

**MACOMB COUNTY EMPLOYEES RETIREMENT SYSTEM**  
**SIXTY-SEVENTH ANNUAL ACTUARIAL VALUATION**  
**DECEMBER 31, 2012**



# CONTENTS

<u>Section</u>	<u>Page</u>	
		<i>Introduction</i>
		<i>Disclosures Required by Actuarial Standards of Practice</i>
A	1-3	Executive Summary
B	1	Financial Objective
	2-3	Computed Contributions
	4	Determination of Unfunded Accrued Liability
	5	Development of Experience Gain (Loss)
	6	Assets and Accrued Liabilities
	7-10	Computed Employer Contributions - Comparative Statement
C	1	Summary of Benefit Provisions
	2	Summary of DROP Provisions
	3	Revenues and Expenditures/Assets and Reserves
	4	Determination of Valuation Assets
	5-13	Retired Life Data
	14	Inactive Member Data
	15-18	Active Member Data
D	1	Valuation Methods
	2-7	Actuarial Assumptions Used for the Valuation
	8-9	Glossary
E	1-2	Financial Disclosure Information
Appendix	1-5	Summary of Benefit Provisions

July 12, 2013

The Retirement Commission  
Macomb County Employees Retirement System  
Mount Clemens, Michigan

**Re: Macomb County Employees Retirement System Actuarial Valuation as of  
December 31, 2012**

Ladies and Gentlemen:


The results of the December 31, 2012 annual actuarial valuation of the Macomb County Employees Retirement System are presented in this report. The purpose of the valuation is to measure the System's funding progress, to determine the employer contribution rate for the fiscal year ending December 31, 2014, and to provide actuarial information for Governmental Accounting Standards Board (GASB) Statements. This report should not be relied upon for any other purpose. This report may be provided to parties other than the System only in its entirety and only with the permission of the Commission.

The valuation was based upon information furnished by the County, concerning Retirement System benefits, financial transactions, plan provisions, active members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not otherwise audited by us. As a result, we are unable to assume responsibility for the accuracy or completeness of the information provided.

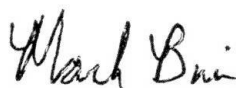
Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the Macomb County 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 undersigned are independent of the plan sponsor and are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Louise Gates, ASA, MAAA



Mark Buis, FSA, MAAA



Francois Pieterse, ASA, MAAA

LG/MB:mrh

---

**SECTION A**

**EXECUTIVE SUMMARY**

---

## EXECUTIVE SUMMARY

### 1. Required Employer Contributions - Fiscal Year Beginning January 1, 2014

The computed employer contributions are as follows:

Division	Computed Employer Contributions*	
	% of Payroll	\$ Based on Projected Payroll
General County	15.42%	\$ 12,237,576
Sheriff's Department	20.90	5,923,380
Road Commission	24.48	3,193,455
Martha T. Berry MCF	12.05	798,409

\* Contribution rates are calculated as a percentage of the payroll of all active members (including those in the DROP). Dollar contributions are based on projected valuation payroll.

Additional detail on these contributions is shown on page B-2.

### 2. Contribution Rate Comparison

Division	Valuation as of December 31	
	2011	2012
General County	13.22%	15.42%
Sheriff's Department	17.83	20.90
Road Commission	21.46	24.48
Martha T. Berry MCF	10.56	12.05

### **3. Reasons for Change**

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the Plan. The second is a change in the valuation assumptions used to predict future occurrences. The third is the effect of differences during the year between the Plan's actual experience and what the assumptions predicted.

The following benefit changes are reflected in this valuation of the Retirement System:

- Employees of the Martha T. Berry (MTB) division and all General division employees hired after 2011 may retire upon completing 15 years of service and attaining age 60 (a.k.a. 60 & 15 retirement). In addition, these individuals become vested after completing 15 years of service.
- Individuals in these divisions hired before 2012 are subject to the prior retirement and vesting eligibility conditions ("60 & 8" retirement and 8-year vesting). In addition, all General and MTB division employees who are not vested as of December 31, 2012 will not be eligible to participate in the Deferred Retirement Option Plan in the future.
- All Sheriffs' department employees (except for Corrections department deputies) who are hired or promoted after various dates in 2010 must complete 15 years of County service to become vested in their pension benefits. In addition, these individuals may retire upon completing 15 years of service and attaining age 60.

The appendix of this report has additional details of these benefit provisions. These changes affected a small number of active plan members reported in connection with this valuation of the System. As a result, these changes had a small impact on contribution results.

In addition, there were no changes in the assumptions used in the actuarial valuation of the System. The changes in contribution amounts over the prior year are due primarily to Retirement System experience.

#### 4. 2012 System Experience

One way the System's experience affects costs is the effect it has on the unfunded accrued liability. This is referred to as the experience gain or loss for the year. During calendar year 2012, the return on fund assets was higher than long term expectations (7.5% per year). However, the market smoothing techniques used in this valuation of the System recognize past and present investment experience. As a result, the recognized rate of investment return was 0.11%. This adverse experience was partially offset by lower than assumed pay increases during 2012.

#### 5. Year 2012 Funding Position

The change in funding position over the prior year is due primarily to the unfavorable experience during calendar year 2012. This year valuation assets represent 92% of accrued liabilities; last year the ratio was 97%.

#### 6. Looking Ahead

As of December 31, 2012 the funding value of assets was 101% of market value. This means that meeting the actuarial investment return assumption in the near term will require average future market returns that exceed the 7.5% investment return assumption.

#### 7. Retiree Reserve Balance

The retiree liabilities for all divisions are larger than the assets allocated to the retiree reserve balances as of December 31, 2012. The liabilities and reserves are shown below:

	<u>General County</u>	<u>Sheriff's Department</u>	<u>Road Commission</u>	<u>Martha T. Berry MCF</u>
Retiree Liability	\$345,822,851	\$125,607,213	\$75,210,735	\$24,263,677
Retiree Reserve	<u>318,209,305</u>	<u>104,429,267</u>	<u>83,200,145</u>	<u>19,056,015</u>
Unfunded Liability	\$ 27,613,546	\$ 21,177,946	\$(7,989,410)	\$ 5,207,662

As of the valuation date, there is a shortfall in the retiree reserve for all groups, except for the Road Commission. We recommend assets equal to the unfunded liabilities for the General, Sheriff's and MTB groups be transferred from the Retirement System employer reserve to fully fund the retiree liability.

---

## **SECTION B**

### **VALUATION RESULTS AND COMPARATIVE INFORMATION**

---



## **FINANCIAL OBJECTIVE**

The financial objective of the Retirement System is to establish and receive contributions, expressed as a percentage of active member payroll, which will follow the expected pattern from year-to-year and will not have to be increased substantially for future generations of taxpayers. Your annual actuarial valuations determine how well the objective is being met.

The Retirement Commission of the Macomb County Employees Retirement System confirms that the System provides for payment of the required employer contribution as described in Section 20m of Michigan Public Act No. 728.

## **CONTRIBUTION RATES**

The Retirement System is supported by contributions from the employers and active members and by the investment income earned on System assets. Most General members and Martha T. Berry MCF members hired before January 1, 2002 contribute 3.5% of their pay (RN's and LPN's contribute 2.5% of their pay) and all General members and Martha T. Berry MCF members hired on or after January 1, 2002 contribute 2.5% of their pay. All Road Commission members contribute 3.5% of their pay. The Sheriff's Department members contribute 4.0% of their pay. The employer provides an actuarially determined contribution, the remainder needed to meet the financial objective.

Member and employer contributions cover both (i) normal cost, and (ii) the financing of the unfunded accrued liability over a period of future years. The normal cost is the portion of System costs allocated to the current year by the valuation method described in Section D. The unfunded accrued liability is the portion of system costs not covered by present system assets and future normal costs.

The contribution requirements for the fiscal year beginning January 1, 2014 are presented on pages B-2 and B-3.

**CONTRIBUTIONS TO PROVIDE BENEFITS  
MEMBER AND EMPLOYER PORTIONS  
FOR THE FISCAL YEAR BEGINNING JANUARY 1, 2014**

Contribution for	% of Active Member Payroll*			
	General County	Sheriff's Department	Road Commission	Martha T. Berry MCF
Normal cost:				
Age and service	12.73 %	19.43 %	15.71 %	13.42 %
Disability	0.80	0.95	1.16	0.71
Death-in-service	0.46	0.43	0.55	0.42
Total	<u>13.99</u>	<u>20.81</u>	<u>17.42</u>	<u>14.55</u>
Administrative expenses	0.10	0.10	0.10	0.10
Member contributions:				
Total**	2.07	3.59	3.50	2.60
Future refunds	0.23	0.11	0.15	0.26
Available	<u>1.84</u>	<u>3.48</u>	<u>3.35</u>	<u>2.34</u>
Employer normal cost	<u>12.25</u>	<u>17.43</u>	<u>14.17</u>	<u>12.31</u>
UAAL as a Level Percent of Payroll	<u>3.17</u>	<u>3.47</u>	<u>10.31</u>	<u>(0.26)</u>
Total Computed Employer Rate	<u><u>15.42 %</u></u>	<u><u>20.90 %</u></u>	<u><u>24.48 %</u></u>	<u><u>12.05 %</u></u>

\* Including payroll of members currently in the DROP.

\*\* Weighted average.

For each division, the unfunded actuarial accrued liabilities (UAAL) or excess assets were amortized as a level percent of payroll over a period of 20 years.

