47.4 %
2006	16	502,037	7	165,373	182	4,769,983	26,209	53,477,694	0.8	52.8 %
2007	20	785,842	9	151,775	193	5,404,051	28,000	60,160,954	0.8	61.3 %
2008	19	743,733	3	37,524	209	6,110,260	29,236	67,228,096	0.7	67.0 %
2009	5	138,063	2	38,115	212	6,210,208	29,293	67,661,780	0.7	67.5 %
2010	20	627,490	5	65,361	227	6,772,337	29,834	73,857,811	0.5	88.4 %
2011	9	265,620	6	129,561	230	6,908,395	30,037	74,533,739	0.4	97.5 %
2012	5	128,793	5	142,161	230	6,895,027	29,978	73,695,255	0.4	101.4 %
2013	2	52,485	2	14,879	230	6,932,633	30,142	73,116,820	0.4	119.6 %
2014	6	186,157	12	251,720	224	6,829,464	30,489	77,266,519	0.4	130.1 %

# Includes adjustments due to attainment of age 65.

\* Does not include DROP members.

@ Includes beneficiaries of deceased retirees.

**RETIREES AND BENEFICIARIES – DECEMBER 31, 2014**  
**TABULATED BY TYPE OF PENSIONS BEING PAID**

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Type of Pensions Being Paid	No.	Annual Pensions
<b>Age and Service Pensions</b>		
Regular pension - benefit terminating at death of retiree	57	\$ 1,426,202
Option A pension - joint and survivor benefit	79	2,873,664
Option B pension - modified joint and survivor benefit	22	603,269
Survivor pension	48	1,527,821
Total age and service pensions	206	\$ 6,430,956
<b>Casualty Pensions</b>		
Duty disability		
Regular pension	4	\$ 107,553
Option A pension		
Survivor pension	3	66,748
Totals	7	174,301
Non-duty disability		
Option A pension	5	140,085
Survivor pension	2	55,415
Totals	7	195,500
Pension to survivor beneficiary of deceased member - non-duty death	4	66,313
Total casualty pensions	18	436,114
<b>Total Pensions Being Paid</b>	<b>224</b>	<b>\$6,867,070</b>

**RETIREES AND BENEFICIARIES – DECEMBER 31, 2014**  
**TABULATED BY ATTAINED AGES**

Attained Ages	Age and Service		Casualty		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
Under 40						
40 - 44	1	\$ 39,450			1	\$ 39,450
45 - 49	9	455,546	2	\$ 73,036	11	528,582
50 - 54	34	1,426,094	2	79,163	36	1,505,257
55 - 59	40	1,444,062	1	27,570	41	1,471,632
60 - 64	36	1,237,824	4	97,083	40	1,334,907
65 - 69	25	761,182	4	114,018	29	875,200
70 - 74	22	502,961			22	502,961
75 - 79	12	250,954	2	18,299	14	269,253
80 - 84	14	209,660	2	24,999	16	234,659
85 - 89	12	97,703	1	1,946	13	99,649
90 & Over	1	5,520			1	5,520
<b>Totals</b>	<b>206</b>	<b>\$6,430,956</b>	<b>18</b>	<b>\$436,114</b>	<b>224</b>	<b>\$6,867,070</b>

Also included in the valuation are 13 deferred members that are not shown in the table above and five members with pending benefits or refunds.

## COMPARATIVE STATEMENT

Valuation Date December 31	Active Members	Active Members in Valuation				
		Valuation Payroll	Average			
			Age	Service	Pay	% Inc.
1994	178	\$ 6,938,018	42.0	12.0	\$ 38,978	(1.5)%
1995	179	7,207,186	41.1	11.4	40,264	3.3%
1996	179	7,702,081	41.4	11.4	43,028	6.9%
1997	189	8,519,683	41.7	11.0	45,078	4.8%
1998	199	9,023,188	41.9	11.1	45,343	0.6%
1999	202	9,335,616	41.5	10.7	46,216	1.9%
2000	211	10,383,761	41.8	11.0	49,212	6.5%
2001	209	10,768,665	42.4	11.7	51,525	4.7%
2002	204	10,783,586	42.0	11.9	52,861	2.6%
2003	188	10,539,218	42.1	11.9	56,060	6.1%
2004	185	10,635,766	42.4	12.3	57,491	2.6%
2005	157	9,358,177	41.7	10.9	59,606	3.7%
2006	148	9,037,043	42.2	11.6	61,061	2.4%
2007	148	8,817,298	41.1	10.8	59,576	(2.4)%
2008	136	9,123,164	40.3	10.5	67,082	12.6%
2009	138	9,205,906	40.9	11.1	66,709	(0.6)%
2010	117	7,660,963	39.9	11.4	65,478	(1.8)%
2011	103	7,088,572	40.4	12.2	68,821	5.1%
2012	92	6,801,883	41.0	13.0	73,934	7.4%
2013	85	5,794,143	41.6	13.4	68,166	(7.8)%
2014	85	5,250,588	41.8	13.6	61,772	(9.4)%

### ACTIVE MEMBERS ADDED TO AND REMOVED FROM ROLLS

Year Ended December 31	Added During Year		Terminations During Year								Active Members End of Year
	A	E	Normal Retirement		Disability Retirement		Died-in- Service		Withdrawal		
			A	E	A	E	A	E	A	E	
2010	0	21	18#	2.2	0	0.5	0	0.1	3	2.3	117
2011	0	14	4	2.0	1	0.4	0	0.1	9	1.9	103
2012	3	6*	1	0.8	2	0.5	0	0.1	11	1.5	92
2013	1	5*	1	0.8	0	0.4	0	0.1	7	1.2	85
2014	5	3*	1	0.3	1	0.4	0	0.1	3	1.0	85

# Includes 18 members retired under Early Retirement Incentive Program.

\* Reflects Police & Fire only, since General group is closed to new hires.

