



Municipal Employees' Retirement System  
of Michigan

**MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM OF MICHIGAN**  
ANNUAL ACTUARIAL VALUATION REPORT  
CITY OF MADISON HEIGHTS (6308)  
DECEMBER 31, 2010



Gabriel Roeder Smith & Company  
Consultants & Actuaries

One Towne Square  
Suite 800  
Southfield, MI 48076-3723

248.799.9000 phone  
248.799.9020 fax  
[www.gabrielroeder.com](http://www.gabrielroeder.com)

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June 16, 2011

The Retirement Board  
Municipal Employees' Retirement System of Michigan

Ladies and Gentlemen:

This report presents the results of the Annual Actuarial Valuation, prepared as of December 31, 2010. The report includes the determination of liabilities and contribution rates resulting from the participation of City of Madison Heights in the Municipal Employees' Retirement System of Michigan ("MERS").

MERS is an agent multiple-employer public employee pension plan and is a tax-qualified plan under section 401(a) of the Internal Revenue Code (most recent letter of Favorable Determination issued June 15, 2005). MERS is an independent non-profit public corporation established by the Legislature pursuant to Public Act 220 of 1996, as amended, and is an instrumentality of the participating municipalities and courts. City of Madison Heights is responsible for the employer contributions needed to provide MERS benefits for its employees and former employees under the Michigan Constitution and the MERS Plan Document.

For this annual actuarial valuation, the Retirement Board adopted revised actuarial assumptions and/or methods. Please refer to page 64 for an explanation of the Board's action.

The valuation utilized information furnished by the MERS administrative staff concerning Retirement System benefits, financial transactions, and individual member information. Data was checked for consistency with the prior year, but was not otherwise audited by us.

To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods in compliance with Act No. 220 of the Public Acts of 1996, as amended, and the MERS Plan Document as revised. All of the undersigned are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The actuarial assumptions used for this valuation produce results that we believe are reasonable. The Retirement Board of the Municipal Employees' Retirement System of Michigan confirms that the System provides for payment of the required employer contribution as described in Section 20m of Act No. 314 of 1965 (MCL 38.1140m).

**Please review the Comments on the Investment Markets on page 3.**

**This report may be provided only in its entirety by the municipality to other interested parties (MERS or the Actuary customarily provides the full report on request to related third parties such as the auditor for the municipality).**

Please contact the Finance Department at MERS if you would like to receive future annual valuations in electronic format, instead of a printed report (800-767-2308; [billingteam@mersofmich.com](mailto:billingteam@mersofmich.com)).

Sincerely,

Alan Sonnanstine, MAAA, ASA

Cathy Nagy, MAAA, FSA

Jim Koss, MAAA, ASA

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# City of Madison Heights (6308)

## Executive Summary

### Required Employer Contributions

The computed minimum required employer contributions to the retirement system for the fiscal years beginning July 1, 2012 (2010 Valuation) and July 1, 2011 (2009 Valuation) are as follows:

Division	Minimum Required Monthly Employer Contributions @			
	Percentage of Payroll		\$ Based on Valuation Payroll	
	2010 Valuation	2009 Valuation	2010 Valuation	2009 Valuation
01 - Non-Union and Depa * #	-%	23.37%	\$24,020	\$23,422
10 - Gnrl Crth #	-%	-%	3,312	2,996
11 - Dept of Public Svc #	-%	-%	20,370	18,423
12 - AFSCME * #	-%	16.61%	10,539	9,458
13 - Cler Tmst * #	-%	12.64%	12,383	14,017
14 - Dispchrss	4.49%	8.10%	1,104	2,581
<b>Total Municipality</b>			<b>\$71,728</b>	<b>\$70,897</b>

@ The above employer contribution requirements are in addition to the member contributions, if any, shown in Table 1.

\* The current year's required employer contributions reflect a change in benefit provisions or a change in member contribution rates. Please see Tables 16 and 17 for details.

# This division will not have new hires. Invoices will be based on the dollar contribution amounts shown in this table (see page 90).

### Please see the Comments on the Investment Markets on page 3.

For additional details see Table 15.

It is important to note that the contribution rates shown above are not expected to remain at present levels indefinitely. If future experience were to match the valuation assumptions exactly, the computed employer rates for divisions that are open to new hires would trend over time toward the long-term cost of system benefits, known as the Normal Cost (see Table 15). For underfunded divisions that are closed to new hires and are not linked to an open division, the computed employer dollar contribution would increase 4%-8% annually, until full funding is reached. The required employer contribution for such a closed division typically reaches its highest level about 11-12 years after the division becomes closed. Prospective benefit changes as well as Retirement System gains and losses will also affect future contribution rates.

## **City of Madison Heights (6308)**

### **Executive Summary (continued)**

Contribution rates will change from one year to the next as a result of changes in benefit provisions, changes in the actuarial assumptions, and experience of the plan (investment experience and demographic experience).

The 2010 valuation reflects changes in actuarial assumptions and/or methods (please refer to page 64). The effects of the changes are shown in the note below Table 16 for each division. For benefit provision changes see Table 1.

#### **2010 System Experience**

Based on the smoothed Actuarial Value of Assets, the recognized rate of investment return for MERS overall was 5.7% (up from 5.3% in 2009, but less than the 8% actuarial assumption). On average this will result in increases in computed employer contributions.

Demographic experience varied by division. This reflects what actually happened to participants (active members, retirees, and vested former members) compared to what was projected by the actuarial assumptions.

#### **2010 Funded Position**

The ratio of the Valuation Assets to the Actuarial Accrued Liability for City of Madison Heights in aggregate is 78%; last year's ratio was 81%.

#### **Comments on the Investment Markets**

The dramatic price declines across the world financial markets in 2008 led to increased volatility unlike any experienced in decades. The following two years, 2009 and 2010, have been more stable and MERS' portfolio recovered with investment returns of over 17% and 14%, respectively. While economic worries continue to haunt investors world-wide, equity markets have rebounded, particularly in the United States. MERS maintains the 8% annual return assumption on investments in the belief that over the long term this is achievable.

The actuarial value of assets (funding value), used to determine both your funded status and your required employer contribution, is based on a 10-year smoothed value of assets. Only a portion (three-tenths, for 2008, 2009, and 2010) of the 2008 investment market losses were recognized in this actuarial valuation report. This reduces the volatility of the valuation results, which affects your required employer contribution and actuarial funded percentage.

As of December 31, 2010 the actuarial value of assets is 116% of market value (down from 125% in 2009). This means that meeting the actuarial assumption in the next few years will require average annual market returns that exceed the 8% investment return assumption.

## **City of Madison Heights (6308)**

### **Executive Summary (continued)**

If the December 31, 2010 valuation results were based on market value on that date instead of 10-year smoothed funding value: i) the funded percent of your entire municipality would be 67% (instead of 78%); and ii) your total employer contribution requirement for the fiscal year starting July 1, 2012 would be \$1,128,504 (instead of \$860,736). If the investment markets do not fully make-up for the 2008 losses, employer contribution requirements may rise. MERS' investment strategy employs diversification using various asset categories (stocks, bonds, and to a smaller extent real estate and private equity) to capture as much of the upside return as possible while managing acceptable risk. If contribution increases do become necessary, MERS would work to impose them incrementally.

Remember that only three-tenths of the 2008 market losses are reflected in this actuarial valuation report. As was true for past market downturns, MERS expects the markets to continue to rebound. By the time the 2008 market losses would be fully recognized (over the following 7 years), future market gains are expected to partly or fully offset 2008 market losses. This smoothing method is a powerful tool for reducing the volatility of your required employer contributions. However, if the financial markets do not rebound, the result would be gradual increases in your employer contribution requirement over the next 7 years (as described above).

#### **Possible Future Changes in Actuarial Assumptions**

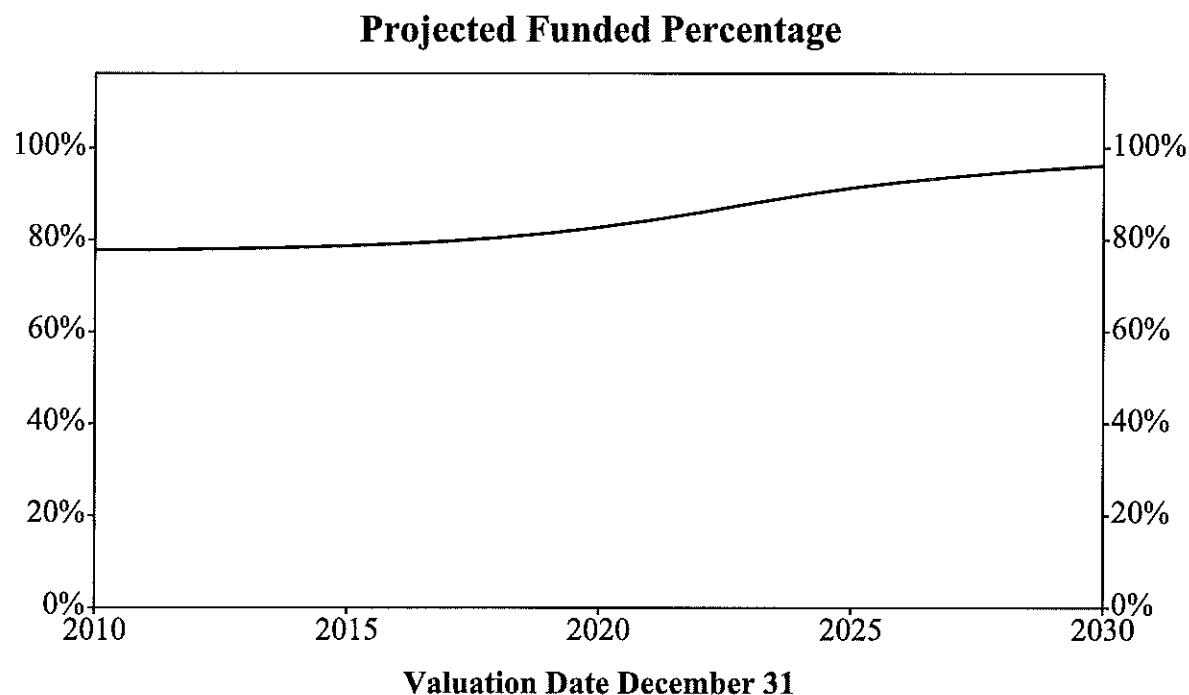
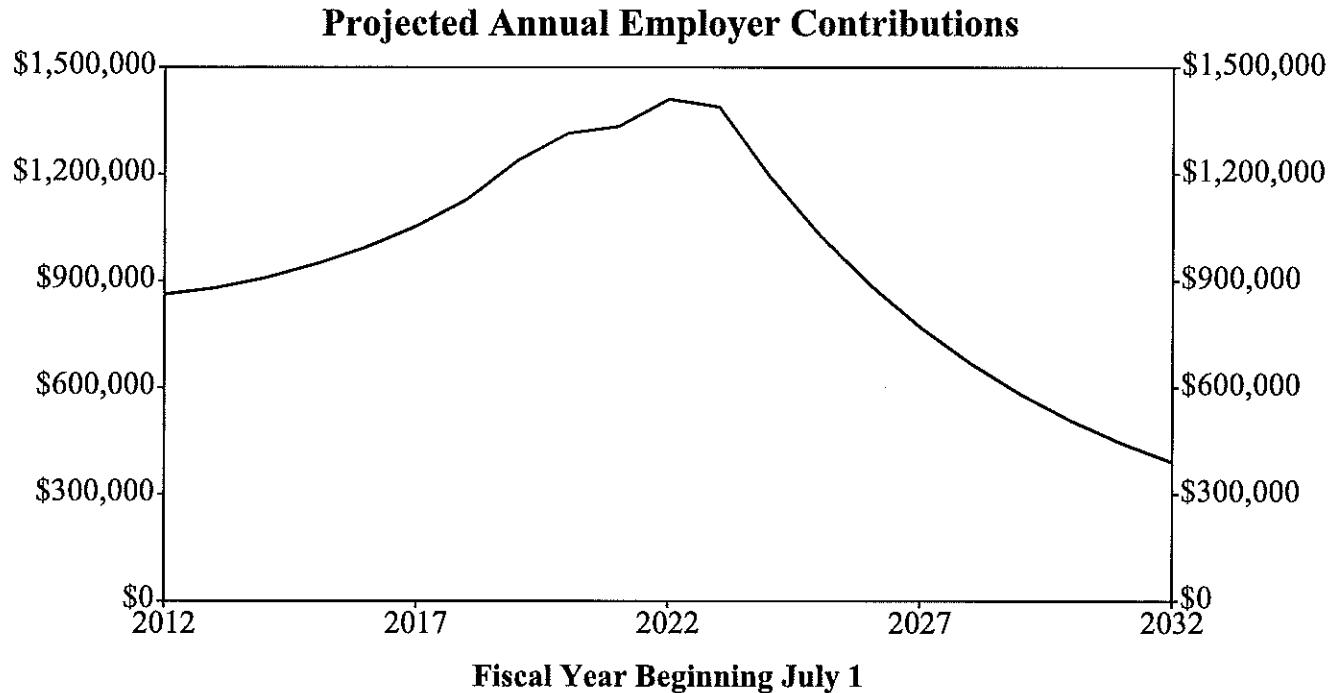
Actuarial assumptions are reviewed every five years, and sometimes more often. The most recent review of MERS actuarial assumptions was completed in March 2010, and covered the 2004-2008 valuation years. All areas of activity were studied, and the Retirement Board adopted revised actuarial assumptions that will be reflected in this valuation (see page 64), and in the December 31, 2011 valuation. MERS expects to provide employers with general updates concerning pending revised actuarial assumptions and the ongoing effects of the financial markets.