Procedures for determining dollar contribution amounts are shown on the following page.

## CONVERTING CONTRIBUTION RATES TO DOLLAR AMOUNTS

For any period of time, the percent-of-payroll contribution rates need to be converted to dollar amounts. We recommend one of the following procedures.

- (1) Contribute dollar amounts for a period which are equal to the employer's percent-of-payroll contribution requirement multiplied by the covered active member payroll for the period (including the payroll of the members in the DROP). Adjustments should be made as necessary to exclude items of pay that are not covered compensation for Retirement System benefits and to include non-payroll payments that are covered compensation.
- (2) **Contribute \$12,237,576 for the General County, \$5,923,380 for the Sheriff's Department, \$3,193,455 for the Road Commission and \$798,409 for Martha T. Berry MCF.** These amounts are based on the payroll information adjusted to reflect assumed payroll increases between the valuation date and the beginning of the fiscal year for which the contributions are being determined.

## TIMING OF CONTRIBUTION PAYMENTS

The contributions in this report anticipate regular payments throughout the year. Examples would be at each payroll date or in 12 monthly installments. **If the employer contribution pattern is significantly different, an adjustment to the costs may be appropriate.** For example, a lump sum contribution at the beginning of the year is available for investment throughout the year and, therefore, ought to be somewhat smaller than 12 monthly payments. Similarly, a lump sum contribution at the end of the year will not generate any investment income that year and so must be greater than 12 monthly payments.

**DETERMINATION OF UNFUNDED ACCRUED LIABILITY  
AS OF DECEMBER 31, 2012**

	General County	Sheriff's Department	Road Commission	Martha T. Berry MCF
<b>A. Accrued Liability</b>				
1. For retirees and beneficiaries*				
a. Benefit payments	\$345,822,851	\$ 125,607,213	\$75,210,735	\$24,263,677
b. Reserves	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
c. Total	345,822,851	125,607,213	75,210,735	24,263,677
2. For vested terminated members				
	12,892,356	2,297,580	1,109,662	2,066,099
3. For present active members				
a. Value of expected future benefit payments	232,027,968	136,763,247	63,444,076	17,715,106
b. Value of future normal costs	<u>85,442,311</u>	<u>51,986,761</u>	<u>24,542,425</u>	<u>10,030,374</u>
c. Active member liability: (a) - (b)	<u>146,585,657</u>	<u>84,776,486</u>	<u>38,901,651</u>	<u>7,684,732</u>
4. Total	505,300,864	212,681,279	115,222,048	34,014,508
<b>B. Valuation Assets</b>				
	<u>467,981,007</u>	<u>198,085,093</u>	<u>95,269,039</u>	<u>34,270,405</u>
<b>C. Unfunded Accrued Liability (Overfunding):</b>				
(A.4) - (B)	<u><u>37,319,857</u></u>	<u><u>14,596,186</u></u>	<u><u>19,953,009</u></u>	<u><u>(255,897)</u></u>
<b>D. Funding %</b>				
	<u><u>92.6%</u></u>	<u><u>93.1%</u></u>	<u><u>82.7%</u></u>	<u><u>100.8%</u></u>

\* Includes liabilities for individuals in the DROP.

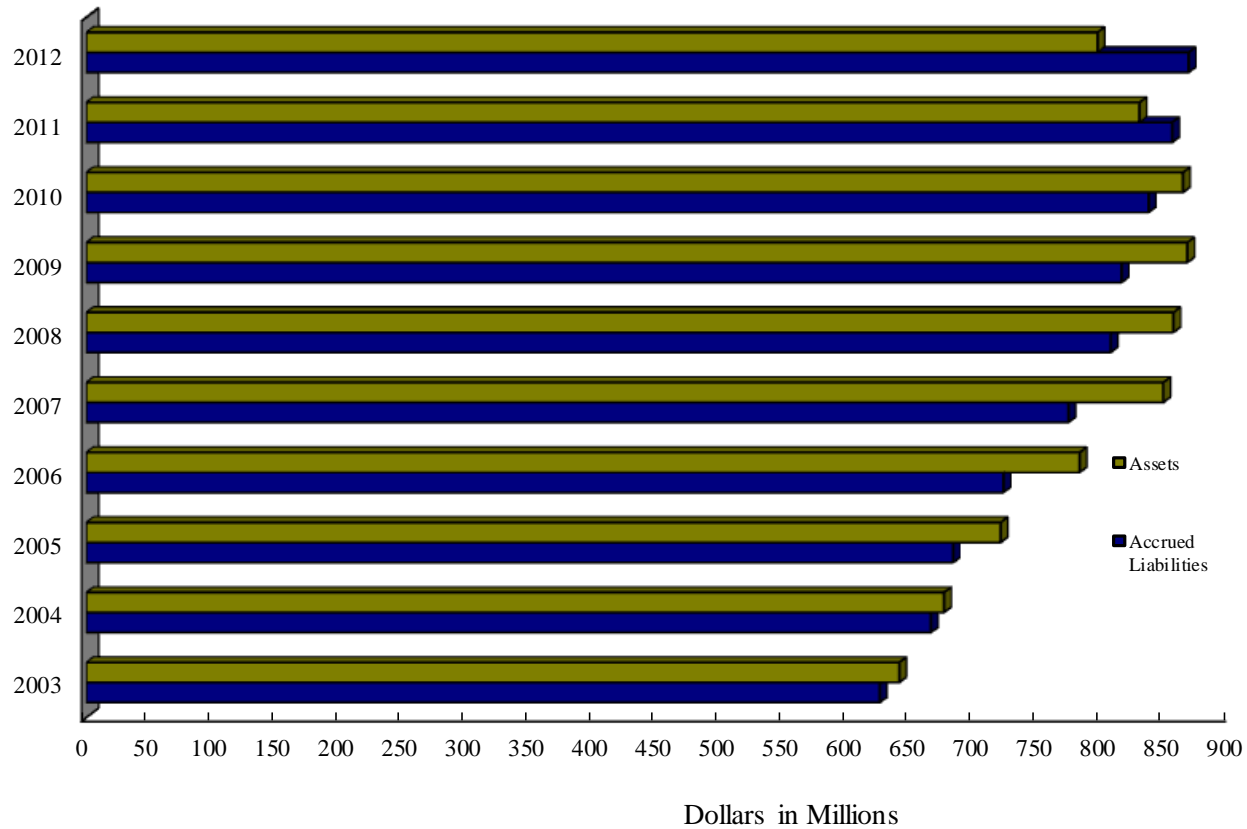
**DEVELOPMENT OF EXPERIENCE GAIN (LOSS)  
YEAR ENDED DECEMBER 31, 2012**

Actual experience will never (except by coincidence) exactly match assumed experience. It is hoped that gains and losses will 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) for all divisions is shown below.

	<b>Year Ending December 31, 2012</b>
(1) UAAL at start of year	\$ 25,631,504
(2) Normal cost	19,641,072
(3) Actual contributions	20,173,991
(4) Interest accrual	1,902,619
(5) Expected UAAL before changes:	0
(1)+(2)-(3)+(4)	27,001,204
(6) Change from benefit provisions	25,948
(7) Change in assumptions or methods	0
(8) Expected UAAL after changes:	
(5)+(6)+(7)	27,027,152
(9) Actual UAAL at end-of-year	71,613,155
(10) Gain (loss): (8)-(9)	(44,586,003)
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year	(5.2)%

## ASSETS & ACCRUED LIABILITIES FOR ALL SYSTEM MEMBERS

Valuation Year



2003 assets equaled 108% of accrued liabilities.

2012 assets equaled 92% of accrued liabilities.

**COMPUTED EMPLOYER CONTRIBUTIONS  
COMPARATIVE STATEMENT  
GENERAL COUNTY**

Valuation Date December 31	Active Members				Retirees & Beneficiaries*		Employer Contributions as Payroll Percents
	No.	Valuation Payroll			No.	Monthly Benefits	
		Total**	Average	% Increase			
1994 #@	1,880	\$58,337,999	\$ 31,031	1.8 %	720	\$ 420,173	8.16 %
1995 #	1,890	61,805,904	32,702	5.4	747	452,003	7.82
1996 #	1,918	65,074,258	33,928	3.7	785	497,829	8.14
1997	1,957	68,048,675	34,772	2.5	827	554,274	6.53
1998	2,000	70,559,895	35,280	1.5	860	608,308	3.83
1999	2,027	75,078,616	37,039	5.0	861	641,816	0.63
2000 #	2,043	74,236,121	36,337	(1.9)	889	719,105	2.19
2001 #	1,866	72,321,085	38,757	6.7	911	763,689	1.11
2002 @	2,080	83,635,826	40,210	3.7	954	835,286	4.26
2003 @	2,131	87,545,515	41,082	2.2	1,072	1,080,329	9.01
2004 #	2,158	92,266,683	42,756	4.1	1,169	1,269,485	14.57
2004 #!	2,158	92,266,683	42,756	4.1	1,169	1,269,485	12.19
2005 @	2,118	91,068,299	42,997	0.6	1,294	1,587,496	11.80
2006	1,956	85,539,496	43,732	1.7	1,486	1,973,938	11.58
2007 #	1,825	83,093,296	45,531	4.1	1,652	2,262,129	11.19
2008 #@	1,546	71,003,823	45,927	0.9	1,575	2,242,888	8.55
2009 #	1,497	67,006,513	44,761	(2.5)	1,620	2,331,449	9.00
2010	1,452	64,855,997	44,667	(0.2)	1,687	2,442,026	10.57
2011	1,422	64,566,970	45,406	1.7	1,755	2,554,204	13.22
2012 #	1,334	62,604,753	46,930	3.4	1,801	2,623,505	15.42

# Benefit changes included in this valuation.

@ Actuarial assumptions or methods revised.