A = Actual

E = Expected

**ACTIVE MEMBERS – DECEMBER 31, 2014**  
**BY ATTAINED AGE AND YEARS OF SERVICE**  
**GENERAL, COURT AND WATER DEPARTMENT**

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Attained Age	Years of Service to Valuation Date							No.	Valuation Payroll	Average Pay
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus			
35-39			3	1				4	\$ 174,762	\$ 43,691
40-44			1	5	2			8	459,478	57,435
45-49			2	2	1			5	293,250	58,650
50-54			2	3	2	1		8	513,137	64,142
55-59		1						1	49,824	49,824
<b>Totals</b>		<b>1</b>	<b>8</b>	<b>11</b>	<b>5</b>	<b>1</b>		<b>26</b>	<b>\$ 1,490,451</b>	<b>\$ 57,325</b>

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

Age: 45.7 years  
Service: 17.0 years



**ACTIVE MEMBERS – DECEMBER 31, 2014**  
**BY ATTAINED AGE AND YEARS OF SERVICE**  
**POLICE AND FIRE MEMBERS**

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Attained Age	Years of Service to Valuation Date							No.	Valuation Payroll	Average Pay
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus			
20-24	1							1	\$ 34,251	\$ 34,251
25-29	2	2						4	215,356	53,839
30-34	2	6						8	477,730	59,716
35-39	2	4	2	2				10	618,617	61,862
40-44	1	3	5	5	2			16	982,490	61,406
45-49	1	1		9	8			19	1,367,419	71,969
50-54		1						1	64,274	64,274
<b>Totals</b>	<b>9</b>	<b>17</b>	<b>7</b>	<b>16</b>	<b>10</b>			<b>59</b>	<b>\$ 3,760,137</b>	<b>\$ 63,731</b>

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

Age: 40.1 years  
Service: 12.1 years

## DEVELOPMENT OF FUNDING VALUE OF ASSETS

Year Ended December 31:	2012	2013	2014	2015	2016	2017
<b>Assumed Investment Return</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>
A. Funding Value Beginning of Year	\$70,080,139	\$72,804,464	\$75,398,785			
B. Market Value End of Year	72,942,550	82,380,318	85,837,172			
C. Market Value Beginning of Year	68,367,809	72,942,550	82,380,318			
D. Non-Investment Net Cash Flow	(3,817,455)	(4,847,083)	(1,558,497)			
E. Investment Income						
E1. Market Total: B - C - D	8,392,196	14,284,851	5,015,351			
E2. Amount for Immediate Recognition	5,112,856	5,278,569	5,596,465			
E3. Amount for Phased-In Recognition: E1-E2	3,279,340	9,006,282	(581,114)			
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.25 x E3	819,835	2,251,571	(145,279)			
F2. First Prior Year	(1,412,847)	819,835	2,251,571	\$ (145,279)		
F3. Second Prior Year	504,277	(1,412,847)	819,835	2,251,571	\$ (145,279)	
F4. Third Prior Year	1,517,659	504,276	(1,412,848)	819,835	2,251,569	\$ (145,277)
F5. Total Recognized Investment Gain	1,428,924	2,162,835	1,513,279	2,926,127	2,106,290	(145,277)
G. Total Return Recognized this Year: E2 + F5	6,541,780	7,441,404	7,109,744			
H. Preliminary Funding Value End of Year: A + D + G	72,804,464	75,398,785	80,950,032			
H1. 125% of Market Value End of Year:	91,178,188	102,975,398	107,296,465			
H2. 75% of Market Value End of Year:	54,706,913	61,785,239	64,377,879			
<b>H3. Funding Value End of Year: H, but not greater than H1, nor less than H2</b>	<b>72,804,464</b>	<b>75,398,785</b>	<b>80,950,032</b>			
I. Difference between Market & Funding Value: B-H3	138,086	6,981,533	4,887,140	1,961,013	(145,277)	
<b>J. Recognized Rate of Return</b>	<b>9.6%</b>	<b>10.6%</b>	<b>9.5%</b>			
<b>K. Market Value Rate of Return</b>	<b>12.6%</b>	<b>20.3%</b>	<b>6.1%</b>			
<b>L. Ratio of Funding Value to Market Value</b>	<b>99.8%</b>	<b>91.5%</b>	<b>94.3%</b>			

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 less than Market Value. If actual and assumed rates of investment income are exactly equal for 3 consecutive years, the Funding Value will become equal to Market Value.