#### **Projections of Employer Contributions and Funded Percentage - Combined for All Divisions**

The following page combines the projections for each division (see chart 17.5 for each division) into a projection for the municipality as a whole. Please refer to page 87 for a discussion of the projection. As noted there, the projection should not be used for short term budgeting purposes because the assumptions are designed to be a long term expectation of future events. For example, the projection assumes that the 10-year smoothed actuarial value of assets always reflects 8% annual investment income (which would require all of the 2008 market losses to be recouped sooner than is likely).

**City of Madison Heights (6308)**  
**Executive Summary (concluded)**

**All Divisions Combined**



Note: Please refer to page 87 for a discussion of the projection.

# City of Madison Heights (6308)

**Table 1**

## **Benefit Provisions Evaluated and/or Considered**

<b>Division</b>	<b>2010 Valuation</b>	<b>2009 Valuation</b>
01 - Non-Union and Dep#	B-4 - 80% Max Normal Ret Age: 60 V-10 F55(15) FAC-3 0.00% Member Contrib. DC Plan for New Hires (07/01/2010) Act 88 Election (02/09/1970)	B-4 - 80% Max Normal Ret Age: 60 V-10 F55(15) FAC-3 0.00% Member Contrib. Act 88 Election (02/09/1970)
10 - Gnrl Crth#	B-2 Normal Ret Age: 60 V-10 F50(25) F55(15) FAC-5 3.04% Member Contrib. DC Plan for New Hires (10/01/2006) Act 88 Election (02/09/1970)	B-2 Normal Ret Age: 60 V-10 F50(25) F55(15) FAC-5 3.04% Member Contrib. DC Plan for New Hires (10/01/2006) Act 88 Election (02/09/1970)
11 - Dept of Public Sv#	B-3 - 80% Max Normal Ret Age: 60 V-10 F55(15) FAC-5 2.34% Member Contrib. DC Plan for New Hires (06/01/2010) Act 88 Election (02/09/1970)	B-3 - 80% Max Normal Ret Age: 60 V-10 F55(15) FAC-5 2.34% Member Contrib. DC Plan for New Hires (06/01/2010) Act 88 Election (02/09/1970)
12 - AFSCME#	B-3 - 80% Max Normal Ret Age: 60 V-10 F55(15) FAC-5 2.44% Member Contrib. DC Plan for New Hires (07/01/2010) Act 88 Election (02/09/1970)	B-3 - 80% Max Normal Ret Age: 60 V-10 F55(15) FAC-5 2.44% Member Contrib. Act 88 Election (02/09/1970)

# City of Madison Heights (6308)

## Table 1 (continued)

### Benefit Provisions Evaluated and/or Considered

Division	2010 Valuation	2009 Valuation
13 - Cler Tmst#	B-2 Normal Ret Age: 60 V-10 F55(15) FAC-5 0.00% Member Contrib. DC Plan for New Hires (07/01/2010) Act 88 Election (02/09/1970)	B-2 Normal Ret Age: 60 V-10 F55(15) FAC-5 0.00% Member Contrib. Act 88 Election (02/09/1970)
14 - Dispchr	B-2 Normal Ret Age: 60 V-10 F55(15) FAC-5 0.00% Member Contrib. Act 88 Election (02/09/1970)	B-2 Normal Ret Age: 60 V-10 F55(15) FAC-5 0.00% Member Contrib. Act 88 Election (02/09/1970)

# This division is closed to new hires or had no active members, so the closed division amortization policy applies. Please refer to the Amortization of Unfunded Actuarial Accrued Liability on page 86 and Open Divisions and Closed Divisions on page 90.

MERS provides the actuary with the benefit provisions in effect in Table 1 above. Any corrections to the benefit provisions should be reported to your Regional Manager in the MERS Office of Marketing and Employer services.

## **City of Madison Heights (6308)**

Table 2

## Membership Summary

Division	2010 Valuation		2009 Valuation	
	Number	Annual Payroll*	Number	Annual Payroll*
01 - Non-Union and Department Active Members	12	\$1,031,825	14	\$1,202,689
Vested Former Members	2	46,752	1	27,651
Retirees and Beneficiaries	20	541,145	16	464,294
10 - Gnrl Crth Active Members	6	\$309,465	7	\$358,201
Vested Former Members	1	13,492	2	17,970
Retirees and Beneficiaries	7	132,948	6	101,224
11 - Dept of Public Svcs TPO Active Members	21	\$1,027,989	27	\$1,334,228
Vested Former Members	4	44,501	4	44,501
Retirees and Beneficiaries	39	717,767	35	572,658
12 - AFSCME Active Members	10	\$648,391	10	\$683,363
Vested Former Members	5	43,348	4	29,031
Retirees and Beneficiaries	16	323,423	15	262,821
13 - Cler Tmst Active Members	23	\$1,029,122	29	\$1,330,765
Vested Former Members	7	56,170	7	70,477
Retirees and Beneficiaries	34	491,353	29	392,918
14 - Disptchrs Active Members	6	\$295,262	8	\$382,404
Vested Former Members	4	37,073	2	23,240
Retirees and Beneficiaries	1	13,799	1	13,799
<b>Total Municipality</b>				
Active Members	78	\$4,342,054	95	\$5,291,650
Vested Former Members	23	241,336	20	212,870
Retirees and Beneficiaries	117	2,220,435	102	1,807,714
<b>Total Participants</b>	<b>218</b>		<b>217</b>	

\* Annual payroll for active members; annual deferred benefits payable for vested former members; annual benefits being paid for retirees and beneficiaries.

# City of Madison Heights (6308)

**Table 3**

## Active Members in the Valuation - Comparative Schedule

Valuation Date 12/31	Number	Annual Payroll	Average Pay		Average Age	Average Benefit Service*	Average Eligibility Service*
			Annual \$	% Increase			
2000	120	\$ 5,091,461	\$ 42,428	3.7%	43.0	12.8	
2001	124	5,300,375	42,745	0.7	43.1	12.3	12.7
2002	122	5,298,842	43,433	1.6	42.8	11.9	12.4
2003	121	5,500,466	45,458	4.7	42.7	12.2	12.6
2004	115	5,689,388	49,473	8.8	43.0	12.4	12.8
2005	103	5,211,617	50,598	2.3	43.2	12.5	13.0
2006	99	5,190,597	52,430	3.6	43.9	13.4	13.8
2007	98	5,346,830	54,559	4.1	44.6	14.1	14.4
2008	97	5,369,765	55,358	1.5	45.1	14.6	15.0
2009	95	5,291,650	55,702	0.6	46.0	15.5	16.3
2010	78	4,342,054	55,667	(0.1)	45.6	15.0	16.0

\* See description on page 83.

**Table 4**

## Flow of Active Membership

Year Ended 12/31	Retired	Disabled	Died (Survivor Benefit)	Other Termination		Net Transfers*	New Member	End of Year
				Vested	Non-Vested			
2001	(4)	(1)			(7)		16	124
2002	(5)			(3)	(2)		8	122
2003	(4)			(1)	(5)		9	121
2004	(4)			(2)	(1)		1	115
2005	(6)			(3)	(7)		4	103
2006	(1)	(1)		(1)	(3)		2	99
2007	(2)				(2)		3	98
2008	(2)		(1)				2	97
2009	(1)			(1)				95
2010	(12)			(5)	(2)	1	1	78

\* Net transfers can include members transferring to a Defined Contribution plan or members who transfer between divisions and subsequently retire or terminate within the same plan year.

## City of Madison Heights (6308)

**Table 5**

### Vested Former Members in the Valuation - Comparative Schedule

Valuation Date 12/31	Number	Annual Deferred Benefits	Average Age	Average Benefit Service*	Average Eligibility Service*
2000	15	\$ 119,103	46.6	15.2	16.6
2001	12	144,893	46.2	15.9	17.1
2002	13	151,699	45.5	14.4	15.8
2003	15	163,335	45.0	13.2	14.6
2004	17				
2005	18	218,875	46.8	14.5	15.8
2006	18	212,905	46.4	14.0	16.1
2007	20	224,040	47.3	13.4	16.2
2008	20	223,940	48.3	13.4	16.5
2009	20	212,870	48.6	12.8	16.2
2010	23	241,336	47.9	11.5	14.8

\* See description on page 83.

**Table 6**

### Flow of Vested Former Members

Year Ended 12/31	Retired	Return To Work	Died (Survivor Benefit)	Forfeit Benefit	Net Transfers*	New	End of Year
2001	(1)			(2)			12
2002	(2)					3	13
2003						2	15
2004	(1)					3	17
2005	(1)			(1)		3	18
2006	(1)					1	18
2007						2	20
2008							20
2009	(1)					1	20
2010	(2)				(1)	6	23

\* Net transfers can include members transferring to a Defined Contribution plan or members who transfer between divisions and subsequently retire or terminate within the same plan year.

# City of Madison Heights (6308)

**Table 7**

## Retirees and Beneficiaries in the Valuation - Comparative Schedule

Valuation Date 12/31	Retirees		Beneficiaries		Total Recipients		No. of Actives per Recip.	Benefits As % of Active Payroll
	Number	Annual Benefits	Number	Annual Benefits	Number	Annual Benefits		
2000		\$ 937,375		\$ 141,642	79	\$ 961,874	1.5	18.9%
2001	65	937,375	19	141,642	84	1,079,017	1.5	20.4
2002	70	1,043,347	18	142,456	88	1,185,803	1.4	22.4
2003	74	1,139,046	17	141,330	91	1,280,376	1.3	23.3
2004	76	1,262,105	18	162,713	94	1,424,818	1.2	25.0
2005	81	1,423,625	17	160,461	98	1,584,086	1.1	30.4
2006	83	1,495,671	16	156,711	99	1,652,382	1.0	31.8
2007	83	1,534,279	16	145,835	99	1,680,114	1.0	31.4
2008	84	1,617,034	16	150,710	100	1,767,744	1.0	32.9
2009	85	1,651,377	17	156,337	102	1,807,714	0.9	34.2
2010	98	2,040,933	19	179,502	117	2,220,435	0.7	51.1

**Table 8**  
**Flow of Retirees and Beneficiaries**

Year Ended 12/31	Added to Rolls			Removed from Rolls			Year End	
	Number@	Annual Benefits	Benefit Adjust. *	Number	Annual Benefits	Benefit Adjust. #	Number	Annual Benefits
2000	6	\$ 64,828	\$	(1)	\$ (6,256)	\$ (2,971)	79	\$ 961,874
2001	7	129,604		(2)	(9,490)	(2,734)	84	1,079,017
2002	7	128,539	1,149	(3)	(20,168)	(1,126)	88	1,185,803
2003	4	95,694	5	(1)	(59,892)	(1,569)	91	1,280,376
2004	7	201,269	4,634	(4)	(12,133)	(6,467)	94	1,424,818
2005	7	171,401		(3)	(10,694)	(31,767)	98	1,584,086
2006	3	85,457		(2)	(12,466)	(237,524)	99	1,652,382
2007	3	52,933	6,566	(3)	(12,951)		99	1,680,114
2008	3	97,780	2,316	(2)			100	1,767,744
2009	28	277,494		(26)			102	1,807,714
2010	16	425,672		(1)			117	2,220,435

@ Includes beneficiaries of retirees who died during the year.

\* Includes where applicable E, E-1, and E-2 benefits, and corrections.

# Includes where applicable C-2 and Accelerated Option benefits, and corrections.

# City of Madison Heights (6308)

## Table 9

### Retirees and Beneficiaries on the Rolls as of December 31, 2010 Distribution by Type of Benefit Being Paid

Benefits Being Paid to:	Annual Benefits	
	Number	Amount
Age and service retirants	92	\$1,957,676
Non-duty disability retirants	3	47,457
Duty disability retirants	3	35,800
Beneficiaries of deceased retirants*	15	141,596
Beneficiaries of deceased members:		
Non-duty death	4	37,906
Duty death	0	0
Total Benefits Being Paid	117	\$2,220,435

\* Alternate Payees, if any, are all included with beneficiaries of deceased retirants.

# City of Madison Heights (6308)

## Table 10

### Reported Assets (Market Value)

Division	2010 Valuation		2009 Valuation	
	Employer And Retiree*	Employee#	Employer And Retiree*	Employee#
01 - Non-Union and Departme	\$ 4,818,515	\$ 66,134	\$ 4,450,635	\$ 70,307
10 - Gnrl Crth	1,409,462	117,982	1,296,137	135,326
11 - Dept of Public Svcs TP	6,781,622	356,249	6,320,782	472,410
12 - AFSCME	3,529,261	217,283	3,063,366	220,115
13 - Cler Tmst	4,788,680	131,826	4,498,043	179,858
14 - Disptchrs	611,414	0	519,979	0
<b>Total Municipality</b>	<b>\$ 21,938,954</b>	<b>\$ 889,474</b>	<b>\$ 20,148,942</b>	<b>\$ 1,078,016</b>
<b>Combined Reserves</b>	<b>\$22,828,428</b>		<b>\$21,226,958</b>	

\* Reserve for Employer Contributions and Benefit Payments

# Reserve for Employee Contributions

The December 31, 2010 Valuation Assets are equal to 1.162921 times the reported Market Value of assets. The derivation of Valuation Assets is described on page 92 and the detailed calculations are shown on pages 93 - 95.

# City of Madison Heights (6308)

**Table 11**

## Flow of Valuation Assets (Actuarial Value)

Year Ended 12/31	Contributions		Investment Income	Benefit Payments	Member Contrib. Refunds	Net Transfers*	Balance
	Employer	Member					
2001	\$ 364,786	\$ 71,472	\$ 1,594,554	\$ (1,010,591)	\$ (11,578)	\$ 0	\$ 22,391,959
2002	339,396	71,486	629,243	(1,125,225)	(3,440)	0	22,303,419
2003	408,187	72,924	1,608,211	(1,213,089)	0	0	23,179,652
2004	482,846	76,364	1,511,128	(1,346,317)	(6,436)	0	23,897,237
2005	537,515	62,351	1,489,401	(1,520,666)	(7,281)	0	24,458,557
2006	577,333	61,632	1,937,949	(1,641,503)	(2,139)	0	25,391,829
2007	668,249	65,339	2,054,668	(1,638,877)	0	0	26,541,208
2008	671,925	60,985	1,102,980	(1,734,081)	(4,983)	(3,514)	26,634,520
2009	682,056	59,268	990,212	(1,791,304)	(5,649)	0	26,569,103
2010	729,975	56,090	1,238,090	(2,045,599)	0	0	26,547,659

\* Transfers in and out are usually related to the transfer of participants between municipalities, and to employer and member payments for service credit purchases (if any) that the governing body has approved.