\* Retiree information includes members electing DROP beginning in 2004.

! Amortization period revised.

\*\* Excludes pay for DROP members.

**COMPUTED EMPLOYER CONTRIBUTIONS  
COMPARATIVE STATEMENT  
SHERIFF'S DEPARTMENT**

Valuation Date December 31,	Active Members				Retirees & Beneficiaries*		Employer Contributions as Payroll Percents
	No.	Valuation Payroll			No.	Monthly Benefits	
		Total**	Average	% Increase			
1994 #@	323	\$ 14,883,102	\$46,078	1.5 %	122	\$ 213,243	20.22 %
1995 #	331	15,453,538	46,687	1.3	128	221,291	18.88
1996 #	338	16,640,938	49,234	5.5	131	233,601	19.24
1997	352	16,866,535	47,916	2.7	132	248,363	15.99
1998	366	18,086,823	49,418	3.1	137	264,882	11.43
1999	372	18,956,773	50,959	3.1	147	298,021	6.66
2000 #	370	20,109,034	54,349	6.7	155	330,752	5.61
2001	362	21,502,952	59,400	9.3	163	352,542	5.47
2002 @	406	23,293,023	57,372	3.4	188	452,403	13.36
2003 #@	415	24,523,879	59,094	3.0	197	494,509	16.27
2004 #	415	25,627,831	61,754	4.5	209	560,910	20.69
2004 #!	415	25,627,831	61,754	4.5	209	560,910	19.80
2005 @	438	28,029,893	63,995	3.6	220	606,501	17.56
2006	432	27,984,382	64,779	1.2	230	640,989	14.67
2007 #	426	28,981,620	68,032	5.0	237	672,103	14.15
2008	422	29,124,791	69,016	1.4	241	688,074	15.29
2009	419	28,638,488	68,350	(1.0)	248	713,854	15.66
2010	401	25,952,721	64,720	(5.3)	261	765,134	14.99
2011	390	25,162,695	64,520	(0.3)	277	834,884	17.83
2012 #	376	24,246,340	64,485	(0.1)	290	892,322	20.90

# Benefit changes included in this valuation.

\* Retiree information includes members electing DROP beginning in 2004.

@ Actuarial assumptions or methods changed.

! Amortization period revised.

\*\* Excludes pay for members electing DROP.



**COMPUTED EMPLOYER CONTRIBUTIONS  
COMPARATIVE STATEMENT  
ROAD COMMISSION**

Valuation Date December 31,	Active Members			Retirees & Beneficiaries		Employer Contributions as Payroll Percents	
	No.	Valuation Payroll		No.	Monthly Benefits		
		Total	Average	% Increase			
1994 #@	274	\$ 10,433,561	\$38,079	0.1 %	210	\$ 191,006	21.27 %
1995 #	273	10,833,071	39,682	4.2	224	230,000	20.99
1996	269	10,857,267	40,362	1.7	232	251,122	18.16
1997	266	11,170,663	41,995	4.0	243	277,451	15.28
1998	278	12,148,390	43,699	4.1	247	290,618	11.70
1999	259	11,546,310	44,580	2.0	248	303,008	7.01
2000 #	247	10,939,384	44,289	(0.7)	249	320,776	3.24
2001	287	13,155,595	45,838	3.5	252	332,187	6.98
2002 @	309	14,370,596	46,507	1.5	256	359,156	10.40
2003 @	315	15,166,250	48,147	3.5	265	393,485	14.92
2004 #	315	16,363,729	51,948	7.9	262	400,588	19.16
2004 #!	315	16,363,729	51,948	7.9	262	400,588	17.92
2005 @	295	15,788,396	53,520	3.0	265	423,833	16.08
2006	293	15,297,108	52,209	(2.5)	272	445,916	13.65
2007 #	263	14,621,336	55,594	6.5	295	511,909	13.09
2008 @	254	14,449,299	56,887	2.3	297	520,317	11.68
2009 #	245	14,421,101	58,862	3.5	302	537,968	15.09
2010	230	13,144,747	57,151	(2.9)	313	568,943	17.95
2011	216	12,613,964	58,398	2.2	325	610,220	21.46
2012 #	213	12,423,961	58,328	(0.1)	317	601,180	24.48

# Benefit changes included in this valuation.  
 @ Actuarial assumptions or methods changed.  
 ! Amortization period revised.

**COMPUTED EMPLOYER CONTRIBUTIONS  
COMPARATIVE STATEMENT  
MARTHA T. BERRY MCF**

Valuation Date	Active Members			Retirees & Beneficiaries		Employer Contributions as Payroll Percents	
	No.	Valuation Payroll		No.	Monthly Benefits		
December 31,		Total**	Average	% Increase			
2008 #@	174	\$ 7,244,761	\$41,637	-	167	\$ 162,643	9.20 %
2009 #	164	6,456,836	39,371	(5.4) %	171	172,128	8.19
2010	174	6,841,775	39,321	(0.1)	178	177,819	9.03
2011	170	6,556,551	38,568	(1.9)	185	188,173	10.56
2012 #	156	6,116,820	39,210	1.7	183	194,604	12.05

# Benefit changes included in this valuation.

@ Actuarial assumptions or methods changed.

\*\* Excludes pay for DROP members.

---

## **SECTION C**

### **SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA**

---

**BRIEF SUMMARY OF ANCILLARY BENEFIT PROVISIONS  
(DECEMBER 31, 2012)**

<b>Eligibility</b>	<b>Amount</b>
<b>REGULAR RETIREMENT</b>	
Please refer to the Appendix.	
<b>DEFERRED RETIREMENT</b>	
Please refer to the Appendix.	
<b>NON-DUTY DEATH-IN-SERVICE</b>	
10 or more years of service.	Computed as a regular retirement but actuarially reduced in accordance with a 100% joint and survivor election.
<b>DUTY DEATH-IN-SERVICE</b>	
No age or service requirements. Must be in receipt of worker's compensation.	Refund of accumulated contributions. Upon termination of worker's compensation payments the same amount is paid to the spouse and to unmarried children under 18.
<b>NON-DUTY DISABILITY</b>	
10 or more years of service.	Computed as a regular retirement with a minimum benefit of \$400 per month.
<b>DUTY DISABILITY</b>	
No age or service requirements. Must be in receipt of worker's compensation.	Computed as a regular retirement with a minimum benefit of \$400 per month. During the worker's compensation period the County financed portion cannot exceed the difference between 65% of final average compensation and worker's compensation payments.
<b>MEMBER CONTRIBUTIONS</b>	
Please refer to the Appendix.	

## SUMMARY OF DROP PROVISIONS

Please refer to the Appendix for DROP eligibility provisions. The other provisions of the DROP are listed below:

- The DROP is a forward DROP.
- Members can DROP when they first become eligible for an unreduced benefit.
- Upon entering the DROP, 100% of the member's monthly retirement benefit will be credited to the DROP account.
- The DROP account will be credited with the same interest rate used to accumulate member contributions (currently 3.5%).
- The maximum DROP period is five years. Members may continue to work past the maximum DROP period but no additional retirement benefits will be credited to the member's DROP account. Interest on the DROP account will continue to accrue for members working past the maximum DROP period.
- Member contributions to the Retirement System will cease upon entering the DROP.
- Upon actual retirement, the member would receive a monthly annuity equal to the accrued benefit credited to the DROP account under any form of payment available from the plan, and the lump sum amount accumulated in the DROP account. Members elect their form of payment at time of DROP.
- The monthly annuity as of the DROP date is calculated based on service, final average compensation and benefit provisions as of the DROP date less the annuity withdrawal reduction, if applicable; this amount is not changed for any subsequent changes in pay or benefit provisions. The annuity withdrawal is paid at the time of DROP.
- For POLC (Union 1 & 20) and MCDPSA (Union 26), interest is earned on the DROP account balance at the end of each month, and shall be paid to the employee's DROP account no later than the last day of the following month.
- For POLC (Union 1), effective August 20, 2010, for new entries into DROP, upon reaching the five year maximum DROP participation period, the DROP participant shall terminate his/her employment.
- For POAM (Union 7), effective August 6, 2010, an employee of Macomb County who is a member of the POAM-Deputies and Dispatchers, may voluntarily elect to participate in the DROP, upon obtaining the minimum age and service requirements for a normal service retirement.