**ALLOCATION OF FUNDING VALUE OF ASSETS  
AS OF DECEMBER 31, 2014**

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	<u>General, Water, and Court</u>	<u>Police &amp; Fire</u>	<u>Total</u>
A. Funding Value at Beginning of Year	\$24,358,418	\$51,040,366	\$75,398,784
B. Contributions			
B1. Member	109,595	316,608	426,203
B2. Employer	2,095,705	2,932,609	5,028,314
B3. Total = B1+B2	<u>2,205,301</u>	<u>3,249,217</u>	<u>5,454,518</u>
C. Disbursements*	2,570,324	4,442,691	7,013,015
D. Non-investment cash flow = B3-C	(365,023)	(1,193,474)	(1,558,497)
E. Average Asset Value During Year = A+(D/2)	24,175,907	50,443,629	74,619,536
F. Ratio	32.40%	67.60%	100.00%
G. Allocation of Investment Return	2,303,557	4,806,188	7,109,745
H. Funding Value at End of Year = A+D+G	<b>\$26,296,952</b>	<b>\$54,653,080</b>	<b>\$80,950,032</b>

\* Actual Disbursements made during the year are not reported by division. The allocation shown is estimated based on retirement benefits and refunds as reported on the valuation date in the census data.

## SUMMARY OF CURRENT ASSET INFORMATION

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### Balance Sheet

Current Assets (Funding Value*)		Reserves for	
Cash	\$ 0	Employees' Contributions	\$ 6,099,634
Receivables	174,209	Employer Contributions	43,087,287
Short-Term Investments	2,226,729	Retired Benefit Payments	32,989,185
Common Stock	59,728,264	Undistributed Investment Income	3,661,066
Bonds	22,683,840	Market Value Adjustment	(4,887,140)
Other	1,024,130		
Market Value Adjustment	(4,887,140)		
Valuation	\$80,950,032	Total Reserves	\$80,950,032

\* Market Value of assets was reported to be \$85,837,172 (see page B-10).

### Revenues and Expenditures

	2014	2013
Balance - January 1,	\$75,398,785	\$72,804,464
Revenues		
Employees' Contributions	426,203	484,964
Employer Contributions	5,028,314	1,719,721
Recognized Investment Income	7,277,328	7,605,612
Miscellaneous (Class Action, etc.)	8,332	3,195
Total	12,740,177	9,813,492
Expenditures		
Benefit Payments	6,911,331	6,945,354
Refund of Member Contributions	101,684	106,414
Administrative and Investment Expenses	175,916	167,403
Total	7,188,930	7,219,171
Balance - December 31,	\$80,950,032	\$75,398,785
Ratio of Net Investment Income to Mean Assets	9.5 %	10.6 %

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## **SECTION C**

### VALUATION PROCEDURES

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## BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

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***Benefit Promises Made Which Must Be Paid For.*** A retirement program 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 program 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.”

The Retirement System meets this constitutional requirement by having the following ***Financial Objective: To establish and receive contributions, expressed as percents of member payroll, which will remain approximately level from year-to-year*** and 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 actuarial present 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).

If contributions to the retirement program 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:

$$\mathbf{B = C + I - E}$$

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

Contributions received on behalf of the group

. . . plus . . .

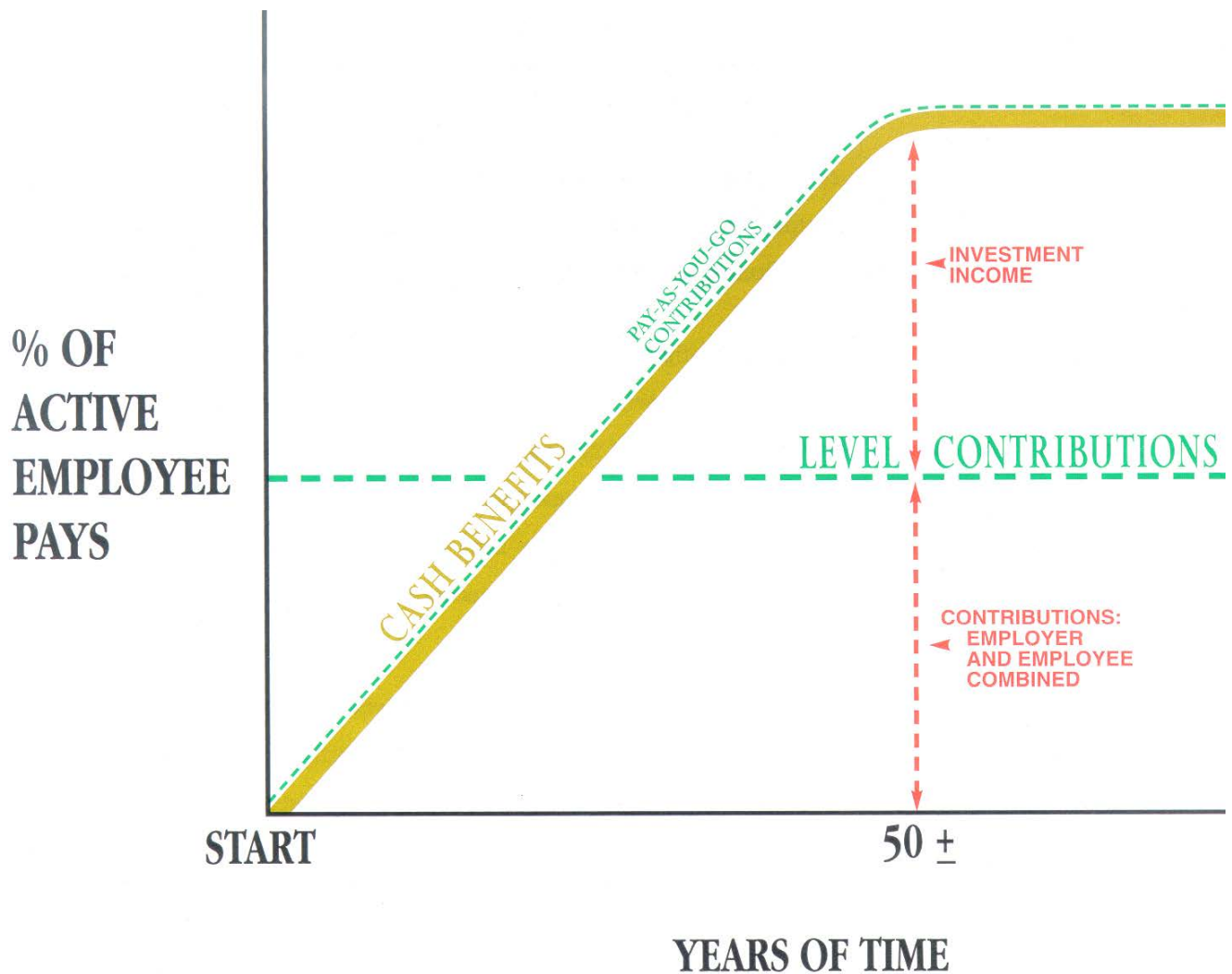
Investment earnings received and not required for immediate payment of benefits