# City of Madison Heights (6308)

## Table 12

### Termination Liability as of December 31, 2010

Division	Termination Liability*	Valuation Assets	Percent Funded	Unfunded (Oversubscribed)
01 - Non-Union and Dep Active Members Vested Former Members Retirees and Beneficiaries Pending Refunds Total	\$ 3,126,161 249,300 4,789,792 0 \$ 8,165,253	\$ 5,680,461	69.6%	\$ 2,484,792
10 - Gnrl Crth Active Members Vested Former Members Retirees and Beneficiaries Pending Refunds Total	\$ 517,191 138,255 1,146,957 4,042 \$ 1,806,445	\$ 1,776,297	98.3%	\$ 30,148
11 - Dept of Public Sv Active Members Vested Former Members Retirees and Beneficiaries Pending Refunds Total	\$ 2,642,390 330,696 7,282,295 129 \$ 10,255,510	\$ 8,300,780	80.9%	\$ 1,954,730
12 - AFSCME Active Members Vested Former Members Retirees and Beneficiaries Pending Refunds Total	\$ 2,221,093 173,055 3,266,405 15,059 \$ 5,675,612	\$ 4,356,935	76.8%	\$ 1,318,677
13 - Cler Tmst Active Members Vested Former Members Retirees and Beneficiaries Pending Refunds Total	\$ 1,564,449 319,055 4,455,493 1,149 \$ 6,340,146	\$ 5,722,160	90.3%	\$ 617,986
14 - Disptchrs Active Members Vested Former Members Retirees and Beneficiaries Pending Refunds Total	\$ 127,205 109,739 152,641 0 \$ 389,585	\$ 711,026	182.5%	\$ (321,441)

# City of Madison Heights (6308)

## Table 12 (continued)

### Termination Liability and Present Value of Accrued Benefits as of December 31, 2010

Division	Termination Liability*	Valuation Assets	Percent Funded	Unfunded (Oversubscribed)
<b>Total Municipality</b>				
Active Members	\$ 10,198,489			
Vested Former Members	1,320,100			
Retirees and Beneficiaries	21,093,583			
Pending Refunds	20,379			
<b>Total</b>	<b>\$ 32,632,551</b>	<b>\$ 26,547,659</b>	<b>81.4%</b>	<b>\$ 6,084,892</b>

\* The Termination Liability represents the present value of benefits payable in the event that all active members terminate employment on December 31, 2010, based upon the valuation interest and mortality assumptions. Pending refunds represent expected refunds of accumulated member contributions to persons who have terminated membership before becoming eligible for pension benefits.

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Table 13

### Actuarial Accrued Liabilities and Valuation Assets as of December 31, 2010

Division	Actuarial Accrued Liabilities	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
01 - Non-Union and Department Heads Reserve for Employer Contributions and Benefit Payments Active Members Vested Former Members Retirees and Beneficiaries Total Reserve for Employee Contributions Active Members Vested Former Members Pending Refunds Total Division Total	\$ 3,377,880 245,467 4,789,792 \$ 8,413,139  \$ 62,301 3,833 0 \$ 66,134  \$ 8,479,273	\$ 579,068 245,467 4,789,792 \$ 5,614,327  \$ 62,301 3,833 0 \$ 66,134  \$ 5,680,461	17.1% 100.0 100.0 66.7%  100.0% 100.0%  67.0%	\$ 2,798,812 0 0 \$ 2,798,812  \$ 0 \$ 0  \$ 2,798,812
10 - Gnrl Crth Reserve for Employer Contributions and Benefit Payments Active Members Vested Former Members Retirees and Beneficiaries Total Reserve for Employee Contributions Active Members Vested Former Members Pending Refunds Total Division Total	\$ 615,785 133,534 1,146,957 \$ 1,896,276  \$ 109,218 4,721 4,042 \$ 117,981  \$ 2,014,257	\$ 377,825 133,534 1,146,957 \$ 1,658,316  \$ 109,218 4,721 4,042 \$ 117,981  \$ 1,776,297	61.4% 100.0 100.0 87.5%  100.0% 100.0%  88.2%	\$ 237,960 0 0 \$ 237,960  \$ 0 \$ 0  \$ 237,960
11 - Dept of Public Svcs TPOAM Reserve for Employer Contributions and Benefit Payments Active Members Vested Former Members Retirees and Beneficiaries Total Reserve for Employee Contributions Active Members Vested Former Members Pending Refunds Total Division Total	\$ 2,740,731 273,732 7,282,295 \$ 10,296,758  \$ 280,802 56,964 129 \$ 337,895  \$ 10,634,653	\$ 406,858 273,732 7,282,295 \$ 7,962,885  \$ 280,802 56,964 129 \$ 337,895  \$ 8,300,780	14.8% 100.0 100.0 77.3%  100.0% 100.0%  78.1%	\$ 2,333,873 0 0 \$ 2,333,873  \$ 0 \$ 0  \$ 2,333,873

# City of Madison Heights (6308)

## Table 13 (continued)

### Actuarial Accrued Liabilities and Valuation Assets as of December 31, 2010

Division	Actuarial Accrued Liabilities	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
12 - AFSCME				
Reserve for Employer Contributions and Benefit Payments				
Active Members	\$ 2,016,020	\$ 724,969	36.0%	\$ 1,291,051
Vested Former Members	148,283	148,283	100.0	0
Retirees and Beneficiaries	<u>3,266,405</u>	<u>3,266,405</u>	100.0	0
Total	\$ 5,430,708	\$ 4,139,657	76.2%	\$ 1,291,051
Reserve for Employee Contributions				
Active Members	\$ 177,447	\$ 177,447		
Vested Former Members	24,772	24,772		
Pending Refunds	<u>15,059</u>	<u>15,059</u>		
Total	\$ 217,278	\$ 217,278	100.0%	\$ 0
Division Total	<b>\$ 5,647,986</b>	<b>\$ 4,356,935</b>	77.1%	<b>\$ 1,291,051</b>
13 - Cler Tmst				
Reserve for Employer Contributions and Benefit Payments				
Active Members	\$ 1,870,823	\$ 842,040	45.0%	\$ 1,028,783
Vested Former Members	292,799	292,799	100.0	0
Retirees and Beneficiaries	<u>4,455,493</u>	<u>4,455,493</u>	100.0	0
Total	\$ 6,619,115	\$ 5,590,332	84.5%	\$ 1,028,783
Reserve for Employee Contributions				
Active Members	\$ 104,423	\$ 104,423		
Vested Former Members	26,256	26,256		
Pending Refunds	<u>1,149</u>	<u>1,149</u>		
Total	\$ 131,828	\$ 131,828	100.0%	\$ 0
Division Total	<b>\$ 6,750,943</b>	<b>\$ 5,722,160</b>	84.8%	<b>\$ 1,028,783</b>
14 - DispTchrs				
Reserve for Employer Contributions and Benefit Payments				
Active Members	\$ 336,664	\$ 448,646	133.3%	\$ (111,982)
Vested Former Members	109,739	109,739	100.0	0
Retirees and Beneficiaries	<u>152,641</u>	<u>152,641</u>	100.0	0
Total	\$ 599,044	\$ 711,026	118.7%	\$ (111,982)
Reserve for Employee Contributions				
Active Members	\$ 0	\$ 0		
Vested Former Members	0	0		
Pending Refunds	<u>0</u>	<u>0</u>		
Total	\$ 0	\$ 0	0.0%	\$ 0
Division Total	<b>\$ 599,044</b>	<b>\$ 711,026</b>	118.7%	<b>\$ (111,982)</b>

# City of Madison Heights (6308)

## Table 13 (continued)

### Actuarial Accrued Liabilities and Valuation Assets as of December 31, 2010

Division	Actuarial Accrued Liabilities	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
<b>Municipality Totals</b>				
Reserve for Employer Contributions and Benefit Payments				
Active Members	\$ 10,957,903	\$ 3,379,406	30.8%	\$ 7,578,497
Vested Former Members	1,203,554	1,203,554	100.0	0
Retirees and Beneficiaries	<u>21,093,583</u>	<u>21,093,583</u>	100.0	0
Total	\$ 33,255,040	\$ 25,676,543	77.2%	\$ 7,578,497
Reserve for Employee Contributions				
Active Members	\$ 734,191	\$ 734,191		
Vested Former Members	116,546	116,546		
Pending Refunds	<u>20,379</u>	<u>20,379</u>		
Total	\$ 871,116	\$ 871,116	100.0%	\$ 0
<b>Municipality Total</b>	<b>\$ 34,126,156</b>	<b>\$ 26,547,659</b>	<b>77.8%</b>	<b>\$ 7,578,497</b>

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

**Table 14**

## Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Accrued Liabilities	Valuation Assets	Funded Percent	Unfunded Accrued Liability	UAL as Percent of Annual Payroll
1996	\$ 15,959,610	\$ 14,625,373	92%	\$ 1,334,237	29%
1997	17,015,612	15,879,856	93	1,135,756	24
1998	18,179,010	17,515,837	96	663,173	14
1999	19,451,724	19,792,233	102	(340,508)	0
2000	21,598,476	21,383,316	99	215,160	4
2001	22,938,928	22,391,959	98	546,969	10
2002	23,826,929	22,303,419	94	1,523,510	29
2003	25,520,723	23,179,652	91	2,341,071	43
2004	27,642,742	23,897,237	86	3,745,505	66
2005	28,414,461	24,458,557	86	3,955,904	76
2006	29,681,342	25,391,829	86	4,289,513	83
2007	31,205,728	26,541,208	85	4,664,520	87
2008	32,402,367	26,634,520	82	5,767,847	107
2009	32,752,091	26,569,103	81	6,182,988	117
2010	34,126,156	26,547,659	78	7,578,497	175

**Notes:** Actuarial assumptions were revised for the 1997, 2000, 2004, 2008, 2009 and 2010 actuarial valuations.

# City of Madison Heights (6308)

**Table 15**

## Computed Employer Contributions to the Retirement System For the Fiscal Year Beginning July 1, 2012

Division	Employer Contributions @		
	Normal Cost	Unfunded Accrued Liability #	Total Required Employer Contribution
<b>Percentage of Payroll</b>			
01 - Non-Union and Department &	-%	-%	-%
10 - Gnrl Crth &	-%	-%	-%
11 - Dept of Public Svcs TPOAM &	-%	-%	-%
12 - AFSCME &	-%	-%	-%
13 - Cler Tmst &	-%	-%	-%
14 - Disptchrs	8.99%	(4.50)%	4.49%
<b>Estimated Monthly Contribution*</b>			
01 - Non-Union and Department	\$ 9,845	\$ 14,175	\$ 24,020
10 - Gnrl Crth	1,876	1,436	3,312
11 - Dept of Public Svcs TPOAM	6,419	13,951	20,370
12 - AFSCME	3,894	6,645	10,539
13 - Cler Tmst	7,303	5,080	12,383
14 - Disptchrs	2,212	(1,108)	1,104
<b>Total Municipality</b>	<b>\$ 31,549</b>	<b>\$ 40,179</b>	<b>\$ 71,728</b>
<b>Estimated Annual Contribution*</b>			
<b>Total Municipality</b>	<b>\$ 378,588</b>	<b>\$ 482,148</b>	<b>\$ 860,736</b>

@ The above Employer contribution requirements are in addition to the Member contributions, if any, shown in Table 1.

\* For divisions that are open to new hires, estimated contributions are based on valuation payroll. Actual contributions will be based on actual reported monthly pays, and will be different from the above amounts (usually higher). For divisions that will have no new hires, invoices will be based on the above dollar amounts which are based on projected fiscal year payroll. See Open Divisions and Closed Divisions on page 90.

# The amortization method and period are described in Table 16 for each division.

& This division will not have new hires. Invoices will be based on the dollar contribution amounts shown in this table.

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Division 01 - Non-Union and Department Heads

**Table 16A**

### Computed Employer Contributions to the Retirement System For the Fiscal Year Beginning July 1, 2012

<b>Contribution for</b>	<b>Monthly Dollar Contribution *</b>
Total Normal Cost	\$9,845
Member Contributions	0
Less Potential Refunds	0
Net Member Contributions	0
Employer Normal Cost @	\$9,845
Amortization of Unfunded Accrued Liability (26 years) ^	<u>14,175</u> ^
Total Long Term Contribution	24,020
Overfunding Credit #	0
<b>Total Employer Contribution @</b>	<b>\$24,020 *</b>

@ The above Employer contribution requirement is based on Member contributions of 0.00% of pay.

\* The monthly dollar contribution is based on projected fiscal year payroll. Monthly invoices will be based on the dollar amount shown above.

# Only applies if projected assets exceed projected liabilities as of the beginning of the July 1, 2012 fiscal year (see Table 24).

^ This division is closed to new hires. This line displays the amortization funding requirement, and is based on a 26 year amortization (payments increase 4.5% per year). However, for reporting and disclosure purposes under Statement Nos. 25 and 27 of the Governmental Accounting Standards Board, the annual required contribution (ARC) is based on a 30 year level dollar amortization (the annual amortization payment is \$248,400 and the ARC is \$366,540). Note that the 26 year amortization period will decrease by 2 years each valuation year, until a minimum 5 year amortization is attained. This will result in amortization payments that increase faster than 4.5% each year.