**REPORTED FINANCIAL INFORMATION  
YEAR ENDED DECEMBER 31, 2012  
(MARKET VALUE)**

**Revenues and Disbursements during 2012**

**Revenues:**

a. Member contributions	\$ 3,569,150	
b. Employer contributions	16,604,841	
c. Interest and dividends	10,010,733	
d. Investment gains (losses)	<u>75,777,960</u>	
e. Total		\$105,962,684

**Disbursements:**

a. Refunds of member contributions	11,452,136	
b. Benefits paid	42,561,642	
c. Investment expenses	2,686,802	
d. Administrative expenses	<u>172,929</u>	
e. Total		56,873,509

**Reserve Increase:**

Total revenues minus total disbursements		<u>\$ 49,089,175</u>
--	--	----------------------

**Assets and Reserves as of December 31, 2012**

**Assets:**

a. Cash & payables	\$ 28,834,810
b. Short-term investments	66,215
c. Government bonds	0
d. Corporate bonds	130,666
e. Stocks	662,847,131
f. Real estate	96,058,632
g. Limited partnerships	<u>0</u>

Total \$787,937,454

**Reserve Accounts:**

a. Member contributions	\$ 45,003,858
b. Reserve for benefits now being paid	524,894,732
c. Reserve for future benefits	213,608,936
d. Supplemental reserve	<u>4,429,928</u>

Total \$787,937,454

## DETERMINATION OF VALUATION ASSETS

Year Ended December 31:	2011	2012	2013	2014	2015	2016
A. Funding Value Beginning of Year	\$862,915,501	\$828,692,442				
B. Market Value End of Year	738,848,279	787,937,454				
C. Market Value Beginning of Year	785,197,989	738,848,279				
D. Non-Investment Net Cash Flow	(35,472,385)	(34,012,716)				
E. Investment Income						
E1. Market Total: B - C - D	(10,877,325)	83,101,891				
E2. Amount for Immediate Recognition (7.5%)	63,388,448	60,876,456				
E3. Amount for Phased-In Recognition: E1-E2	(74,265,773)	22,225,435				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.2 x E3	(14,853,155)	4,445,087				
F2. First Prior Year	5,545,340	(14,853,155)	\$ 4,445,087			
F3. Second Prior Year	8,020,345	5,545,340	(14,853,155)	\$ 4,445,087		
F4. Third Prior Year	(63,108,255)	8,020,345	5,545,340	(14,853,155)	\$ 4,445,087	
F5. Fourth Prior Year	2,256,603	(63,108,255)	8,020,347	5,545,338	(14,853,153)	\$ 4,445,087
G. Total of Items F1 - F5	(62,139,122)	(59,950,638)	3,157,619	(4,862,730)	(10,408,066)	4,445,087
H. Funding Value End of Year: A + D + E2 + G	828,692,442	795,605,544				
I. Difference between Market & Funding Value	(89,844,163)	(7,668,090)	(10,825,709)	(5,962,979)	4,445,087	0
J. Recognized Rate of Return - Funding Value Basis (G+E2)/(1/2*(A+H-(G+E2)))	0.15%	0.11%				
K. Recognized Rate of Return - Market Value Basis E1/(1/2*(B+C-(E1)))	(1.42%)	11.51%				

**RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS  
COMPARATIVE STATEMENT**

Year Ended December 31	Added to Rolls*#		Removed from Rolls		Rolls End of Year		% Increase in Annual Pensions	Average Pension	Present Value of Pensions
	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions			
1993	76	\$ 1,156,543	35	\$ 165,207	986	\$ 8,342,410	13.5%	\$ 8,461	\$ 93,777,780
1994	105	1,765,220	38	214,407	1,052	9,893,223	18.6	9,404	102,320,216
1995	85	1,198,103	37	251,793	1,100	10,839,533	9.6	9,854	111,649,206
1996	85	1,206,860	37	255,781	1,148	11,790,612	8.8	10,271	125,424,807
1997	92	1,381,389	38	210,946	1,202	12,961,055	9.9	10,783	137,436,352
1998	87	1,320,780	45	316,133	1,244	13,965,702	7.8	11,226	147,517,689
1999	70	1,235,117	58	286,683	1,256	14,914,136	6.8	11,874	156,999,665
2000	99	1,939,366	62	405,901	1,293	16,447,601	10.3	12,720	175,045,484
2001	81	1,366,678	48	433,272	1,326	17,381,007	5.7	13,108	184,227,153
2002	133	2,859,450	61	478,315	1,398	19,762,142	13.7	14,136	212,414,152
2003	192	4,493,238	56	635,506	1,534	23,619,878	19.5	15,398	256,882,027
2004	159	3,633,350	53	481,426	1,640	26,771,802	13.3	16,324	291,780,728
2005	191	5,077,365	52	435,209	1,779	31,413,958	17.3	17,658	345,568,514
2006	258	5,814,886	49	498,726	1,988	36,730,118	16.9	18,476	406,950,639
2007	258	5,353,201	62	729,628	2,184	41,353,691	12.6	18,935	461,361,122
2008	143	2,522,444	47	509,064	2,280	43,367,071	4.9	19,021	489,123,875
2009	133	3,513,555	72	1,815,834	2,341	45,064,792	3.9	19,250	512,641,054
2010	135	2,780,334	37	398,052	2,439	47,447,074	5.3	19,453	536,040,285
2011	158	3,423,043	55	620,343	2,542	50,249,774	5.9	19,768	560,026,223
2012	115	2,308,379	66	818,819	2,591	51,739,334	3.0	19,969	570,904,476

\* Includes post-retirement increases and beneficiaries of deceased retirees.

# Includes alternate payees under EDROs and members electing DROP beginning in 2004.



**RETIREES AND BENEFICIARIES DECEMBER 31, 2012  
TABULATED BY ATTAINED AGE**

**GENERAL COUNTY**

Age	Age and Service		Death-in-Service Survivor		Disability		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
Under 20			1	\$ 6,649			1	\$ 6,649
20 - 24					2	\$ 19,025	2	19,025
25 - 29			3	33,607	1	9,710	4	43,317
30 - 34	2	\$ 42,274					2	42,274
35 - 39	1	8,411			1	7,884	2	16,295
40 - 44	6	28,946			3	30,907	9	59,853
45 - 49	5	54,007			5	63,768	10	117,775
50 - 54	112	3,106,165	3	43,635	9	182,397	124	3,332,197
55 - 59	244	5,559,778	1	11,012	4	62,207	249	5,632,997
60 - 64	392	8,080,811	5	95,384	9	77,998	406	8,254,193
65 - 69	314	5,599,171	4	50,128	9	121,076	327	5,770,375
70-74	226	3,586,561	2	41,903	9	87,172	237	3,715,636
75-79	125	1,528,727	1	12,472	12	122,153	138	1,663,352
80-84	143	1,574,039	4	36,089	1	3,086	148	1,613,214
85-89	87	858,212	2	12,306	3	23,493	92	894,011
90+	45	288,922	2	7,033	3	4,945	50	300,900
<b>Totals</b>	<b>1,702</b>	<b>\$30,316,024</b>	<b>28</b>	<b>\$350,218</b>	<b>71</b>	<b>\$815,821</b>	<b>1,801</b>	<b>\$31,482,063</b>

**RETIREES AND BENEFICIARIES DECEMBER 31, 2012  
TABULATED BY ATTAINED AGE**

**SHERIFF'S DEPARTMENT**

Age	Age and Service		Death-in-Service Survivor		Disability		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
35 - 39	1	\$ 39,059			1	\$ 7,538	2	\$ 46,597
40 - 44					1	21,135	1	21,135
45 - 49	17	767,458			3	45,977	20	813,435
50 - 54	41	2,031,945	1	\$ 27,328	2	48,391	44	2,107,664
55 - 59	64	3,051,883			6	167,823	70	3,219,706
60 - 64	32	1,256,725	1	34,242	4	98,812	37	1,389,779
65 - 69	29	1,047,566			4	77,317	33	1,124,883
70 - 74	37	1,240,757			1	15,031	38	1,255,788
75 - 79	18	386,808			1	8,119	19	394,927
80 - 84	11	160,011			2	20,965	13	180,976
85 - 89	10	110,541					10	110,541
90+	3	42,436					3	42,436
<b>Totals</b>	<b>263</b>	<b>\$10,135,189</b>	<b>2</b>	<b>\$61,570</b>	<b>25</b>	<b>\$511,108</b>	<b>290</b>	<b>\$10,707,867</b>

**RETIREES AND BENEFICIARIES DECEMBER 31, 2012  
TABULATED BY ATTAINED AGE**

**ROAD COMMISSION**

Age	Age and Service		Death-in-Service Survivor		Disability		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
Under 20					2	\$ 14,373	2	\$ 14,373
20 - 24								
25 - 29					1	7,187	1	7,187
30 - 34					1	2,396	1	2,396
35 - 39					1	3,595	1	3,595
40 - 44					2	14,721	2	14,721
45 - 49	8	\$ 231,331			2	37,324	10	268,655
50 - 54	26	851,584	1	\$ 23,419	1	23,440	28	898,443
55 - 59	46	1,384,087	1	30,240	3	46,028	50	1,460,355
60 - 64	51	1,467,718			3	30,494	54	1,498,212
65 - 69	29	780,146			2	27,194	31	807,340
70 - 74	31	710,292	1	31,504	2	13,091	34	754,887
75 - 79	33	668,611			2	13,796	35	682,407
80 - 84	31	488,713	1	5,197	6	47,998	38	541,908
85 - 89	13	143,434			1	11,089	14	154,523
90+	15	98,800	1	6,355			16	105,155
<b>Totals</b>	<b>283</b>	<b>\$6,824,716</b>	<b>5</b>	<b>\$96,715</b>	<b>29</b>	<b>\$292,726</b>	<b>317</b>	<b>\$7,214,157</b>