. . . minus . . .

Expenses of operating the program.

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets. **Investment income on invested assets becomes the major contributor to the retirement program**, and the amount is directly related to the amount of contributions and investment performance.

***Computed Contribution Rate Needed To Finance Benefits.*** From a given schedule of benefits and from the data furnished, the contribution rate is calculated *by means of an actuarial valuation* – the technique of assigning monetary values to the risks assumed in operating a retirement program.



**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

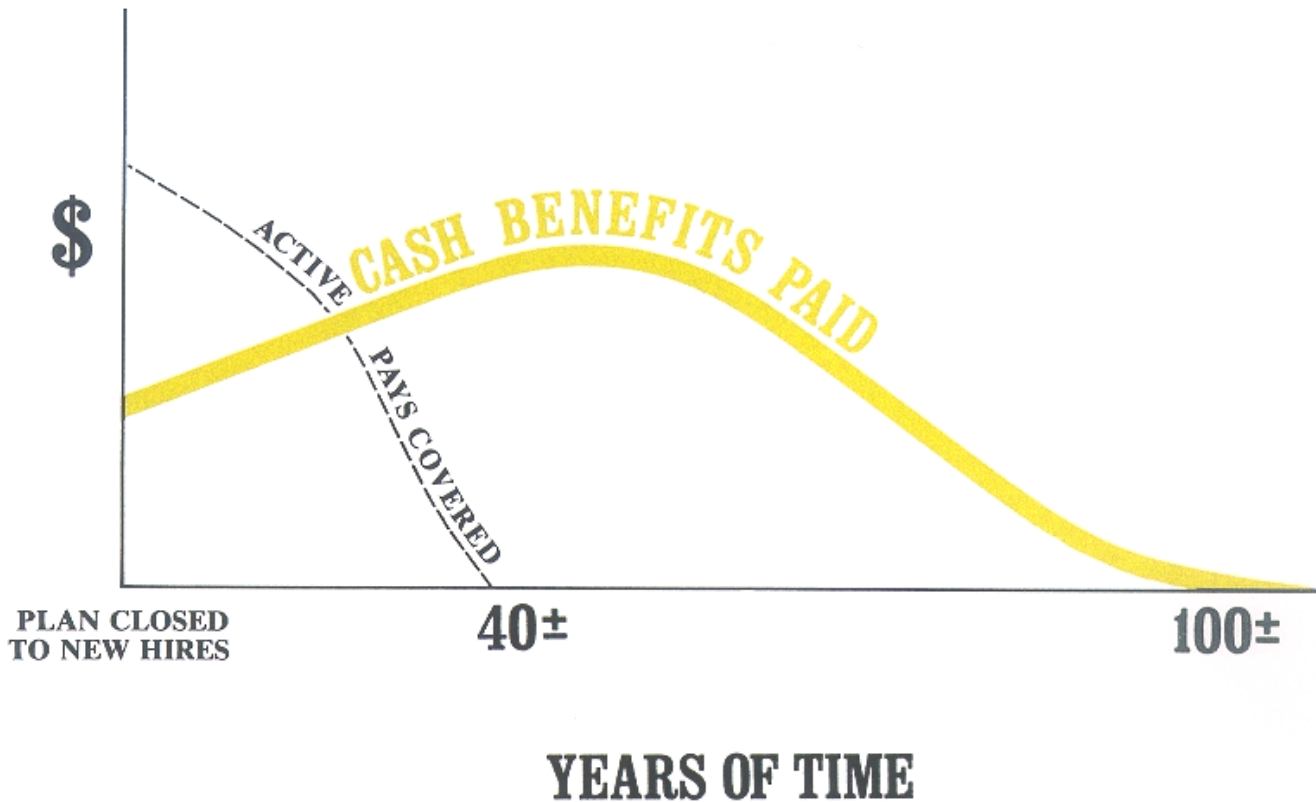
- Rates of investment return
- Rates of pay increase
- Changes in active member group size