**Note:** Changes in actuarial assumptions and/or methods were reflected in the December 31, 2010 actuarial valuation. The effects of the changes are shown below:

Increase in Actuarial Accrued Liabilities:	\$(95,282)
Increase in Computed Long Term Employer Contribution	
Monthly Normal Cost:	\$0
Monthly Amortization Payment:	\$(522)
Monthly Total:	\$(522)

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Division 01 - Non-Union and Department Heads

**Table 17A**

### Computed Employer Contributions - Comparative Statement

Valuation Date December 31,	Active Members		Employer Contribution	
	Number	Annual Payroll	Regular Contribution	Minimum Required Contribution
1996	12	\$ 764,343	15.98%	12.79%
1997	12	711,182	15.56%	15.56%
1998	12	846,450	12.19%	12.19%
1999	16	978,108	13.41%	11.06%
2000	14	932,626	13.87%	13.87%
2001	15	1,035,179	14.65%	14.65%
2002	15	1,074,112	16.05%	16.05%
2003	15	1,139,161	16.60%	16.60%
2004	15	1,186,288	18.76%	18.76%
2005	15	1,184,003	18.53%	18.53%
2006	15	1,206,690	19.59%	19.59%
2007	14	1,182,345	20.01%	20.01%
2008	14	1,174,358	22.90%	22.90%
2009	14	1,202,689	23.37%	23.37%
2010	12	1,031,825	\$ 24,020 #	\$ 24,020 #

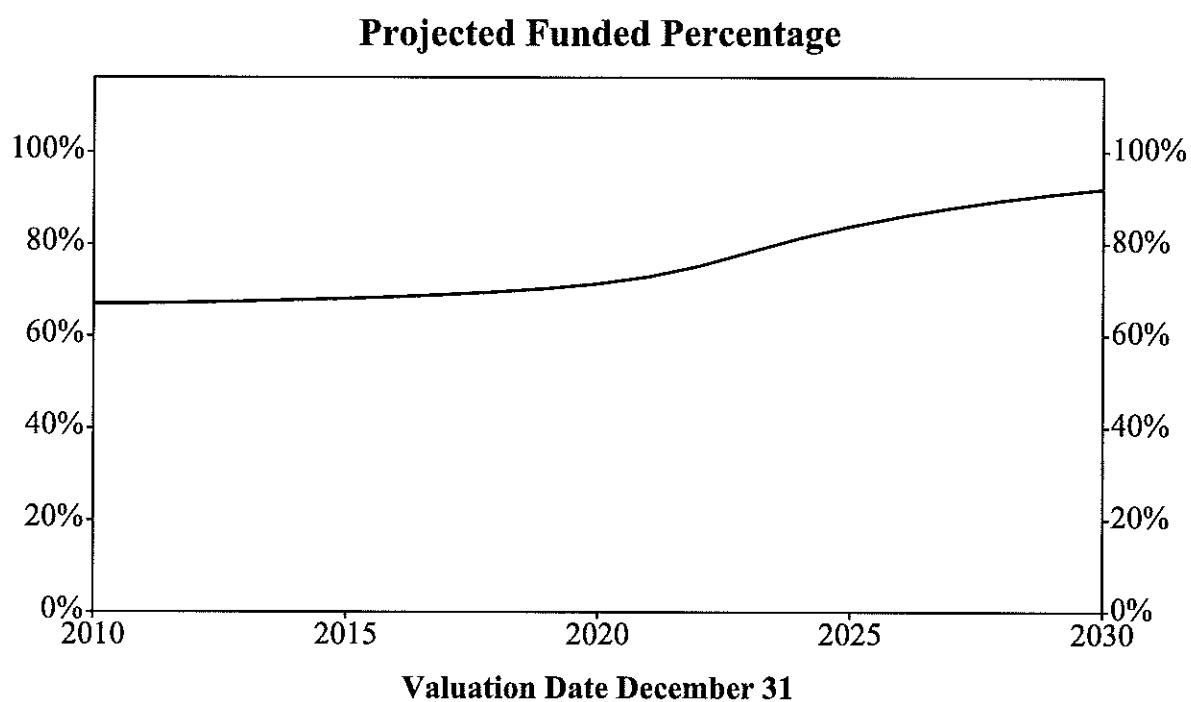
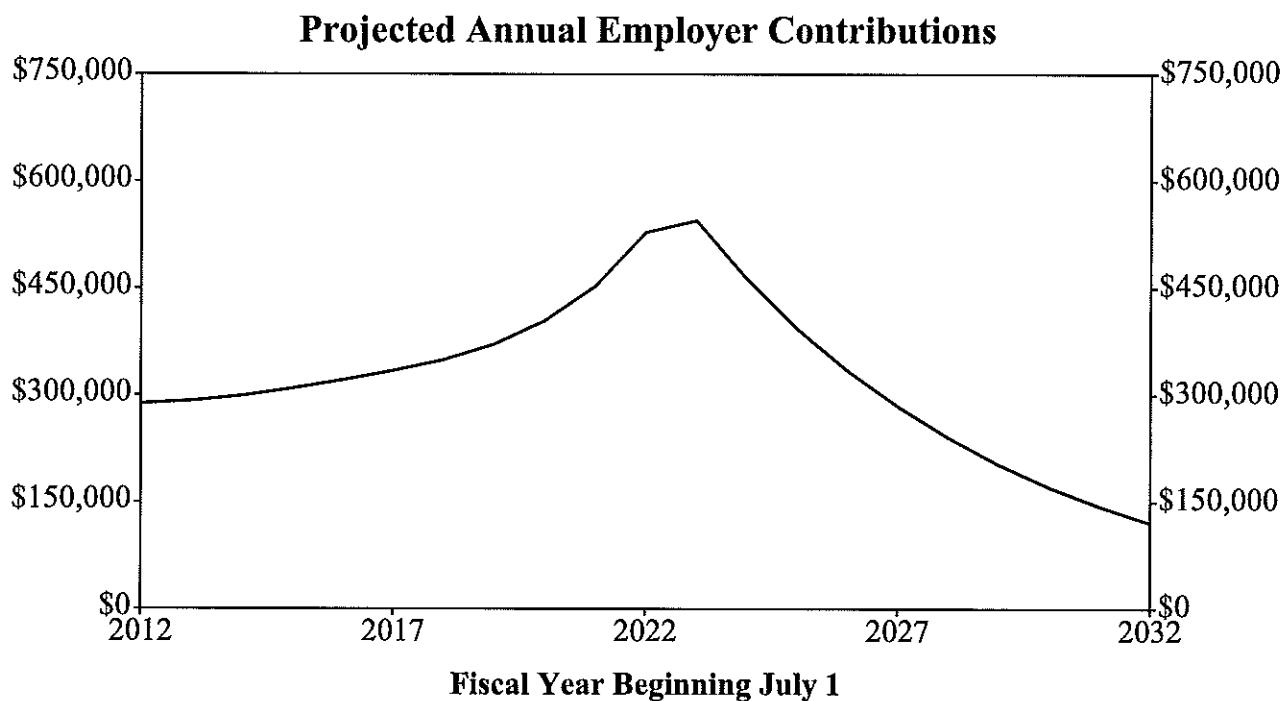
# Beginning with this valuation, a monthly dollar contribution is shown because the division will have no new hires.

Notes:

- Actuarial assumptions were revised for the 1997 valuation.
- Actuarial assumptions were revised for the 2000 valuation.
- Actuarial assumptions were revised for the 2004 valuation.
- Actuarial assumptions and methods were revised for the 2008 valuation.
- Actuarial assumptions were revised for the 2009 valuation.
- Adoption of DC Plan for New Hires reflected in 2010 valuation.
- Actuarial assumptions were revised for the 2010 valuation.

The most recent 15 years of benefit changes are reflected in this table. For a complete benefit history see Table 25.

**City of Madison Heights (6308)**  
**Division 01 - Non-Union and Department Heads**  
**Chart 17.5A**



Note: Please refer to page 87 for a discussion of the projection.

**City of Madison Heights (6308)**

**Division 01 - Non-Union and Department Heads**

**Table 18A**  
**Flow of Active Membership**

Year Ended 12/31	Retired	Disabled	Died (Survivor Benefit)	Other Termination		Transfer		New Member	End of Year
				Vested	Non-Vested	Out	In		
2001								1	15
2002									15
2003									15
2004	(1)				(1)		1		15
2005							1	1	15
2006	(1)							1	15
2007									14
2008	(1)						1		14
2009									14
2010	(3)				(1)		1	1	12

**Table 19A**  
**Flow of Vested Former Members**

Year Ended 12/31	Retired	Return To Work	Died (Survivor Benefit)	Forfeit Benefit	Transfer		New	End of Year
					Out	In		
2001								1
2002	(1)							0
2003								0
2004								0
2005							1	1
2006								1
2007								1
2008								1
2009								1
2010							1	2

# City of Madison Heights (6308)

## Division 01 - Non-Union and Department Heads

**Table 20A**  
**Flow of Retirees and Beneficiaries**

Year Ended 12/31	Added to Rolls			Removed from Rolls			Year End	
	Number@	Annual Benefits	Benefit Adjust.*	Number	Annual Benefits	Benefit Adjust.#	Number	Annual Benefits
2001		\$ 4,164		(2)	\$ (9,490)	\$ (661)	34	\$ 403,256
2002	1			(2)	\$ (8,885)		33	398,535
2003							33	398,535
2004	1	72,284		(1)	(3,447)		34	470,819
2005							33	467,372
2006	1	65,071		(2)	(10,694)	(625)	32	521,124
2007	1	3,175		(2)	(17,716)		31	506,583
2008	1	64,638		(1)	(1,678)		31	569,543
2009				(15)	(105,249)		16	464,294
2010	4	76,851					20	541,145

@ Includes beneficiaries of retirees who died during the year.

\* Includes where applicable E, E-1, and E-2 benefits, and corrections.

# Includes where applicable C-2 and Accelerated Option benefits, and corrections.

# City of Madison Heights (6308)

## Division 01 - Non-Union and Department Heads

**Table 21A**  
**Flow of Valuation Assets (Actuarial Value)**

Year Ended 12/31	Contributions		Investment Income	Benefit Payments	Member Contrib. Refunds	Transfer*		Balance
	Employer	Member				Out	In	
2001	\$ 120,590	\$ 0	\$ 386,413	\$ (403,863)	\$ 0	\$ 0	\$ 857	\$ 5,505,256
2002	133,401	0	134,494	(395,267)	0	0	0	5,377,884
2003	162,540	0	370,370	(398,535)	0	0	0	5,512,259
2004	189,124	0	377,078	(434,676)	0	0	200,835	5,844,620
2005	195,271	0	360,391	(468,324)	0	0	0	5,931,958
2006	212,638	0	466,316	(522,065)	0	0	0	6,088,847
2007	238,038	0	491,711	(509,162)	0	0	0	6,309,434
2008	237,486	0	255,689	(543,589)	0	0	27,248	6,286,268
2009	238,112	0	14,276	(499,377)	0	(380,561)	0	5,658,718
2010	244,305	0	269,022	(510,202)	0	0	18,618	5,680,461

\* Transfers out and in are usually related to the transfer of participants between divisions or municipalities, and to employer and member payments for service credit purchases (if any) that the governing body has approved.

**Table 22A**  
**Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Accrued Liabilities	Valuation Assets	Funded Percent	Unfunded Accrued Liability	UAL as Percent of Annual Payroll
2001	\$ 6,330,000	\$ 5,505,256	87%	\$ 824,744	80%
2002	6,494,132	5,377,884	83	1,116,248	104
2003	6,806,510	5,512,259	81	1,294,251	114
2004	7,604,876	5,844,620	77	1,760,256	148
2005	7,622,671	5,931,958	78	1,690,713	143
2006	8,019,042	6,088,847	76	1,930,195	160
2007	8,274,109	6,309,434	76	1,964,675	166
2008	8,685,702	6,286,268	72	2,399,434	204
2009	8,038,466	5,658,718	70	2,379,748	198
2010	8,479,273	5,680,461	67	2,798,812	271

# City of Madison Heights (6308)

## Division 10 - Gnrl Crth

**Table 16B**

### Computed Employer Contributions to the Retirement System For the Fiscal Year Beginning July 1, 2012

Contribution for	Monthly Dollar Contribution *
Total Normal Cost	\$2,533
Member Contributions	765
Less Potential Refunds	<u>(108)</u>
Net Member Contributions	657
Employer Normal Cost @	\$1,876
Amortization of Unfunded Accrued Liability (20 years) ^	<u>1,436</u> ^
Total Long Term Contribution	3,312
Overfunding Credit #	0
<b>Total Employer Contribution @</b>	<b>\$3,312 *</b>

@ The above Employer contribution requirement is based on Member contributions of 3.04% of pay.

\* The monthly dollar contribution is based on projected fiscal year payroll. Monthly invoices will be based on the dollar amount shown above.

# Only applies if projected assets exceed projected liabilities as of the beginning of the July 1, 2012 fiscal year (see Table 24).

^ This division is closed to new hires. This line displays the amortization funding requirement, and is based on a 20 year amortization (payments increase 4.5% per year). However, for reporting and disclosure purposes under Statement Nos. 25 and 27 of the Governmental Accounting Standards Board, the annual required contribution (ARC) is based on a 30 year level dollar amortization (the annual amortization payment is \$21,108 and the ARC is \$43,620). Note that the 20 year amortization period will decrease by 2 years each valuation year, until a minimum 5 year amortization is attained. This will result in amortization payments that increase faster than 4.5% each year.