**RETIREES AND BENEFICIARIES DECEMBER 31, 2012  
TABULATED BY ATTAINED AGE**

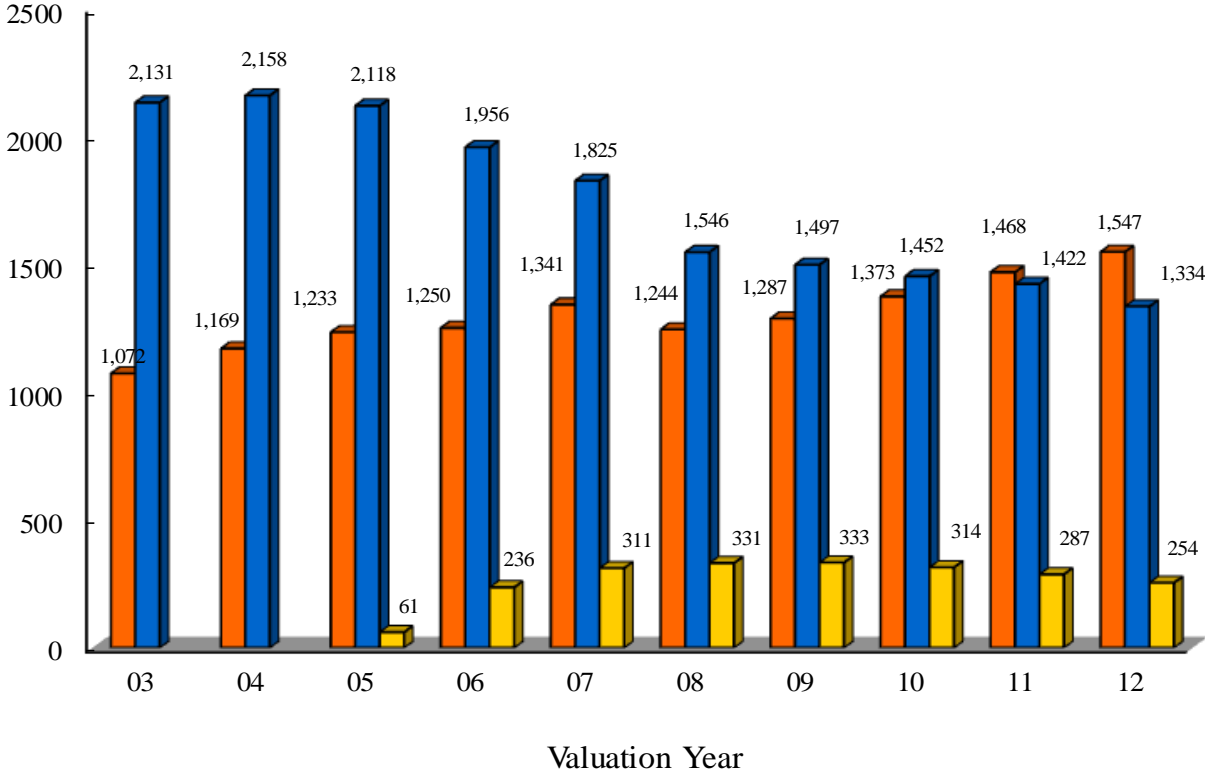
**MARTHA T. BERRY MCF**

Age	Age and Service		Death-in-Service Survivor		Disability		Totals	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
35 - 39	1	\$ 11,296					1	\$ 11,296
40 - 44								
45 - 49			1	\$ 10,350	3	\$ 35,181	4	45,531
50 - 54	8	206,712			2	36,399	10	243,111
55 - 59	18	397,287			2	29,073	20	426,360
60 - 64	37	556,995					37	556,995
65 - 69	21	306,526			4	24,893	25	331,419
70 - 74	26	281,166			2	13,267	28	294,433
75 - 79	22	209,896	1	6,388	3	19,697	26	235,981
80 - 84	13	105,395			4	14,211	17	119,606
85 - 89	10	50,136					10	50,136
90 +	5	20,379					5	20,379
<b>Totals</b>	<b>161</b>	<b>\$2,145,788</b>	<b>2</b>	<b>\$16,738</b>	<b>20</b>	<b>\$172,721</b>	<b>183</b>	<b>\$2,335,247</b>