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

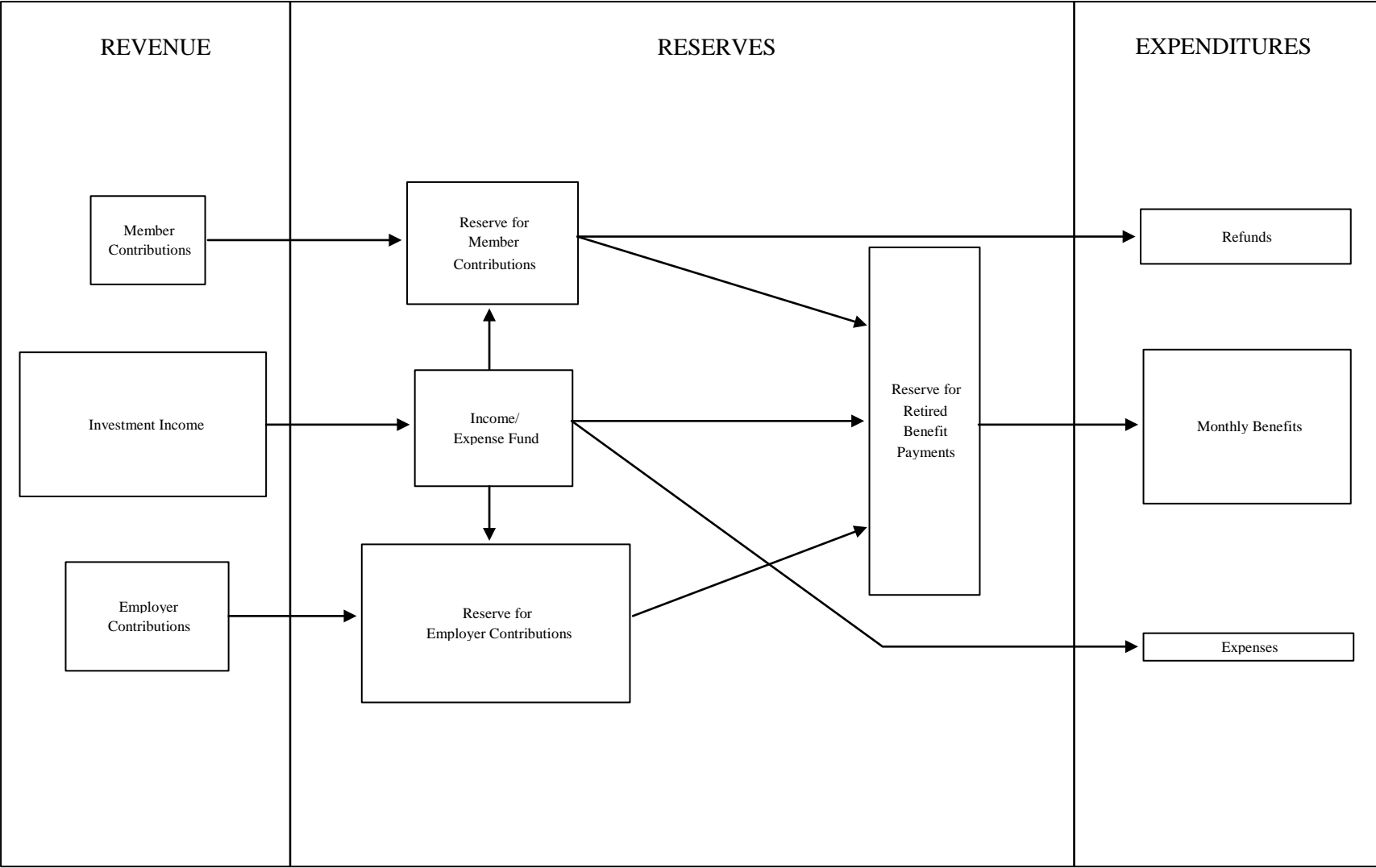


A plan becomes closed when no new hires are admitted to active membership. The persons covered by the plan at the time of closing continue their normal activities and continue to be covered by the plan, until the last survivor dies.

**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.

# FLOW OF MONEY THROUGH THE RETIREMENT SYSTEM



## ACTUARIAL METHODS

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*Normal cost and the allocation of benefit values* between service rendered before and after the valuation date were determined using an individual *entry-age normal 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 portion of the value of the member's benefit at the time of retirement; and
- (ii) Each annual normal cost is a constant percentage of the member's year-by-year projected covered pay. For funding purposes, the normal cost is based on the benefits in effect in the year of service rendered.

***Financing of Unfunded Actuarial Accrued Liabilities.*** Unfunded actuarial accrued liabilities were amortized by level percent-of-payroll (principal and interest combined) over a period of 24 future years for Police & Fire (starting amortization period of 25 years), and as a level dollar amount over a period of 18 future years for General, Water Department and Court Members (starting amortization period of 20 years). Police & Fire payroll is assumed to grow with wage inflation. General, Water Department and Court payroll is assumed to decline as the closed population decreases. Amortization rates are developed by projecting the unfunded actuarial accrued liabilities to the beginning of the fiscal year for which rates are determined.