**Note:** Changes in actuarial assumptions and/or methods were reflected in the December 31, 2010 actuarial valuation. The effects of the changes are shown below:

Increase in Actuarial Accrued Liabilities:	\$(23,783)
Increase in Computed Long Term Employer Contribution	
Monthly Normal Cost:	\$0
Monthly Amortization Payment:	\$(155)
Monthly Total:	\$(155)

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Division 10 - Gnrl Crth

**Table 17B**

### Computed Employer Contributions - Comparative Statement

Valuation Date December 31,	Active Members		Employer Contribution	
	Number	Annual Payroll	Regular Contribution	Minimum Required Contribution
1996	11	\$ 395,268	8.23%	6.59%
1997	11	424,443	7.29%	7.29%
1998	11	406,762	8.71%	8.71%
1999	10	345,926	6.81%	5.61%
2000	9	331,258	4.88%	4.87%
2001	9	350,884	6.08%	6.08%
2002	9	350,254	6.49%	6.49%
2003	9	368,310	6.85%	6.85%
2004	9	396,370	7.25%	7.25%
2005	8	369,204	7.18%	7.18%
2006	8	378,402	7.00%	7.00%
2007	7	346,669	\$ 1,940 #	\$ 1,940 #
2008	7	354,953	\$ 2,943	\$ 2,943
2009	7	358,201	\$ 2,996	\$ 2,996
2010	6	309,465	\$ 3,312	\$ 3,312

# Beginning with this valuation, a monthly dollar contribution is shown because the division will have no new hires.

Notes:

Adoption of Benefits B-2, F50 (25 years) and 3.04% member contributions reflected in 1997 valuation.

Actuarial assumptions were revised for the 1997 valuation.

Actuarial assumptions were revised for the 2000 valuation.

Actuarial assumptions were revised for the 2004 valuation.

Adoption of DC Plan for New Hires reflected in 2007 valuation.

Actuarial assumptions were revised for the 2008 valuation.

Actuarial assumptions were revised for the 2009 valuation.

Actuarial assumptions were revised for the 2010 valuation.

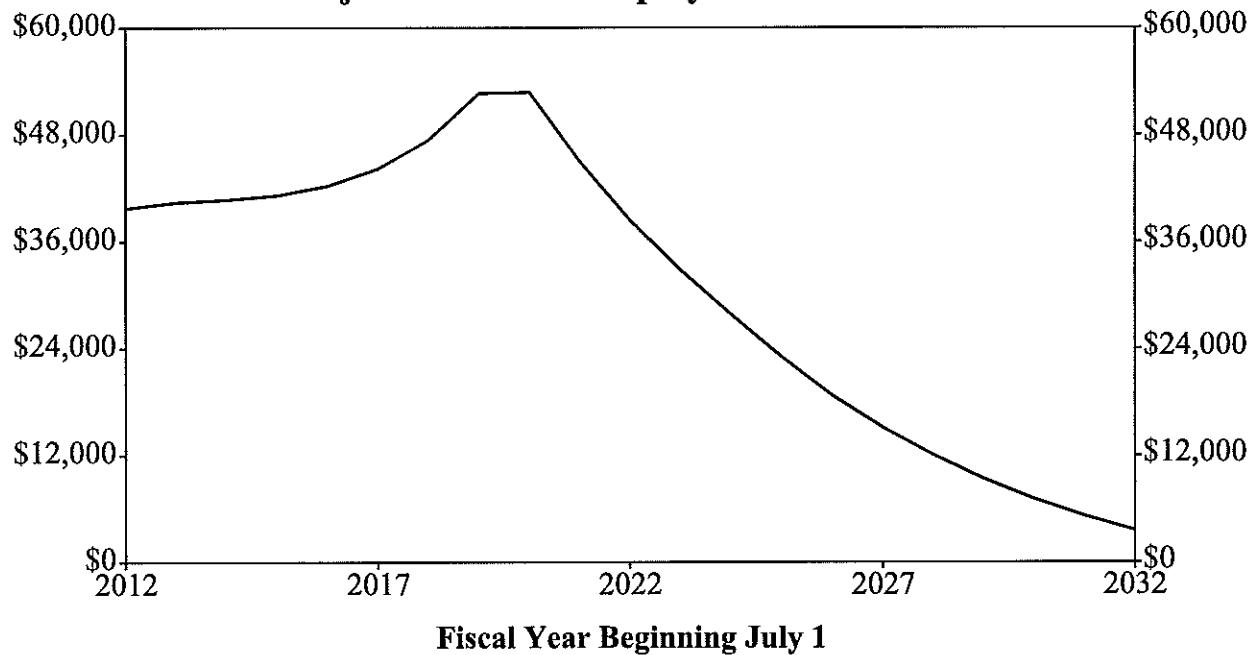
The most recent 15 years of benefit changes are reflected in this table. For a complete benefit history see Table 25.

## City of Madison Heights (6308)

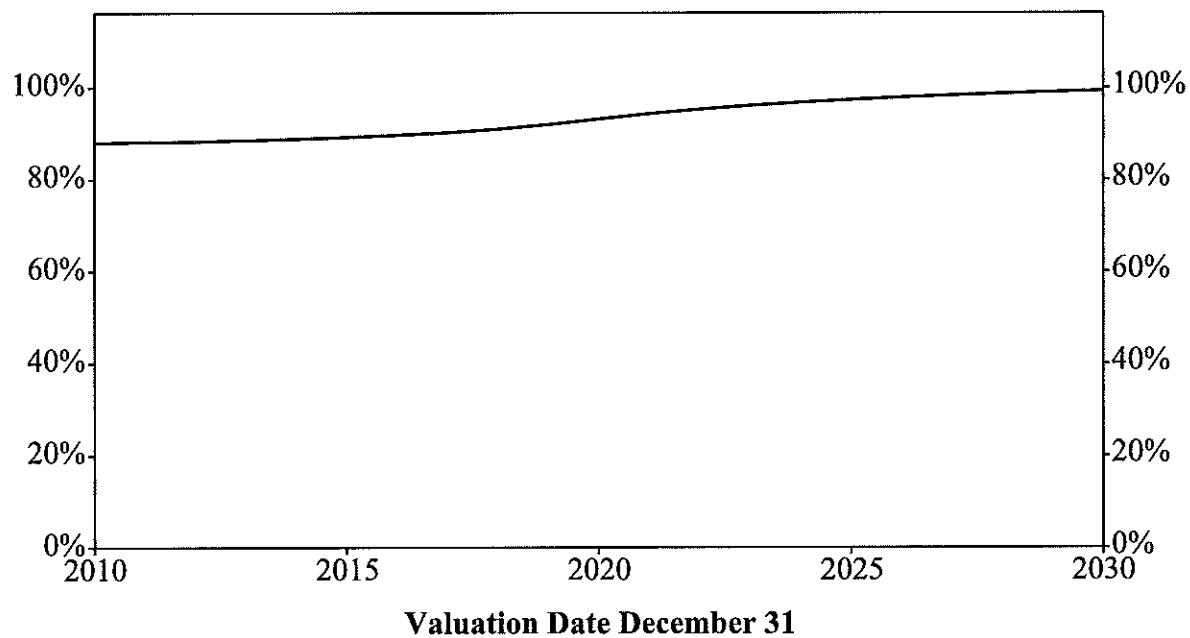
### Division 10 - Gnrl Crth

#### Chart 17.5B

##### Projected Annual Employer Contributions



##### Projected Funded Percentage



Note: Please refer to page 87 for a discussion of the projection.

**City of Madison Heights (6308)**

**Division 10 - Gnrl Crth**

**Table 18B**  
**Flow of Active Membership**

Year Ended 12/31	Retired	Disabled	Died (Survivor Benefit)	Other Termination		Transfer		New Member	End of Year
				Vested	Non-Vested	Out	In		
2001					(1)			1	9
2002									9
2003									9
2004									9
2005				(1)	(1)			1	8
2006									8
2007						(1)			7
2008									7
2009									7
2010	(1)								6

**Table 19B**  
**Flow of Vested Former Members**

Year Ended 12/31	Retired	Return To Work	Died (Survivor Benefit)	Forfeit Benefit	Transfer		New	End of Year
					Out	In		
2001	(1)			(1)				1
2002								1
2003								1
2004								1
2005							1	2
2006	(1)							1
2007							1	2
2008								2
2009								2
2010					(1)			1

# City of Madison Heights (6308)

## Division 10 - Gnrl Crth

**Table 20B**  
**Flow of Retirees and Beneficiaries**

Year Ended 12/31	Added to Rolls			Removed from Rolls			Year End	
	Number@	Annual Benefits	Benefit Adjust.*	Number	Annual Benefits	Benefit Adjust.#	Number	Annual Benefits
2001	1	\$ 20,039	\$		\$	\$	3	\$ 51,012
2002							3	51,012
2003							3	51,012
2004							3	51,012
2005							3	51,012
2006	1	7,810					4	58,822
2007							4	58,822
2008							4	58,822
2009	2	42,402					6	101,224
2010	1	31,724					7	132,948

@ Includes beneficiaries of retirees who died during the year.

\* Includes where applicable E, E-1, and E-2 benefits, and corrections.

# Includes where applicable C-2 and Accelerated Option benefits, and corrections.

# City of Madison Heights (6308)

## Division 10 - Gnrl Crth

**Table 21B**  
**Flow of Valuation Assets (Actuarial Value)**

Year Ended 12/31	Contributions		Investment Income	Benefit Payments	Member Contrib. Refunds	Transfer*		Balance
	Employer	Member				Out	In	
2001	\$ 26,120	\$ 11,042	\$ 75,906	\$ (51,443)	\$ (3,226)	\$ 0	\$ 0	\$ 1,060,643
2002	18,421	10,646	32,721	(51,012)	0	(5,690)	5,690	1,071,419
2003	18,743	10,375	80,576	(51,012)	0	0	0	1,130,101
2004	23,370	11,228	75,901	(51,012)	0	0	0	1,189,588
2005	24,930	11,376	76,039	(51,012)	(5,052)	(62)	62	1,245,869
2006	25,497	11,052	100,294	(56,219)	0	0	0	1,326,493
2007	26,916	11,342	107,540	(58,822)	0	(2,852)	2,852	1,413,469
2008	25,161	10,791	62,590	(58,822)	0	(6,366)	2,852	1,449,675
2009	23,862	10,894	177,215	(87,090)	0	0	217,160	1,791,716
2010	29,298	10,585	80,402	(117,086)	0	(18,618)	0	1,776,297

\* Transfers out and in are usually related to the transfer of participants between divisions or municipalities, and to employer and member payments for service credit purchases (if any) that the governing body has approved.

**Table 22B**  
**Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Accrued Liabilities	Valuation Assets	Funded Percent	Unfunded Accrued Liability	UAL as Percent of Annual Payroll
2001	\$ 1,069,710	\$ 1,060,643	99%	\$ 9,067	3%
2002	1,109,347	1,071,419	97	37,928	11
2003	1,193,737	1,130,101	95	63,636	17
2004	1,280,890	1,189,588	93	91,302	23
2005	1,344,080	1,245,869	93	98,211	27
2006	1,410,541	1,326,493	94	84,048	22
2007	1,510,707	1,413,469	94	97,238	28
2008	1,613,659	1,449,675	90	163,984	46
2009	1,979,624	1,791,716	91	187,908	52
2010	2,014,257	1,776,297	88	237,960	77

# City of Madison Heights (6308)

## Division 11 - Dept of Public Svcs TPOAM

**Table 16C**

### **Computed Employer Contributions to the Retirement System For the Fiscal Year Beginning July 1, 2012**

Contribution for	Monthly Dollar Contribution *
Total Normal Cost	\$7,979
Member Contributions	1,863
Less Potential Refunds	<u>(303)</u>
Net Member Contributions	1,560
Employer Normal Cost @	\$6,419
Amortization of Unfunded Accrued Liability (20 years) ^	<u>13,951</u> ^
Total Long Term Contribution	20,370
Overfunding Credit #	<u>0</u>
<b>Total Employer Contribution @</b>	<b>\$20,370 *</b>

*@ The above Employer contribution requirement is based on Member contributions of 2.34% of pay.*

*\* The monthly dollar contribution is based on projected fiscal year payroll. Monthly invoices will be based on the dollar amount shown above.*

*# Only applies if projected assets exceed projected liabilities as of the beginning of the July 1, 2012 fiscal year (see Table 24).*

*^ This division is closed to new hires. This line displays the amortization funding requirement, and is based on a 20 year amortization (payments increase 4.5% per year). However, for reporting and disclosure purposes under Statement Nos. 25 and 27 of the Governmental Accounting Standards Board, the annual required contribution (ARC) is based on a 30 year level dollar amortization (the annual amortization payment is \$205,032 and the ARC is \$282,060). Note that the 20 year amortization period will decrease by 2 years each valuation year, until a minimum 5 year amortization is attained. This will result in amortization payments that increase faster than 4.5% each year.*

**Note: Changes in actuarial assumptions and/or methods were reflected in the December 31, 2010 actuarial valuation. The effects of the changes are shown below:**

<b>Increase in Actuarial Accrued Liabilities:</b>	<b>\$73,707</b>
<b>Increase in Computed Long Term Employer Contribution</b>	
Monthly Normal Cost:	\$0
Monthly Amortization Payment:	\$(481)
Monthly Total:	\$(481)

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Division 11 - Dept of Public Svcs TPOAM

**Table 17C**

### Computed Employer Contributions - Comparative Statement

Valuation Date December 31,	Active Members		Employer Contribution	
	Number	Annual Payroll	Regular Contribution	Minimum Required Contribution
1996	42	\$ 1,429,154	5.92%	4.73%
1997	41	1,412,355	5.06%	5.06%
1998	39	1,463,047	4.41%	4.41%
1999	37	1,447,656	2.57%	2.11%
2000	36	1,438,528	3.45%	3.44%
2001	37	1,477,354	2.78%	2.78%
2002	33	1,342,450	5.94%	5.94%
2003	37	1,476,977	6.00%	6.00%
2004	35	1,559,486	8.75%	8.75%
2005	30	1,339,492	10.42%	10.42%
2006	29	1,374,577	10.95%	10.95%
2007	29	1,461,577	\$ 14,063 #	\$ 14,063 #
2008	28	1,433,600	\$ 18,318	\$ 18,318
2009	27	1,334,228	\$ 18,423	\$ 18,423
2010	21	1,027,989	\$ 20,370	\$ 20,370