## ACTIVE MEMBERS, DROP MEMBERS & BENEFIT RECIPIENTS GENERAL COUNTY

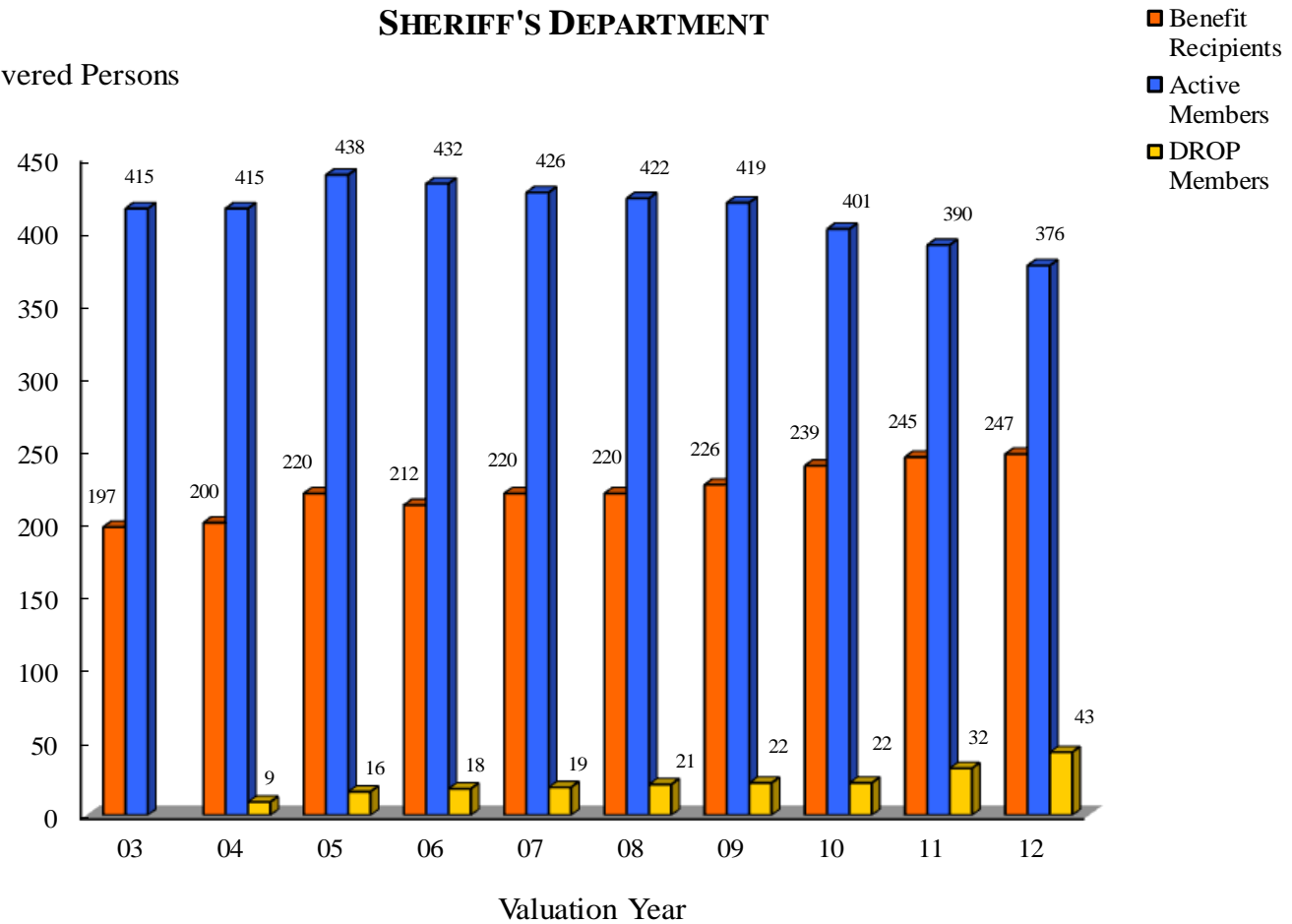
Covered Persons

- Benefit Recipients
- Active Members
- DROP Members



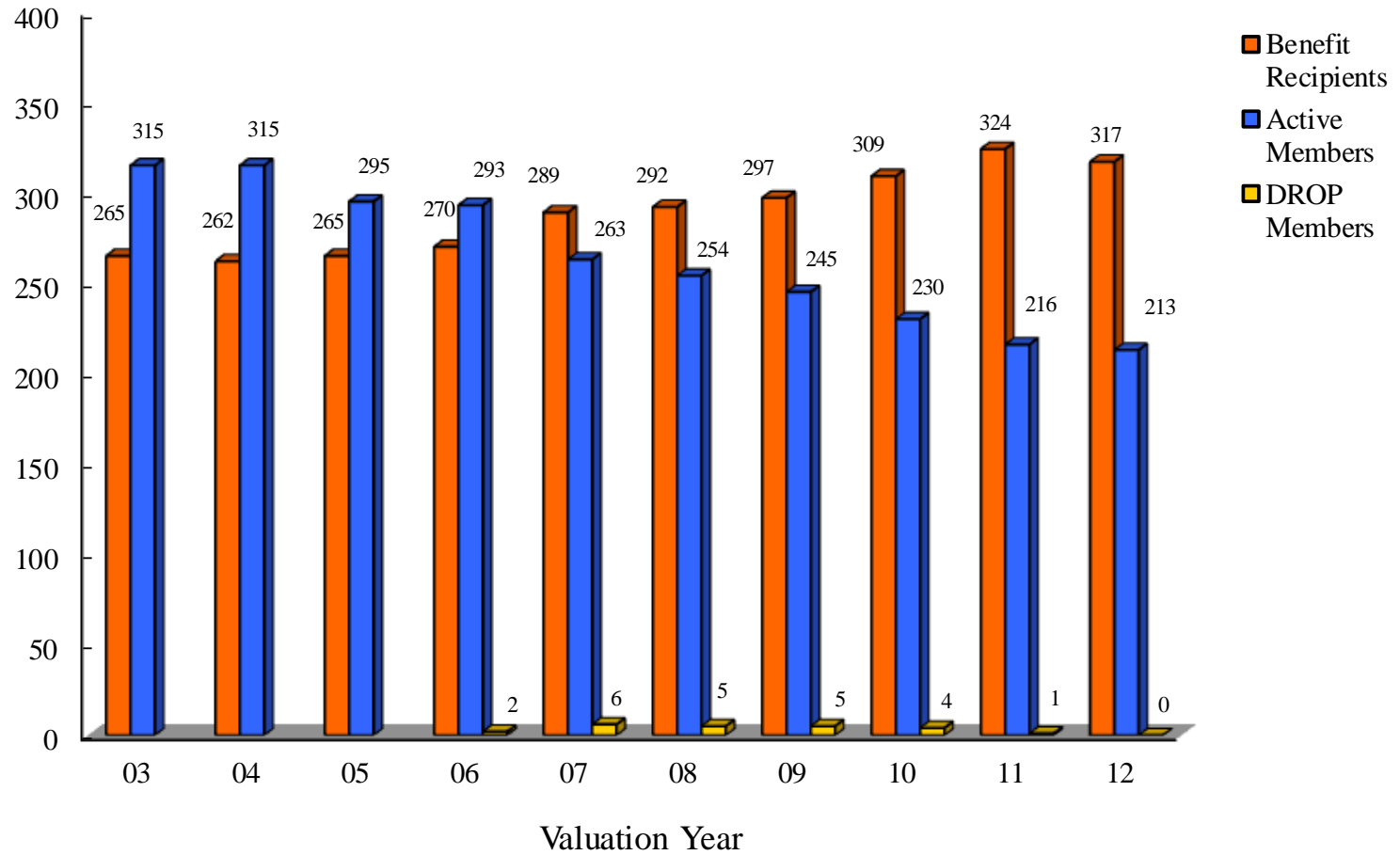
## ACTIVE MEMBERS, DROP MEMBERS & BENEFIT RECIPIENTS SHERIFF'S DEPARTMENT

Covered Persons



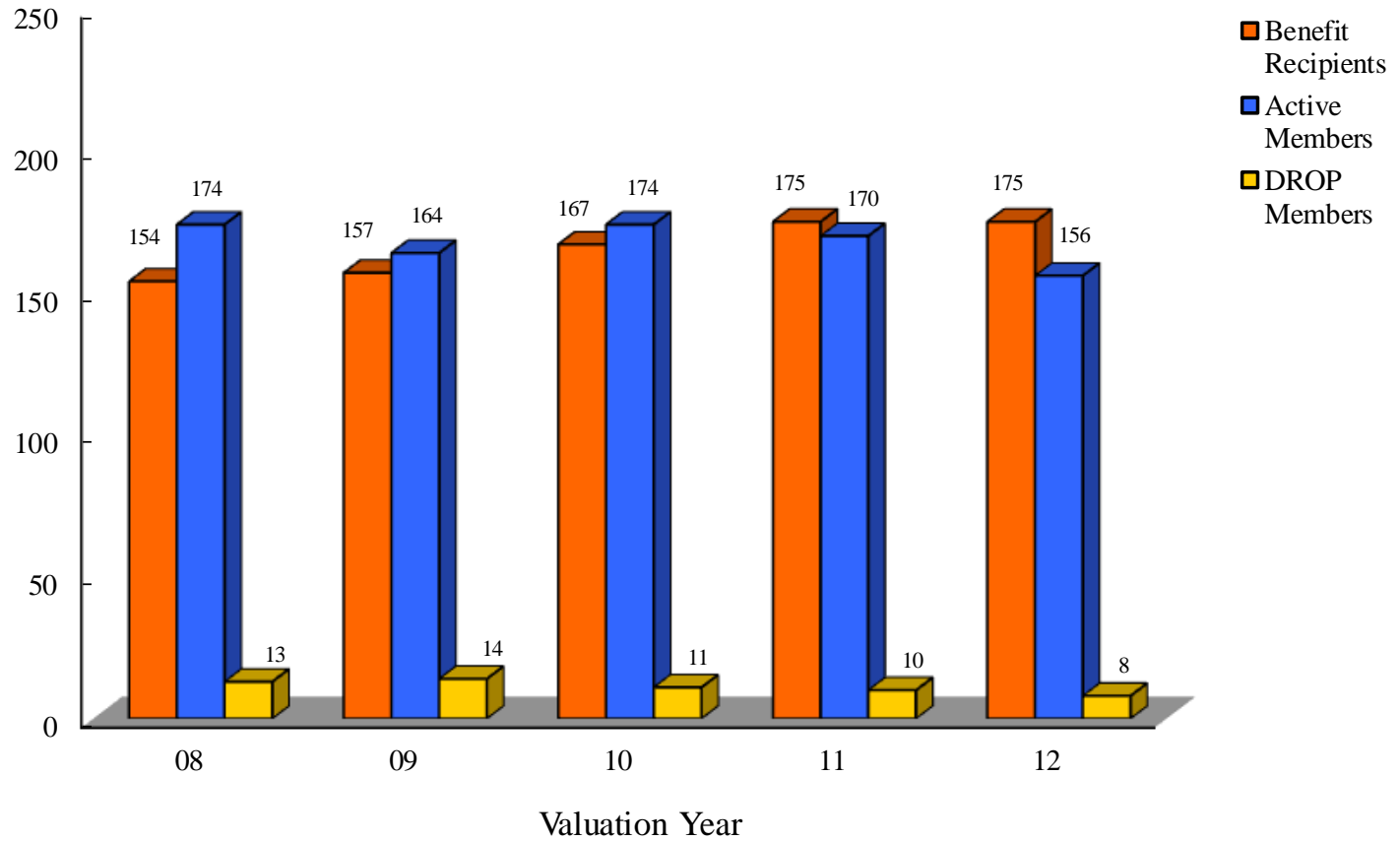
## ACTIVE MEMBERS, DROP MEMBERS & BENEFIT RECIPIENTS ROAD COMMISSION

Covered Persons



## ACTIVE MEMBERS, DROP MEMBERS & BENEFIT RECIPIENTS MARTHA T. BERRY MCF

Covered Persons





*Inactive members* included in the valuation totaled 235 involving estimated deferred annual retirement allowances of \$2,703,140. An inactive member is a person who has left covered employment after completing 8 or more years of service, but has not yet applied for a retirement allowance, and who has not withdrawn his accumulated contributions from the Employees' Savings Fund. Included in this group are 7 employees who are covered under the Reciprocal Retirement Act.

**Inactive Members December 31, 2012  
Tabulated by Valuation Divisions**

<b>Valuation Divisions</b>	<b>Number</b>	<b>Estimated Deferred</b>
General County	180	\$1,901,527
Sheriff's Department	19	362,874
Road Commission	15	180,790
Martha T. Berry MCF	21	257,949
Totals	235	\$2,703,140

**GENERAL COUNTY ACTIVE MEMBERS DECEMBER 31, 2012**  
**BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service on Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll*
15-19	1							1	\$ 27,053
20-24	7							7	212,859
25-29	34	10						44	1,756,143
30-34	37	52	14					103	4,377,599
35-39	47	71	56	11				185	8,701,693
40-44	45	67	59	39	8	1		219	10,583,819
45-49	35	71	54	44	34	21		259	12,621,280
50-54	35	67	56	40	16	16	2	232	11,011,789
55-59	26	62	63	18	10	2		181	8,318,999
60	2	8	2	1	1			14	590,393
61	4	11	5			1		21	1,071,627
62	1	7	7	3				18	817,993
63		6						6	319,397
64	1	4	2	5	1	1		14	726,604
65	2	2	2	1				7	424,660
66		4						4	121,028
67		4	2	1				7	308,913
68				1				1	47,948
70	1			1				2	113,101
72	1	2			1			4	260,007
73		1						1	74,293
74	1	1						2	75,855
75	1							1	27,392
79			1					1	14,308
<b>Totals</b>	<b>281</b>	<b>450</b>	<b>323</b>	<b>165</b>	<b>71</b>	<b>42</b>	<b>2</b>	<b>1,334</b>	<b>\$62,604,753</b>

\* Valuation Payroll excludes pay for members electing the DROP.

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

Age: 46.4 years  
Service: 10.3 years  
Annual Pay: \$46,930

**SHERIFF'S DEPARTMENT ACTIVE MEMBERS DECEMBER 31, 2012  
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service on Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll*
20-24	8							8	\$ 291,022
25-29	15	12						27	1,325,070
30-34	5	23	16					44	2,634,362
35-39	3	14	50	9				76	5,014,336
40-44	3	16	25	43	10			97	6,452,654
45-49	2	7	15	16	35	2		77	5,225,472
50-54		6	7	4	17	1		35	2,427,109
55-59		2		1	7			10	711,276
60				1	1			2	165,039
<b>Totals</b>	<b>36</b>	<b>80</b>	<b>113</b>	<b>74</b>	<b>70</b>	<b>3</b>		<b>376</b>	<b>\$24,246,340</b>

\* Valuation Payroll excludes pay for members electing the DROP.