***Asset Valuation Method.*** The prior year's valuation assets are increased by contributions and reduced by refunds and benefit payments. An amount equal to the assumed investment return net of expenses 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. Valuation assets are restricted to a range of 75% to 125% of Market Value of Assets. Valuation assets are allocated based on actual contributions and estimated disbursements by member classification.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

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The contribution requirements and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and census data furnished, using the actuarial cost methods described on the previous page.

The rationale for the actuarial assumptions is as follows.

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

- Long-term rates of investment return to be generated by the assets of the System.
- 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 retirements.

The monetary effect of each assumption is calculated for the length of time for which each present covered person survives.

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Actual experience of the System will not coincide exactly with assumed experience. 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 were last reviewed and updated based on a report issued December 11, 2014 and adopted by the Board January 14, 2015 for use in the December 31, 2014 actuarial valuation.

All actuarial assumptions are estimates of future experience, not market measures.

## VALUATION ASSUMPTIONS

**The rate of investment return** is 7.0% (net of expenses) per year, compounded annually. This assumption is used to make money payable at one point in time equal in value to an amount of money payable at another point in time. The assumed real rate of return (the net return in excess of the wage inflation rate) is 4.0%

**The wage inflation assumption** is 3.0%.

**The price inflation assumption** is 2.5% (not explicit in the valuation).

Economic experience during the last 5 years has been as follows:

	Year Ended December 31,					Average
	2014	2013	2012	2011	2010	
1) Nominal rate of return <sup>#</sup>	9.5 %	10.6 %	9.6 %	(1.4)%	0.6 %	5.7 %
2) Increase in CPI	0.8 %	1.5 %	1.7 %	3.0 %	1.5 %	1.7 %
3) Average salary increase	(9.4)%	(7.8)%	7.4 %	5.1 %	(1.8)%	(1.5)%
4) Spread between recognized return and average salary increase						
Actual						7.2%
Assumed						4.0%*

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

\* 3.5% during 2010 - 2013.

**The rates of salary increase** used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Sample Ages	Salary Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
20	3.8%	3.0%	6.8%
25	3.6%	3.0%	6.6%
30	2.8%	3.0%	5.8%
35	2.3%	3.0%	5.3%
40	1.9%	3.0%	4.9%
45	1.5%	3.0%	4.5%
50	1.1%	3.0%	4.1%
55	0.7%	3.0%	3.7%
Ref	93		

If the number of active members remains constant, then the total active member payroll will increase 3.0% annually, the base portion of the individual salary increase assumptions.

*The mortality table* used to measure post-retirement mortality is the RP-2014 Healthy Annuitant Mortality Table for males and females projected five years to 2019, with MP-2014. The provision for future mortality improvement is the projection to 2019. Sample values follow:

Sample Attained Ages	Single Life Retirement Values					
	Present Value of \$1 Monthly for Life		Percent Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women	Men	Women
55	\$137.11	\$141.85	0.5328%	0.3471%	28.92	31.44
60	129.40	134.62	0.7387%	0.4918%	24.73	27.02
65	119.79	125.47	1.0439%	0.7430%	20.70	22.74
70	108.05	114.22	1.5588%	1.1702%	16.85	18.67
75	94.16	100.88	2.4452%	1.9042%	13.26	14.86
80	78.51	85.68	4.0602%	3.1777%	10.01	11.41
Ref:	1208 x 1.00 sb 0	1209 x 1.00 sb 0				

For pre-retirement mortality, the RP-2014 Employee Mortality Table for males and females projected to 2019 with MP-2014 is used. Ten percent of pre-retirement deaths were assumed to be Duty related.

The RP-2014 Disabled Retiree Mortality Table projected to 2019 with MP-2014 is used for current disability retirees for projecting disability costs.

Published mortality tables have been extended to high and low ages using a cubic spline method.

*The rates of retirement* used to measure the probability of eligible members retiring during the next year were as follows:

Retirement Ages	General, Water and Court	Retirement Ages	Police & Fire
		52	40%
53	25%	53	40%
54	25%	54	40%
55	25%	55	40%
56	25%	56	40%
57	25%	57	40%
58	25%	58	40%
59	25%	59	40%
60	30%	60+	100%
61	40%		
62	50%		
63	60%		
64	70%		
65	80%		
66+	100%		
Ref	1395		2160

In addition to the retirement probabilities shown above, it was assumed that at least 50% of remaining eligible members would retire upon accruing the maximum pension of 75% of FAC. Also, Police and Fire members hired on or after January 1, 2013 are assumed to retire at a rate of 60% upon first (age) eligibility at age 55.

*Rates of separation from active membership* are represented by the following table (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	% of Active Members Separating within Next Year	
		General, Water and Court	Police & Fire
ALL	0	9.00%	N/A
	1	9.00%	
	2	8.00%	
	3	8.00%	
	4	5.50%	
20	5 & Over	5.00%	3.50%
25		5.00%	3.50%
30		4.50%	2.90%
35		3.55%	1.50%
40		1.45%	0.60%
45		0.75%	0.50%
50		0.75%	0.50%
55		0.75%	0.50%
Ref		337	1
		55	54

This assumption measures the probabilities of members remaining in employment. The rates do not apply to members eligible to retire and do not include separation on account of disability.