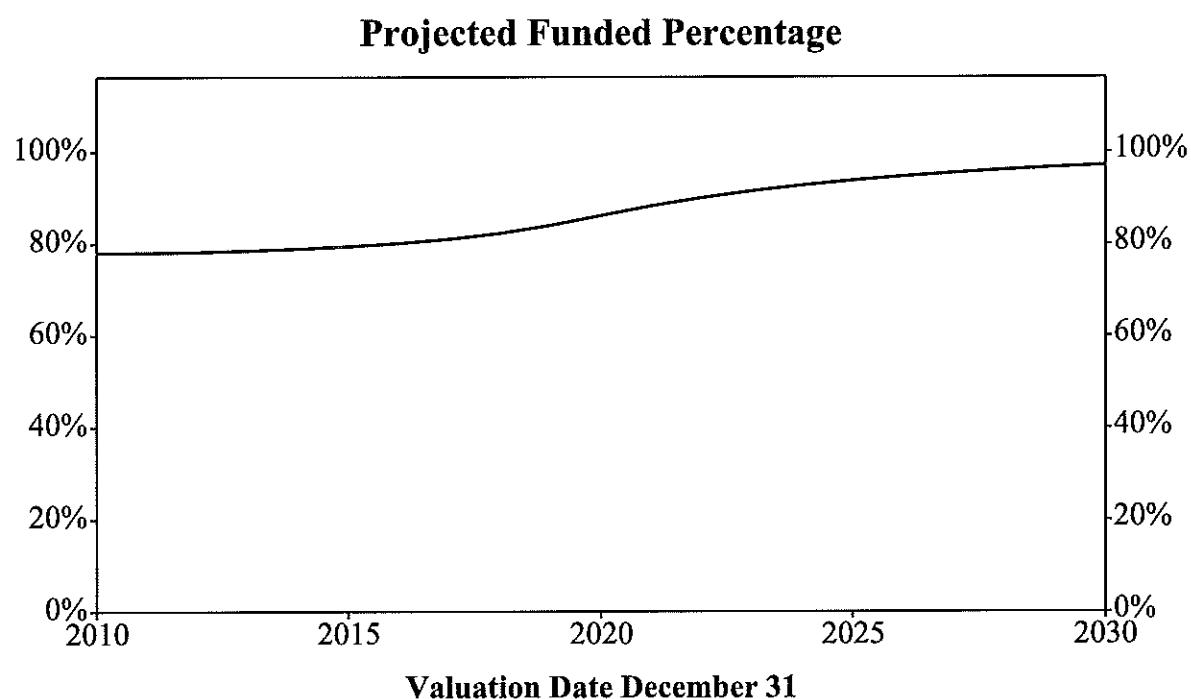
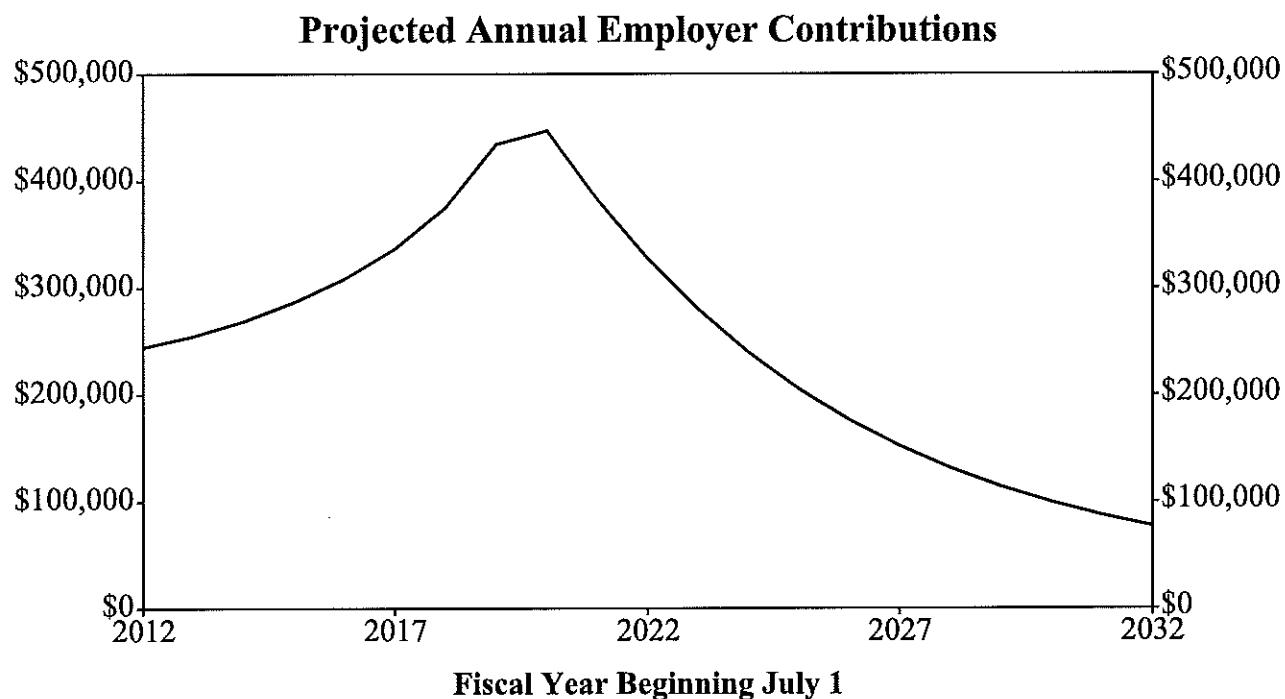
# Beginning with this valuation, a monthly dollar contribution is shown because the division will have no new hires.

Notes:

- Actuarial assumptions were revised for the 1997 valuation.
- Actuarial assumptions were revised for the 2000 valuation.
- Adoption of Benefit B-3 - 80% Maximum, 3.09% Member Contributions reflected in 2004 valuation.
- Actuarial assumptions were revised for the 2004 valuation.
- Adoption of 2.34% Member Contributions reflected in 2005 valuation.
- Adoption of DC Plan for New Hires reflected in 2007 valuation.
- Actuarial assumptions were revised for the 2008 valuation.
- Actuarial assumptions were revised for the 2009 valuation.
- Actuarial assumptions were revised for the 2010 valuation.

The most recent 15 years of benefit changes are reflected in this table. For a complete benefit history see Table 25.

**City of Madison Heights (6308)**  
**Division 11 - Dept of Public Svcs TPOAM**  
**Chart 17.5C**



Note: Please refer to page 87 for a discussion of the projection.

**City of Madison Heights (6308)**  
**Division 11 - Dept of Public Svcs TPOAM**

**Table 18C**  
**Flow of Active Membership**

Year Ended 12/31	Retired	Disabled	Died (Survivor Benefit)	Other Termination		Transfer		New Member	End of Year
				Vested	Non-Vested	Out	In		
2001	(1)				(1)			3	37
2002	(2)			(2)	(1)			1	33
2003								4	37
2004	(2)								35
2005	(3)			(1)	(1)				30
2006		(1)							29
2007									29
2008	(1)								28
2009	(1)								27
2010	(4)					(2)			21

**Table 19C**  
**Flow of Vested Former Members**

Year Ended 12/31	Retired	Return To Work	Died (Survivor Benefit)	Forfeit Benefit	Transfer		New	End of Year
					Out	In		
2001								4
2002							2	6
2003								6
2004	(1)							5
2005	(1)						1	5
2006								5
2007								5
2008								5
2009	(1)							4
2010								4

**City of Madison Heights (6308)**  
**Division 11 - Dept of Public Svcs TPOAM**

**Table 20C**  
**Flow of Retirees and Beneficiaries**

Year Ended 12/31	Added to Rolls			Removed from Rolls			Year End	
	Number@	Annual Benefits	Benefit Adjust.*	Number	Annual Benefits	Benefit Adjust.#	Number	Annual Benefits
2001	2	\$ 22,514	\$ 1,126		\$ (2,310)	\$ (1,136)	31	\$ 399,930
2002	2	47,147		(1)	(1,126)		33	447,067
2003				(4)	(59,892)	(1,569)	32	445,941
2004	5	109,353	2,254	(2)	(8,686)		33	496,087
2005	4	93,875					35	581,276
2006	1	12,576					36	593,852
2007			375	(1)	(14,051)		35	580,176
2008	1	26,589					36	606,765
2009	9	79,487		(10)	(113,594)		35	572,658
2010	5	158,060		(1)	(12,951)		39	717,767

@ Includes beneficiaries of retirees who died during the year.

\* Includes where applicable E, E-1, and E-2 benefits, and corrections.

# Includes where applicable C-2 and Accelerated Option benefits, and corrections.

**City of Madison Heights (6308)**  
**Division 11 - Dept of Public Svcs TPOAM**

**Table 21C**  
**Flow of Valuation Assets (Actuarial Value)**

Year Ended 12/31	Contributions		Investment Income	Benefit Payments	Member Contrib. Refunds	Transfer*		Balance
	Employer	Member				Out	In	
2001	\$ 47,934	\$ 22,206	\$ 581,076	\$ (388,633)	\$ 0	\$ (153,041)	\$ 0	\$ 8,332,397
2002	40,175	21,910	208,863	(423,502)	(3,028)	(7,098)	7,098	8,176,815
2003	46,215	22,292	561,538	(446,886)	0	0	0	8,359,974
2004	63,600	36,182	536,694	(469,798)	0	0	0	8,526,652
2005	110,602	32,843	525,581	(556,858)	0	(550)	550	8,638,820
2006	116,354	32,345	681,152	(581,275)	0	0	0	8,887,396
2007	147,061	34,201	718,862	(581,163)	0	(4,503)	4,503	9,206,357
2008	155,515	34,092	372,886	(602,332)	(4,706)	(8,868)	8,868	9,161,812
2009	160,601	31,700	116,441	(580,940)	0	(386,793)	0	8,502,821
2010	196,031	29,022	350,035	(647,323)	0	(129,806)	0	8,300,780

\* Transfers out and in are usually related to the transfer of participants between divisions or municipalities, and to employer and member payments for service credit purchases (if any) that the governing body has approved.

**Table 22C**  
**Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Accrued Liabilities	Valuation Assets	Funded Percent	Unfunded Accrued Liability	UAL as Percent of Annual Payroll
2001	\$ 7,985,546	\$ 8,332,397	104%	\$ (346,851)	0%
2002	8,273,212	8,176,815	99	96,397	7
2003	8,483,791	8,359,974	99	123,817	8
2004	9,401,713	8,526,652	91	875,061	56
2005	9,640,698	8,638,820	90	1,001,878	75
2006	10,061,921	8,887,396	88	1,174,525	85
2007	10,438,648	9,206,357	88	1,232,291	84
2008	10,780,891	9,161,812	85	1,619,079	113
2009	10,290,554	8,502,821	83	1,787,733	134
2010	10,634,653	8,300,780	78	2,333,873	227

# City of Madison Heights (6308)

## Division 12 - AFSCME

**Table 16D**

### Computed Employer Contributions to the Retirement System For the Fiscal Year Beginning July 1, 2012

<b>Contribution for</b>	<b>Monthly Dollar Contribution *</b>
Total Normal Cost	\$4,840
Member Contributions	1,079
Less Potential Refunds	<u>(133)</u>
Net Member Contributions	946
Employer Normal Cost @	\$3,894
Amortization of Unfunded Accrued Liability (26 years) ^	<u>6,645</u> ^
Total Long Term Contribution	10,539
Overfunding Credit #	<u>0</u>
<b>Total Employer Contribution @</b>	<b>\$10,539 *</b>

@ The above Employer contribution requirement is based on Member contributions of 2.44% of pay.

\* The monthly dollar contribution is based on projected fiscal year payroll. Monthly invoices will be based on the dollar amount shown above.

# Only applies if projected assets exceed projected liabilities as of the beginning of the July 1, 2012 fiscal year (see Table 24).

^ This division is closed to new hires. This line displays the amortization funding requirement, and is based on a 26 year amortization (payments increase 4.5% per year). However, for reporting and disclosure purposes under Statement Nos. 25 and 27 of the Governmental Accounting Standards Board, the annual required contribution (ARC) is based on a 30 year level dollar amortization (the annual amortization payment is \$116,436 and the ARC is \$163,164). Note that the 26 year amortization period will decrease by 2 years each valuation year, until a minimum 5 year amortization is attained. This will result in amortization payments that increase faster than 4.5% each year.

**Note:** Changes in actuarial assumptions and/or methods were reflected in the December 31, 2010 actuarial valuation. The effects of the changes are shown below:

Increase in Actuarial Accrued Liabilities:	\$(40,398)
Increase in Computed Long Term Employer Contribution	
Monthly Normal Cost:	\$0
Monthly Amortization Payment:	\$(221)
Monthly Total:	\$(221)

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Division 12 - AFSCME

**Table 17D**

### **Computed Employer Contributions - Comparative Statement**

Valuation Date December 31,	Active Members		Employer Contribution	
	Number	Annual Payroll	Regular Contribution	Minimum Required Contribution
1996	16	\$ 697,769	10.40%	8.32%
1997	16	724,559	8.26%	8.26%
1998	14	673,505	7.73%	7.73%
1999	11	544,734	5.34%	4.39%
2000	15	775,899	6.14%	6.14%
2001	15	778,990	7.41%	7.41%
2002	16	852,632	7.83%	7.83%
2003	14	761,707	10.55%	10.55%
2004	12	740,431	11.47%	11.47%
2005	12	743,357	11.49%	11.49%
2006	10	637,287	11.16%	11.16%
2007	9	615,532	12.95%	12.95%
2008	10	681,062	14.45%	14.45%
2009	10	683,363	16.61%	16.61%
2010	10	648,391	\$ 10,539 #	\$ 10,539 #

# Beginning with this valuation, a monthly dollar contribution is shown because the division will have no new hires.

Notes:

- Adoption of Benefit B-2 and 1.63% member contributions reflected in 1997 valuation.
- Actuarial assumptions were revised for the 1997 valuation.
- Actuarial assumptions were revised for the 2000 valuation.
- Adoption of Benefit B-3 - 80% Maximum, 3.26% Member Contributions reflected in 2003 valuation.
- Adoption of 2.44% Member Contributions reflected in 2004 valuation.
- Actuarial assumptions were revised for the 2004 valuation.
- Actuarial assumptions and methods were revised for the 2008 valuation.
- Actuarial assumptions were revised for the 2009 valuation.
- Adoption of DC Plan for New Hires reflected in 2010 valuation.
- Actuarial assumptions were revised for the 2010 valuation.