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

Age: 40.8 years

Service: 13.3 years

Annual Pay: \$64,485

**ROAD COMMISSION ACTIVE MEMBERS DECEMBER 31, 2012  
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service on Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll*
25-29	2	3						5	\$ 258,895
30-34	1	8	12	1				22	1,147,812
35-39	1	11	14	7				33	1,942,742
40-44	2	5	11	19	8	1		46	2,749,090
45-49		6	10	9	15	10		50	3,025,185
50-54	2	2	11	11	3	4		33	1,946,337
55-59		4	5	4	1			14	761,974
60		2	1	3				6	370,054
62			1					1	44,426
64			1	1				2	136,264
73					1			1	41,182
<b>Totals</b>	<b>8</b>	<b>41</b>	<b>66</b>	<b>55</b>	<b>28</b>	<b>15</b>		<b>213</b>	<b>\$12,423,961</b>

\* Valuation Payroll excludes pay for members electing the DROP.

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

Age: 44.5 years

Service: 14.9 years

Annual Pay: \$58,328

**MARTHA T. BERRY MCF ACTIVE MEMBERS DECEMBER 31, 2012**  
**BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service on Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll*
20-24	5							5	\$ 158,137
25-29	7							7	235,533
30-34	17	7						24	950,306
35-39	12	6	1					19	758,547
40-44	20	9	3	4	2			38	1,569,853
45-49	5	3	4	5	2	1		20	683,596
50-54	5	4	1	5		1		16	618,347
55-59	7	6	6	1				20	812,895
60		2						2	119,870
61	1							1	29,090
62		1						1	46,464
63	1							1	55,587
65		1						1	37,586
67		1						1	41,009
<b>Totals</b>	<b>80</b>	<b>40</b>	<b>15</b>	<b>15</b>	<b>4</b>	<b>2</b>		<b>156</b>	<b>\$6,116,820</b>

\* Valuation Payroll excludes pay for members electing the DROP.

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

Age: 43.1 years

Service: 6.7 years

Annual Pay: \$39,210

---

## **SECTION D**

# **ACTUARIAL COST METHODS AND ACTUARIAL ASSUMPTIONS**

---

## VALUATION METHODS

**Actuarial Cost Method:** Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an 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 hire to the date of retirement, are sufficient to accumulate to the value of the member's benefits.
- (ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

**Amortization of Unfunded Actuarial Valuation Method:** Unfunded actuarial accrued liabilities or asset surpluses were amortized by level percent-of-payroll contributions (principal and interest combined) over 20 years. These periods are re-established with each annual actuarial valuation. The amortization method was first adopted for the December 31, 2005 actuarial valuation. Active member payroll was assumed to increase 5.0% for the purpose of determining the level-percent contributions.

**Asset Valuation Method:** The actuarial value equals:

- (a) Actuarial value of assets from the previous valuation, plus
- (b) employer and member contributions since the last valuation, minus
- (c) benefit payments and refunds since the last valuation, plus
- (d) estimated investment income at the assumed investment return, plus
- (e) portion of gain (loss) recognized in the current valuation.

For the above purpose, gain (loss) is defined as the excess during the period of the investment return on the market value of assets over the expected investment income. Twenty percent of the difference is recognized over a 5-year period in the actuarial value of assets.

This method was first adopted for the December 31, 2005 actuarial valuation.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

**Investment Return** (net of investment expenses).

2.5% per year in excess of pay inflation (real rate of return). If pay inflation matches the assumption of 5.0%, this implies a 7.5% rate of return.

This assumption is used to equate the value of payments due at different points in time and was first used for the December 31, 1993 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 Average*
	2012	2011	2010	2009	2008	
Rate of Investment Return	0.1 %	0.1 %	3.3 %	3.5 %	2.5 %	1.9 %
Increase in Average Pay	<u>2.3</u>	<u>0.9</u>	<u>(2.1)</u>	<u>(1.4)</u>	<u>0.9</u>	<u>0.1</u>
Real Rate of Return	(2.2)	(0.8)	5.4	4.9	1.6	1.8

\* Compound 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 actual 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 comparison with other systems.

**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, 2005 valuation.

Years of Service	Base (Economic)	Annual Rate of Pay Increase							
		Merit and Longevity				Total			
		General County	Sheriff's Department	Road Commission	Martha T. Berry MCF	General County	Sheriff's Department	Road Commission	Martha T. Berry MCF
1	5.0%	3.0 %	7.0 %	6.0 %	3.0 %	8.0%	12.0%	11.0%	8.0%
2	5.0	3.0	7.0	6.0	3.0	8.0	12.0	11.0	8.0
3	5.0	3.0	7.0	6.0	3.0	8.0	12.0	11.0	8.0
4	5.0	3.0	4.0	6.0	3.0	8.0	9.0	11.0	8.0
5	5.0	3.0	4.0	6.0	3.0	8.0	9.0	11.0	8.0
6	5.0	3.0	4.0	6.0	3.0	8.0	9.0	11.0	8.0
7	5.0	1.0	4.0	2.0	1.0	6.0	9.0	7.0	6.0
8	5.0	1.0	1.0	2.0	1.0	6.0	6.0	7.0	6.0
9	5.0	1.0	1.0	2.0	1.0	6.0	6.0	7.0	6.0
10	5.0	1.0	1.0	2.0	1.0	6.0	6.0	7.0	6.0
11+	5.0	1.0	1.0	1.0	1.0	6.0	6.0	6.0	6.0



*The mortality table (a risk assumption)* used was the RP 2000 Mortality Table, adjusted for projected mortality improvements to 2015 with no setbacks for males or females. This table was first used for the December 31, 2005 valuation. The membership size in the plan is not sufficiently large to determine if there is a margin for mortality improvement. However, based on our experience with a broad cross section of plans similar in nature to this plan it is our opinion that there is a provision for future mortality improvement in the current mortality assumption. Sample values follow:

Sample Ages	Single Life Retirement Values			
	Values at Retirement of		Future Life	
	\$1 Monthly for Life		Expectancy (years)	
	Men	Women	Men	Women
50	\$144.50	\$146.68	32.29	34.38
55	136.81	139.67	27.59	29.64
60	126.95	130.80	23.05	25.08
65	115.04	120.11	18.79	20.80
70	101.33	107.82	14.89	16.86
75	85.49	93.96	11.34	13.29
80	68.54	78.58	8.25	10.09

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each pension payment being made after retirement.

The table above was set forward 4 years for males and females for the purpose of valuing disabled lives.

*Rates of disability* were as follows:

Sample Ages	% of Active Members Becoming Disabled within Next Year
25	0.09 %
30	0.11
35	0.15
40	0.22
45	0.36
50	0.61
55	1.01
60	1.66

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

<b>Retirement Ages</b>	<b>General County</b>	<b>Sheriff's Department</b>	<b>Road Commission</b>	<b>Martha T. Berry MCF</b>	<b>Retirement Service</b>	<b>Sheriff's Department</b>
50	15 %			15 %	25	50 %
51	15			15	26	40
52	15			15	27	40
53	15			15	28	40
54	15			15	29	40
55	15		25 %	15	30	40
56	15		25	15	31	35
57	15		25	15	32	25
58	15		25	15	33	25
59	25		25	25	34	25
60	25	25 %	25	25	35 & Up	100
61	25	25	30	25		
62	25	25	30	25		
63	25	25	30	25		
64	25	25	30	25		
65	25	100	100	25		
66	25			25		
67	25			25		
68	25			25		
69	25			25		
70 & Up	100			100		

These tables were first used for the December 31, 2005 valuation.

For all General County and Martha T. Berry MCF members hired on or after January 1, 2002 the following retirement probabilities will apply:

<b>Retirement Ages</b>	<b>General County</b>	<b>Martha T. Berry MCF</b>
55	10 %	10 %
56	10	10
57	10	10
58	10	10
59	20	20
60	20	20
61	20	20
62	25	25
63	25	25
64	25	25
65	25	25
66	25	25
67	25	25
68	25	25
69	25	25
70 & Up	100	100

*Rates of separation from active membership (a risk assumption)* were as follows: (rates do not apply to members eligible for regular retirement and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment.

**Sample Rates of Separation from Active Employment  
Before Retirement, Death or Disability**

Sample Ages	Years of Service	% of Active Members Separating within Next Year			
		General County	Sheriff's Department	Road Commission	Martha T. Berry MCF
ALL	0	12.00 %	4.00 %	6.50 %	12.00 %
	1	9.00	4.00	6.00	9.00
	2	8.00	3.00	5.50	8.00
	3	6.00	3.00	5.00	6.00
	4	6.00	3.00	4.50	6.00
25	5 & Over	5.80	1.60	2.50	5.80
30		5.30	1.10	2.00	5.30
35		4.30	1.00	2.00	4.30
40		3.30	0.75	1.50	3.30
45		2.30	0.50	1.00	2.30
50		1.80	0.25	0.50	1.80
55		1.75	0.25	0.50	1.75
60	1.50	0.25	0.50	1.50	

These tables were first used for the December 31, 2005 valuation.

*Effect of lump sum payments on FAC:* 4.5% for General County and Martha T. Berry MCF members.