*Rates of disability* were as follows:

Sample Ages	% of Active Members Becoming Disabled within Next Year	
	Men	Women
20	0.15%	0.15%
25	0.18%	0.18%
30	0.20%	0.20%
35	0.29%	0.29%
40	0.42%	0.42%
45	0.65%	0.65%
50	1.05%	1.05%
55	1.84%	1.84%
Ref	16	16

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

### DECEMBER 31, 2014

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<b>Marriage Assumption:</b>	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.
<b>Pay Increase Timing:</b>	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.
<b>Decrement Timing:</b>	Decrements of all types are assumed to occur mid-year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	Disability and turnover do not operate during retirement eligibility.
<b>Adjustments:</b>	Age and Service Retirement Present Values for Sergeants and Lieutenants were adjusted by 4% (3% for Police and Fire members 9% for Police and Fire Chiefs) to account for the additional amount included in the FAC due to unused sick leave and unused vacation time. Police and Fire Actuarial Accrued Liabilities were increased by 2% to account for FAC calculations using pay prior to pay cuts. Police hired after December 16, 2008 and Firefighters hired after July 1, 2008 were given no adjustment. Age and Service retirement present values were adjusted by 3% to account for annuity withdrawal, with the exception of Police hired after December 16, 2008 and Firefighters hired after July 1, 2008.
<b>Data Assumptions:</b>	There were five members whose payment status was undetermined as of the December 31, 2014 valuation. Two of the members were valued as receiving a retirement benefit and three were valued as receiving a deferred retirement benefit. Estimated liability for these members was adjusted by 20% to reflect data uncertainty.
<b>Option Factors (as of the date of this report):</b>	Option factors are based upon 7.5% interest and 90% of the 1983 Group Annuity Mortality Table with a 90% Unisex Blend. General, Water and Court members are assumed to elect straight life annuities. 90% of Police and Fire Chiefs, Lieutenants and Sergeants hired before July 2008 are assumed to elect unreduced 70% Joint and Survivor.
<b>Incidence of Contributions:</b>	Contributions are assumed to be received each month throughout the year based upon the computed monthly dollar amount shown in this report.
<b>Benefit Service:</b>	Exact Fractional service is used to determine the amount of benefit payable.



## GLOSSARY

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***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, turn-over 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 “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 “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.

## GLOSSARY

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***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.

***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.”

***Valuation Assets.*** The value of current plan assets recognized for valuation purposes.

## PENSIONS IN AN INFLATIONARY ENVIRONMENT

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### Value of \$1,000/month Retirement Benefit to an Individual Who Retires at Age 55 in an Environment of 2.5% Inflation

Age	Inflation Rate
	2.5%
55	\$1,000
56	976
57	952
58	929
59	906
60	884
65	781
70	690
75	610
80	539
85	477

The life expectancy of a 55-year-old male retiree is to age 84. 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.

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## **SECTION D**

### **GOVERNMENTAL ACCOUNTING STANDARDS BOARD STATEMENT NO. 25**

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**This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements. Information needed for compliance with GASB Statements No. 67 and No. 68 will be presented in a separate report.**

**This is the last time GASB No. 25 information will be presented.**

**STATEMENT OF MARKET VALUE OF PLAN NET ASSETS  
AS OF DECEMBER 31**

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	<b>2014</b>	<b>2013</b>
<b>Assets:</b>		
Cash and short-term investments	\$ 2,400,938	\$ 3,122,461
Bonds	22,683,840	27,825,288
Stocks	59,728,265	51,306,855
Other	1,024,130	125,714
Total Assets	85,837,172	82,380,318
<b>Liabilities</b>		
Payables	0	0
Net assets held in trust for pension benefits*	\$85,837,172	\$82,380,318

\* A schedule of funding progress for the plan is presented on page D-4.

**STATEMENT OF CHANGES IN PLAN NET ASSETS  
FOR THE FISCAL YEARS ENDED DECEMBER 31**

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	2014	2013
Additions:		
Contributions		
Employer	\$ 5,028,314	\$ 1,719,721
Plan members	426,203	484,964
Total	5,454,518	2,204,685
Investment Income	5,191,267*	14,452,254*
Total Additions	10,645,784	16,656,939
Deductions:		
Benefits	6,911,331	6,945,354
Refunds of contributions	101,684	106,414
Expenses	175,916	167,403
Total Deductions	7,188,930	7,219,171
Net Increase	3,456,854	9,437,768
Net assets held in Trust Fund:		
Beginning of year	82,380,318	72,942,550
End of year	85,837,172	82,380,318

\* Estimated based on reported financial transactions and beginning and end of year market values.

**Plan Description.** The City of Allen Park Employees Retirement System is a single-employer defined benefit pension plan that covers employees of the City of Allen Park.

The plan provides retirement, disability, and death benefits to plan members and their beneficiaries.

**Contributions.** Effective April 1, 2014, General members (excluding Court) contribute 7% of annual salary (6% prior to April 1, 2014).