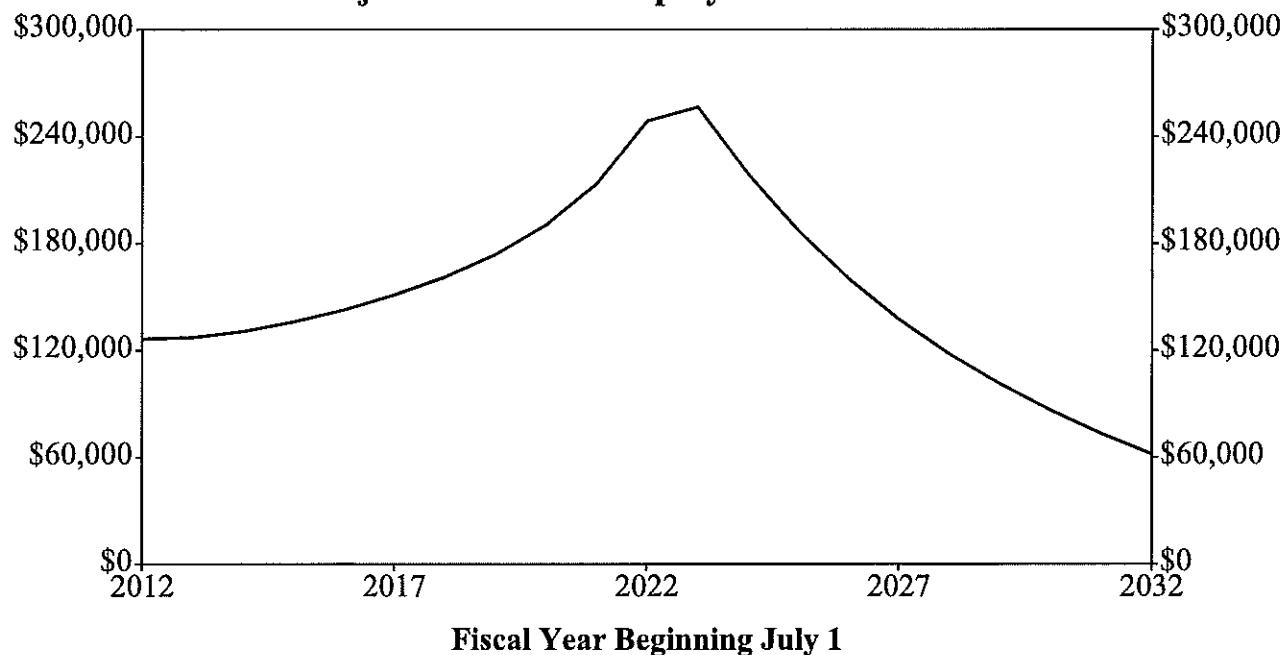
The most recent 15 years of benefit changes are reflected in this table. For a complete benefit history see Table 25.

# City of Madison Heights (6308)

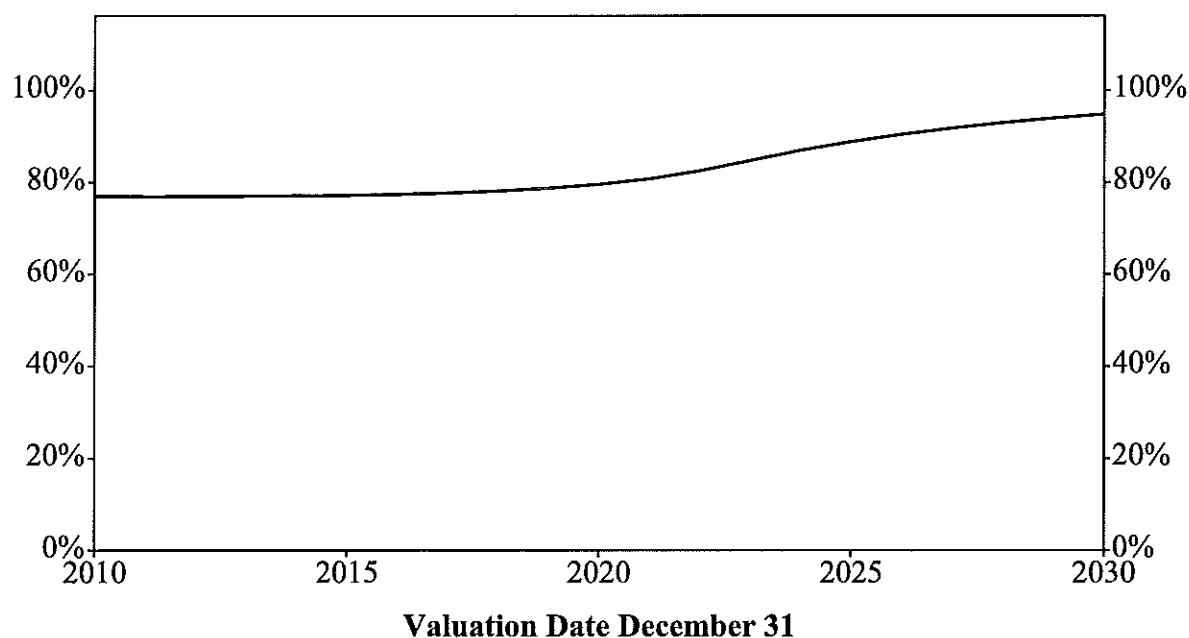
## Division 12 - AFSCME

### Chart 17.5D

#### Projected Annual Employer Contributions



#### Projected Funded Percentage



Note: Please refer to page 87 for a discussion of the projection.

**City of Madison Heights (6308)**

**Division 12 - AFSCME**

**Table 18D**  
**Flow of Active Membership**

<b>Year Ended 12/31</b>	<b>Retired</b>	<b>Disabled</b>	<b>Died (Survivor Benefit)</b>	<b>Other Termination</b>		<b>Transfer</b>		<b>New Member</b>	<b>End of Year</b>
				<b>Vested</b>	<b>Non-Vested</b>	<b>Out</b>	<b>In</b>		
2001	(2)	(1)				(1)	1	3	15
2002								1	16
2003	(2)			(1)	(1)			2	14
2004					(1)	(1)			12
2005									12
2006				(1)	(1)				10
2007	(1)								9
2008								1	10
2009									10
2010	(1)			(1)	(1)		3		10

**Table 19D**  
**Flow of Vested Former Members**

<b>Year Ended 12/31</b>	<b>Retired</b>	<b>Return To Work</b>	<b>Died (Survivor Benefit)</b>	<b>Forfeit Benefit</b>	<b>Transfer</b>		<b>New</b>	<b>End of Year</b>
					<b>Out</b>	<b>In</b>		
2001								3
2002	(1)							2
2003							2	4
2004								4
2005				(1)				3
2006								4
2007							1	4
2008								4
2009								4
2010							1	5

# City of Madison Heights (6308)

## Division 12 - AFSCME

**Table 20D**  
**Flow of Retirees and Beneficiaries**

Year Ended 12/31	Added to Rolls			Removed from Rolls			Year End	
	Number@	Annual Benefits	Benefit Adjust.*	Number	Annual Benefits	Benefit Adjust.#	Number	Annual Benefits
2001	3	\$ 63,500	\$				9	\$ 142,586
2002	1	20,980		(1)	\$ (11,283)	\$ (1,598)	9	150,685
2003	2	50,950					11	201,635
2004							11	201,635
2005							11	201,635
2006						(2,545)	11	199,090
2007	1	35,959					12	235,049
2008			2,316				12	237,365
2009	3	25,456					15	262,821
2010	1	60,602					16	323,423

@ Includes beneficiaries of retirees who died during the year.

\* Includes where applicable E, E-1, and E-2 benefits, and corrections.

# Includes where applicable C-2 and Accelerated Option benefits, and corrections.

# City of Madison Heights (6308)

## Division 12 - AFSCME

**Table 21D**  
**Flow of Valuation Assets (Actuarial Value)**

Year Ended 12/31	Contributions		Investment Income	Benefit Payments	Member Contrib. Refunds	Transfer*		Balance
	Employer	Member				Out	In	
2001	\$ 50,239	\$ 13,467	\$ 248,611	\$ (102,082)	\$ 0	\$ 0	\$ 152,184	\$ 3,351,037
2002	44,923	13,895	102,716	(133,052)	0	(8,292)	8,292	3,379,519
2003	68,050	20,950	254,614	(154,896)	0	(6)	6	3,568,237
2004	66,373	22,459	208,359	(201,634)	(6,436)	(200,835)	0	3,456,523
2005	73,445	18,132	216,857	(201,634)	0	(6)	6	3,563,323
2006	82,264	18,235	284,746	(199,937)	0	(5)	5	3,748,631
2007	84,697	19,796	303,726	(199,089)	0	(1)	1	3,957,761
2008	76,617	16,102	165,194	(237,364)	0	(105)	105	3,978,310
2009	82,294	16,674	198,535	(254,335)	(5,649)	0	93,999	4,109,828
2010	92,353	16,483	246,876	(288,071)	0	0	179,466	4,356,935

\* Transfers out and in are usually related to the transfer of participants between divisions or municipalities, and to employer and member payments for service credit purchases (if any) that the governing body has approved.

**Table 22D**  
**Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Accrued Liabilities	Valuation Assets	Funded Percent	Unfunded Accrued Liability	UAL as Percent of Annual Payroll
2001	\$ 3,523,064	\$ 3,351,037	95%	\$ 172,027	22%
2002	3,621,006	3,379,519	93	241,487	28
2003	4,204,722	3,568,237	85	636,485	84
2004	4,104,867	3,456,523	84	648,344	88
2005	4,230,783	3,563,323	84	667,460	90
2006	4,333,119	3,748,631	87	584,488	92
2007	4,718,282	3,957,761	84	760,521	124
2008	4,851,889	3,978,310	82	873,579	128
2009	5,195,434	4,109,828	79	1,085,606	159
2010	5,647,986	4,356,935	77	1,291,051	199

# City of Madison Heights (6308)

## Division 13 - Cler Tmst

**Table 16E**

### **Computed Employer Contributions to the Retirement System For the Fiscal Year Beginning July 1, 2012**

<b>Contribution for</b>	<b>Monthly Dollar Contribution *</b>
Total Normal Cost	\$7,303
Member Contributions	0
Less Potential Refunds	0
Net Member Contributions	0
Employer Normal Cost @	\$7,303
Amortization of Unfunded Accrued Liability (26 years) ^	<u>5,080</u> ^
Total Long Term Contribution	12,383
Overfunding Credit #	0
<b>Total Employer Contribution @</b>	<b>\$12,383 *</b>

@ The above Employer contribution requirement is based on Member contributions of 0.00% of pay.

\* The monthly dollar contribution is based on projected fiscal year payroll. Monthly invoices will be based on the dollar amount shown above.

# Only applies if projected assets exceed projected liabilities as of the beginning of the July 1, 2012 fiscal year (see Table 24).

^ This division is closed to new hires. This line displays the amortization funding requirement, and is based on a 26 year amortization (payments increase 4.5% per year). However, for reporting and disclosure purposes under Statement Nos. 25 and 27 of the Governmental Accounting Standards Board, the annual required contribution (ARC) is based on a 30 year level dollar amortization (the annual amortization payment is \$89,028 and the ARC is \$176,664). Note that the 26 year amortization period will decrease by 2 years each valuation year, until a minimum 5 year amortization is attained. This will result in amortization payments that increase faster than 4.5% each year.

**Note:** Changes in actuarial assumptions and/or methods were reflected in the December 31, 2010 actuarial valuation. The effects of the changes are shown below:

Increase in Actuarial Accrued Liabilities:	\$ (58,082)
Increase in Computed Long Term Employer Contribution	
Monthly Normal Cost:	\$0
Monthly Amortization Payment:	\$(318)
Monthly Total:	\$(318)

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Division 13 - Cler Tmst

### Table 17E

#### Computed Employer Contributions - Comparative Statement

Valuation Date December 31,	Active Members		Employer Contribution	
			Regular Contribution	Minimum Required Contribution
	Number	Annual Payroll		
1996	35	\$ 1,057,857	8.76%	7.01%
1997	36	1,157,844	8.01%	8.01%
1998	35	1,187,524	8.36%	8.36%
1999	35	1,223,650	7.60%	6.27%
2000	36	1,279,437	6.16%	6.16%
2001	37	1,346,179	6.93%	6.93%
2002	36	1,316,377	7.56%	7.56%
2003	37	1,396,864	8.94%	8.94%
2004	34	1,400,901	10.27%	10.27%
2005	29	1,187,967	11.32%	11.32%
2006	28	1,195,420	11.20%	11.20%
2007	30	1,318,856	11.06%	11.06%
2008	29	1,311,602	11.99%	11.99%
2009	29	1,330,765	12.64%	12.64%
2010	23	1,029,122	\$ 12,383 #	\$ 12,383 #

# Beginning with this valuation, a monthly dollar contribution is shown because the division will have no new hires.

#### Notes:

- Actuarial assumptions were revised for the 1997 valuation.
- Actuarial assumptions were revised for the 2000 valuation.
- Adoption of 0.90% Member Contributions reflected in 2003 valuation.
- Adoption of 0.00% Member Contributions reflected in 2004 valuation.
- Actuarial assumptions were revised for the 2004 valuation.
- Actuarial assumptions and methods were revised for the 2008 valuation.
- Actuarial assumptions were revised for the 2009 valuation.
- Adoption of DC Plan for New Hires reflected in 2010 valuation.
- Actuarial assumptions were revised for the 2010 valuation.