11.0% for Command Officer and Inspectors hired before 12/1/96; 1% for other CBU members.

6.0% for Road Commission members.

*Administrative expense load:* 0.10% of payroll

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

<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>	Six months after the valuation date.
<b>Decrement Timing:</b>	Decrements of all other 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>Benefit Service:</b>	Exact fractional service is used to determine the amount of benefit payable.
<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 death-in-service decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.
<b>Normal Form of Benefit:</b>	The assumed normal form of benefit is the straight life form.
<b>Incidence of Contributions:</b>	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

## GLOSSARY

**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 and 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 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”.

***Valuation Assets*** - The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.

---

**SECTION E**

**DISCLOSURE MATERIAL IN CONFORMANCE  
WITH STATEMENT NO. 25 OF THE  
GOVERNMENTAL ACCOUNTING STANDARDS  
BOARD**

---



## SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b) – (a)	Funded Ratio (a)/(b)	Covered Payroll** (c)	UAAL as a Percentage of Covered Payroll [(b) – (a)] / (c)
12/31/03 #*	\$674,575,807	\$624,212,027	\$(50,363,780)	108.1	\$ 127,235,644	(39.6) %
12/31/04 *	674,857,869	664,487,155	(10,370,714)	101.6	134,258,243	(7.7)
12/31/05 #	719,336,871	682,144,687	(37,192,184)	105.5	134,886,588	(27.6)
12/31/06	781,450,248	721,657,669	(59,792,579)	108.3	128,820,986	(46.4)
12/31/07	847,305,155	772,649,767	(74,655,387)	109.7	126,696,252	(58.9)
12/31/08 #*	855,265,571	805,888,089	(49,377,481)	106.1	121,822,674	(40.5)
12/31/09 *	866,356,598	814,563,728	(51,792,870)	106.4	116,522,938	(44.4)
12/31/10 *	862,915,501	837,167,835	(25,747,666)	103.1	110,795,240	(23.2)
12/31/11	828,692,442	854,323,946	25,631,504	97.0	108,900,180	23.5
12/31/12 *	795,605,544	867,218,699	71,613,155	91.7	105,391,874	67.9

\* *Plan amended.*

\*\* *Excludes pay for members electing DROP.*

# *Certain assumptions or methods revised.*

Actuarial Cost Method

Individual Entry Age Normal Cost

Asset Valuation Method

Market value with 5-year smoothing of gains and losses

Principal Actuarial Assumptions  
(last revised for the 12/93 special valuation):

- Net Investment Return 7.5%
- Projected Salary Increases 5.0% base pay increase plus merit and longevity
- Cost-of-Living Adjustments None

This information is presented in draft form for review by the County's auditor. Please let us know if there are any changes so that we may maintain consistency with the County's financial statements.

## SCHEDULE OF EMPLOYER CONTRIBUTIONS

Valuation Year Ended December 31	Fiscal Year Ended December 31	Annual Required Contribution
2003	2005	\$ 14,848,710
2004	2006	20,215,000
2005	2007	19,121,329
2006	2008	18,658,076
2007	2009	18,507,521
2008	2010	15,170,777
2009	2011	16,050,489
2010	2012	16,604,841
2011	2013	19,932,742
2012	2014	22,152,820

Actuarial Cost Method

Individual Entry Age Normal Cost

Amortization Method

Level percent of payroll over a 20-year open period

Asset Valuation Method

Market value with 5-year smoothing of gains and losses

Principal Actuarial Assumptions  
(last revised for the 12/93 special valuation):

- |                               |   |
|-------------------------------|---|
| - Net Investment Return*      | 7.5%  |
| - Projected Salary Increases* | 5.0% base pay increase plus merit and longevity |
| - Cost-of-Living Adjustments  | None  |

\* Includes pay inflation at 5.0%.

---

## **APPENDIX**

### **SUMMARY OF BENEFIT PROVISIONS**

---

# Benefit Provision Summary as of December 31, 2012 for General Employees

Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility		Retirement Benefit		FAC Period	Employee Contribution
					Eligibility (age/service)	Multiplier	Employer Maximum			
0	General Non Union	Hired on or before 12/31/01 or vested by 2/26/09	8 years	No	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	No	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
2	UAW Animal Shelter	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
3	AFSCME Local 411	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
6	Macomb County Environmental Health Association	Hired on or before 12/31/01 or vested by 5/1/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
8	Teamsters 214 Court Reporters	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
9	International Union of Operating Engineers (Boiler Operators)	Hired on or before 12/31/01 or vested by 5/1/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
10	TPOAM Circuit Court Officers	Hired on or before 12/31/01 or vested by 7/24/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
11	MNA Unit I Health Dept.	Hired on or before 12/31/01 or vested by 5/1/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
12	UAW Local 412 Unit 49 Information Technology	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
13	UAW Local 889 Specialized Offices	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	
15	Building Trades Association	Hired on or before 12/31/01 or vested by 5/1/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%	
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%	
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%	

\* Must be vested on 12/31/2012, otherwise not eligible for DROP

## Benefit Provision Summary as of December 31, 2012 for General Employees

Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility		Retirement Benefit		
					Eligibility (age/service)	Multiplier	Employer Maximum	FAC Period	Employee Contribution
16	UAW Local 412 Unit 46 Assistant Prosecutors	Hired on or before 12/31/01 or vested by 9/14/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
18	Teamsters Local 214 FOC/Circuit Court	Hired on or before 12/31/01 or vested by 7/24/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
19	General	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
21	POAM JJC	Hired on or before 12/31/01 or vested by 5/1/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
24	UAW Local 889 MCCSA	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
25	UAW Local 412 Unit 75 Supervisors	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
27	TPOAM Macomb Co. Senior Service Employees Association	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
28	TPOAM Juvenile Court & Justice Center Employees	Hired on or before 12/31/01 or vested by 5/1/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
30	UAW Local 412 Unit 95 Assistant Corporation Counsel	Hired on or before 12/31/01 or vested by 2/27/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
43	UAW Local 889 Probate Court/ Corporation Counsel	Hired on or before 12/31/01 or vested by 6/19/09	8 years	Yes*	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
44	UAW Local 412 - Unit 98 MCCSA Professionals	Hired on or before 12/31/01 or vested by 2/26/09	8 years	No #	60/8, Rule of 70 (min age 50)	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on/after 1/1/2002 & before 1/1/2012	8 years	No	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on/after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%

\* Must be vested on 12/31/2012, otherwise not eligible for DROP

# DROP will remain in place for existing employees currently enrolled. No new entries into the DROP shall be allowed.

## Benefit Provision Summary as of December 31, 2012 for the Sheriff's Department

Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility	Retirement Benefit		FAC Period	Member Contribution
					Eligibility (age/service)	Multiplier	Employer Maximum		
1	POLC- Command	Hired before 8/20/2010	8 years	Yes	60/8, 25 & out	2.4% (26 yrs) / 1%	65% of FAC	3 years	4%
		Hired on/after 8/20/2010	15 years	Yes	60/15, 25 & out	2.4% (26 yrs) / 1%	65% of FAC	3 years	4%
7	POAM Deputies	Hired before 08/06/2010	8 years	Yes*	60/8, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
		Hired or promoted on/after 08/06/2010	15 years	Yes*	60/15, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
	POAM Dispatchers	Hired before 08/06/2010	8 years	Yes*	60/8, 25 & out	2.4% (26 yrs) / 1%	66% of FAC	3 years	4%
		Hired or promoted on/after 08/06/2010	15 years	Yes*	60/15, 25 & out	2.4% (26 yrs) / 1%	66% of FAC	3 years	4%
		Hired before 12/18/2009	8 years	Yes	60/8, 25 & out	2.4% (26 yrs) / 1%	65% of FAC	3 years	4%
20	POLC Captains	Promoted or Hired on/after 12/18/2009	15 years	Yes	60/15, 25 & out	2.4% (26 yrs) / 1%	65% of FAC	3 years	4%
26	Deputies (Corrections)	All employees	8 years	Yes	60/8, 25 & out	2.4% (26 yrs) / 1%	66% of FAC	3 years	4%

\* Must be vested on 12/31/2012, otherwise not eligible for DROP

# FAC will NOT include payment for banked sick leave time if individual is hired on or after 11/1/1996

@ FAC will NOT include payment for banked sick leave time if individual is hired on or after 12/19/1996

## Benefit Provision Summary as of December 31, 2012 for Road Commission Employees

Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility	Retirement Benefit		FAC Period	Member Contributions	
					Eligibility (age/service)	Employer Multiplier	Maximum			
31	Road Commission Non Union		8 years	No	55/25, 60/8	2.4% / 1%	(26 yrs)	65% of FAC	3 years	3.5%
32	Road Commission ADTECH	Hired before 10/19/2011	8 years	No	60/8, Rule of 70 (min age 55)	2.4% / 1%	(26 yrs)	65% of FAC	3 years	3.5%
		Hired on/after 10/19/2011	8 years	No	55/25, 60/8	2.4% / 1%	(26 yrs)	65% of FAC	3 years	3.5%
33	Road Commission AFSCME Local 893	Hired before 6/15/2010	8 years	No	Rule of 70 (min age 55)	2.4% / 1%	(26 yrs)	65% of FAC	3 years	3.5%
		Hired on/after 6/15/2010	8 years	No	55/25, 65/8	2.4% / 1%	(26 yrs)	65% of FAC	3 years	3.5%