Effective July 1, 2013, Fire members contribute 7% of annual salary.

Effective July 1, 2013, Police members contribute 8% of annual salary.

The employer's funding policy provides for periodic employer contributions based upon a *fundamental financial objective of having rates of contribution which remain relatively level from generation to generation of the City of Allen Park citizens.* To determine the employer contribution rates and to assess the extent to which the fundamental financial objective is being achieved, the System has actuarial valuations prepared annually. In preparing these valuations, the entry age actuarial cost method is used to determine normal cost and actuarial accrued liabilities.

Unfunded actuarial accrued liabilities (full funding credit) are amortized by level percent-of-payroll contributions over a period of 24 future years for Police & Fire members (starting amortization period of 25 years), and level dollar amounts over a period of 18 remaining years for General, Water Department and Court members (starting amortization period of 20 years).

On the basis of the December 31, 2014 actuarial valuation, the employer rates for the fiscal year beginning July 1, 2015 were determined to be as follows:

<b>Contributions for</b>	<b>Percents of Covered Active Member Payroll</b>
Normal Cost	12.54 %
Accrued Liabilities	35.31 %
Total Employer Rate	47.85 %

**REQUIRED SUPPLEMENTARY INFORMATION**  
**SCHEDULE OF FUNDING PROGRESS**  
**(DOLLAR AMOUNTS IN MILLIONS)**

<b>Actuarial Valuation 12/31</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) - Entry Age (b)</b>	<b>Unfunded AAL (UAAL) (b)-(a)</b>	<b>Funded Ratio (a)/(b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percent of Covered Payroll [(b)-(a)]/(c)</b>
1995*	\$ 39.7	\$ 39.7	\$ 0.0	100.0 %	\$ 7.2	- %
1996*	44.8	42.2	(2.6)	106.2	7.5	-
1997*	49.5	45.7	(3.8)	108.3	8.5	-
1998*	56.2	48.7	(7.5)	115.4	9.0	-
1999*	62.3	54.6	(7.7)	114.1	9.3	-
2000	67.9	58.8	(9.1)	115.5	10.4	-
2001* <sup>@</sup>	71.9	62.9	(9.0)	114.3	10.8	-
2002*	72.4	68.1	(4.3)	106.3	10.8	-
2003	73.5	73.4	(0.1)	100.1	10.5	-
2004*	76.1	76.8	0.7	99.1	11.0	6.4
2005	77.8	82.9	5.1	93.8	9.8	52.0
2006	81.9	86.3	4.4	94.9	9.3	47.3
2007*	84.0	90.2	6.2	93.1	8.9	69.7
2008	79.5	96.0	16.5	82.8	9.1	181.3
2009	77.1	97.7	20.6	78.9	9.2	224.4
2010 <sup>@</sup>	74.7	98.7	24.0	75.7	7.7	313.5
2011	70.1	99.8	29.7	70.2	7.1	419.4
2012	72.8	101.3	28.5	71.8	6.8	419.6
2013*	75.4	99.8	24.4	75.6	5.8	421.0
2014* <sup>@</sup>	81.0	104.4	23.4	77.6	5.3	446.0

<sup>@</sup> Revised actuarial assumptions or methods.

\* Retirement System benefits amended.



## SCHEDULE OF EMPLOYER PENSION CONTRIBUTIONS

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<u>Year Ended December 31</u>	<u>Annual Required Contribution*</u>
1995	\$ 937,643
1996	759,774
1997	824,087
1998	750,645
1999	783,153
2000	666,474
2001	848,414
2002	907,141
2003	872,008
2004	1,288,684
2005	1,740,077
2006	1,871,800
2007	1,916,145
2008	1,962,336
2009	2,545,881
2010	3,177,149
2011	2,971,831
2012	4,032,657#
2013	3,334,274@
2014	2,302,748^

\* *Since it was reported to the actuary that the City's practice is to contribute the monthly dollar amounts shown on page A-2 in the actuarial valuation report, the annual required contributions shown in the Schedule of Employer Contributions are the actual contributions made by the City in the fiscal year.*

# *The City reported actual employer contributions of \$2,758,177 for the year ending December 31, 2012. The annual required contribution shown is based on the reported amount of unpaid contributions totaling \$1,274,480.*

@ *Based on our understanding of City procedure (see footnote above), we estimate that the Annual Required Contribution was \$3,334,274. The City reported actual employer contributions of \$1,719,721 for the year ending December 31, 2013.*

^ *Based on our understanding of City procedure (see footnote above), we estimate that the Annual Required Contribution was \$2,302,748. The City reported actual employer contributions of \$5,028,314 for the year ending December 31, 2014.*

## SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

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The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date	December 31, 2014
Actuarial cost method	Entry Age
Amortization method	
General (AFSCME)	Level dollar, closed
Police & Fire	Level percent, closed
Remaining amortization period	
General (AFSCME)	18 years (out of 20)
Police & Fire	24 years (out of 25)
Asset valuation method	4-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.0%
Projected salary increases*	3.0% - 6.8%
Cost-of-living adjustments	N/A
Payroll Growth	3.0%
Group Size – General	Closed Population
Group Size – Police-Fire	Stable Population
<hr/>	
*Includes price inflation at	2.5%