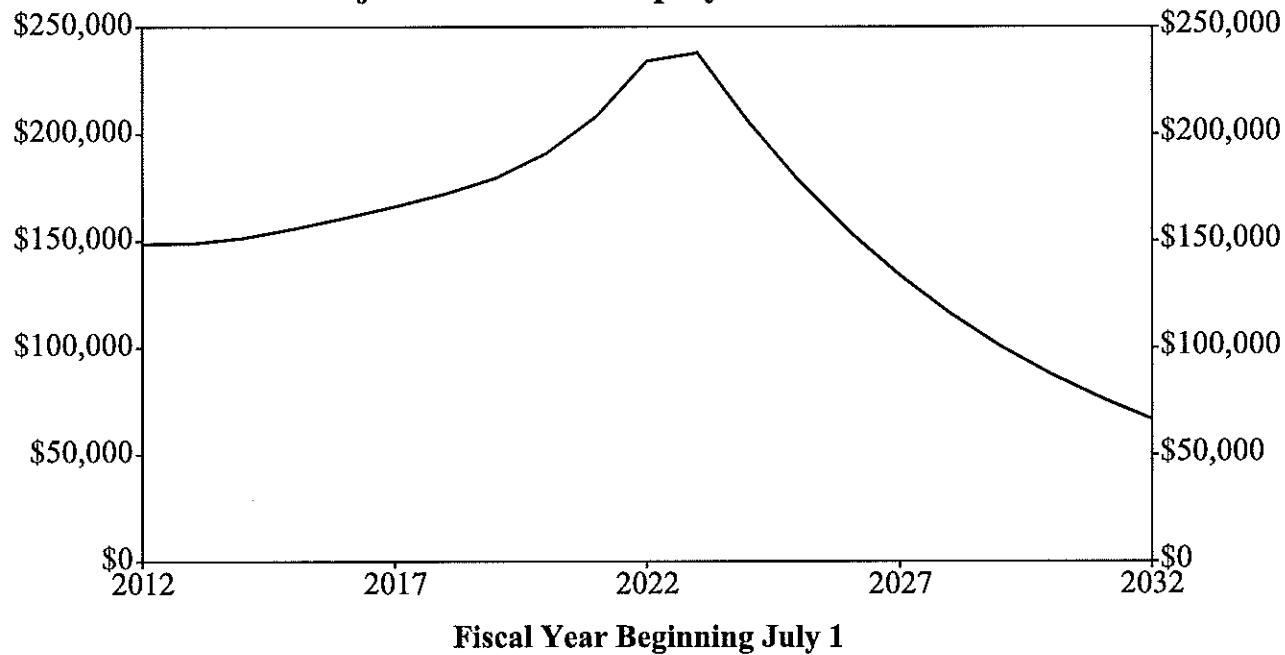
The most recent 15 years of benefit changes are reflected in this table. For a complete benefit history see Table 25.

# City of Madison Heights (6308)

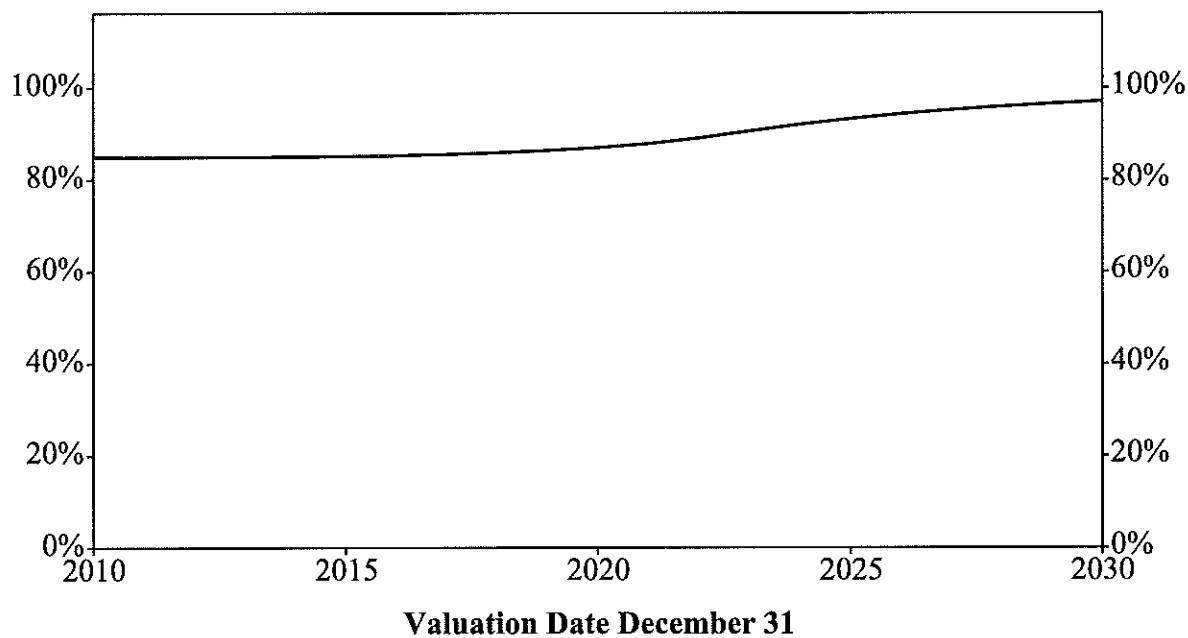
## Division 13 - Cler Tmst

### Chart 17.5E

#### Projected Annual Employer Contributions



#### Projected Funded Percentage



Note: Please refer to page 87 for a discussion of the projection.

**City of Madison Heights (6308)**

**Division 13 - Cler Tmst**

**Table 18E**  
**Flow of Active Membership**

<b>Year Ended 12/31</b>	<b>Retired</b>	<b>Disabled</b>	<b>Died (Survivor Benefit)</b>	<b>Other Termination</b>		<b>Transfer</b>		<b>New Member</b>	<b>End of Year</b>
				<b>Vested</b>	<b>Non-Vested</b>	<b>Out</b>	<b>In</b>		
2001	(1)				(2)			4	37
2002	(3)			(1)				3	36
2003	(2)				(2)			3	37
2004	(1)								34
2005	(3)				(3)			1	29
2006						(2)		1	28
2007							(1)	2	30
2008			(1)					1	29
2009				(2)					29
2010	(3)						(1)		23

**Table 19E**  
**Flow of Vested Former Members**

<b>Year Ended 12/31</b>	<b>Retired</b>	<b>Return To Work</b>	<b>Died (Survivor Benefit)</b>	<b>Forfeit Benefit</b>	<b>Transfer</b>		<b>New</b>	<b>End of Year</b>
					<b>Out</b>	<b>In</b>		
2001				(1)				2
2002							1	3
2003								3
2004							3	6
2005								6
2006								6
2007							1	7
2008								7
2009								7
2010	(2)						2	7

# City of Madison Heights (6308)

## Division 13 - Cler Tmst

**Table 20E**  
**Flow of Retirees and Beneficiaries**

Year Ended 12/31	Added to Rolls			Removed from Rolls			Year End	
	Number@	Annual Benefits	Benefit Adjust.*	Number	Annual Benefits	Benefit Adjust.#	Number	Annual Benefits
2001	1	\$ 23,551	\$ 23		\$	\$	7	\$ 82,233
2002	3	56,248	5				10	138,504
2003	2	44,744					12	183,253
2004	1	19,632	2,380				13	205,265
2005	3	77,526					16	282,791
2006							16	279,494
2007							16	285,685
2008	1	6,553		(1)	(10,788)		16	281,450
2009	14	130,149		(1)	(18,681)		29	392,918
2010	5	98,435					34	491,353

@ Includes beneficiaries of retirees who died during the year.

\* Includes where applicable E, E-1, and E-2 benefits, and corrections.

# Includes where applicable C-2 and Accelerated Option benefits, and corrections.

# City of Madison Heights (6308)

## Division 13 - Cler Tmst

**Table 21E**  
**Flow of Valuation Assets (Actuarial Value)**

Year Ended 12/31	Contributions		Investment Income	Benefit Payments	Member Contrib. Refunds	Transfer*		Balance
	Employer	Member				Out	In	
2001	\$ 100,326	\$ 24,757	\$ 281,995	\$ (64,570)	\$ (8,352)	\$ 0	\$ 0	\$ 3,867,647
2002	86,753	25,035	136,732	(122,392)	(412)	(4,305)	4,305	3,993,363
2003	99,605	19,307	312,763	(161,760)	0	0	0	4,263,278
2004	124,172	6,495	287,740	(189,197)	0	(12)	12	4,492,488
2005	115,094	0	284,158	(242,838)	(2,229)	(45)	45	4,646,673
2006	115,882	0	369,414	(282,007)	(2,139)	0	0	4,847,823
2007	141,148	0	392,569	(282,591)	0	0	0	5,098,949
2008	148,547	0	218,668	(278,175)	(277)	(27,248)	0	5,160,464
2009	148,111	0	446,172	(355,763)	0	0	456,195	5,855,179
2010	137,287	0	248,472	(469,118)	0	(49,660)	0	5,722,160

\* Transfers out and in are usually related to the transfer of participants between divisions or municipalities, and to employer and member payments for service credit purchases (if any) that the governing body has approved.

**Table 22E**  
**Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Accrued Liabilities	Valuation Assets	Funded Percent	Unfunded Accrued Liability	UAL as Percent of Annual Payroll
2001	\$ 3,865,533	\$ 3,867,647	100%	\$ (2,114)	0%
2002	4,120,453	3,993,363	97	127,090	10
2003	4,555,498	4,263,278	94	292,220	21
2004	4,892,108	4,492,488	92	399,620	29
2005	5,175,417	4,646,673	90	528,744	45
2006	5,387,984	4,847,823	90	540,161	45
2007	5,669,599	5,098,949	90	570,650	43
2008	5,820,235	5,160,464	89	659,771	50
2009	6,621,959	5,855,179	88	766,780	58
2010	6,750,943	5,722,160	85	1,028,783	100

# City of Madison Heights (6308)

## Division 14 - Disptchrs

**Table 16F**

### Computed Employer Contributions to the Retirement System For the Fiscal Year Beginning July 1, 2012

Contribution for	As Percentage of Active Member Payroll	Estimated Monthly Dollar Contribution *
Total Normal Cost	8.99%	\$2,212
Member Contributions	0.00	0
Less Potential Refunds	<u>0.00</u>	<u>0</u>
Net Member Contributions	0.00	0
Employer Normal Cost @	8.99%	\$2,212
Amortization of Unfunded Accrued Liability (28 years) #	<u>(2.10)</u>	<u>(517)</u>
Total Long Term Contribution	6.89	1,695
Overfunding Credit #	<u>(2.40)</u>	<u>(591)</u>
<b>Total Employer Contribution @</b>	<b>4.49%</b>	<b>\$1,104 *</b>

@ The above Employer contribution requirement is based on Member contributions of 0.00% of pay. If Member contributions are increased/decreased by 1.00% of pay, the Employer long term contribution requirement (based on a 28 year amortization) will decrease/increase by 0.91% of pay.

\* Estimated contributions are based on valuation payroll. Actual contributions will be based on actual reported monthly pays, and will be different from the above amounts (usually higher).

# For this division, projected assets exceed projected liabilities as of the beginning of the July 1, 2012 fiscal year (see Table 24). The negative unfunded accrued liability is amortized (spread) over 10 years, and used to reduce the employer contribution rate. The total credit is 4.50% (2.10% plus 2.40%). The additional 2.40% results from spreading the negative unfunded accrued liability over 10 years instead of 28 years.

**Note:** Changes in actuarial assumptions and/or methods were reflected in the December 31, 2010 actuarial valuation. The effects of the changes are shown below:

Increase in Actuarial Accrued Liabilities:	\$13,800
Increase in Computed Long Term Employer Contribution As a Percentage of Active Member Payroll	
Normal Cost:	0.00%
Amortization Payment:	(0.27)%
Total:	(0.27)%

Please see the Comments on the Investment Markets on page 3.

# City of Madison Heights (6308)

## Division 14 - Disptchrs

**Table 17F**

### Computed Employer Contributions - Comparative Statement

Valuation Date December 31,	Active Members		Employer Contribution	
			Regular Contribution	Minimum Required Contribution
	Number	Annual Payroll		
1996	11	\$ 311,417	8.75%	7.00%
1997	10	258,180	7.63%	7.63%
1998	10	289,815	7.18%	7.18%
1999	9	290,076	5.67%	4.67%
2000	10	333,713	4.69%	4.68%
2001	11	311,789	2.46%	2.46%
2002	13	363,017	3.73%	3.73%
2003	9	357,447	4.95%	4.95%
2004	10	405,912	7.37%	7.37%
2005	9	387,594	6.85%	6.85%
2006	9	398,221	6.96%	6.96%
2007	9	421,851	7.71%	7.71%
2008	9	414,190	9.45%	9.45%
2009	8	382,404	8.10%	8.10%
2010	6	295,262	4.49%	4.49%

Notes:

- Actuarial assumptions were revised for the 1997 valuation.
- Actuarial assumptions were revised for the 2000 valuation.
- Adoption of Benefit B-2 reflected in 2003 valuation.
- Actuarial assumptions were revised for the 2004 valuation.
- Actuarial assumptions and methods were revised for the 2008 valuation.
- Actuarial assumptions were revised for the 2009 valuation.
- Actuarial assumptions and methods were revised for the 2010 valuation.

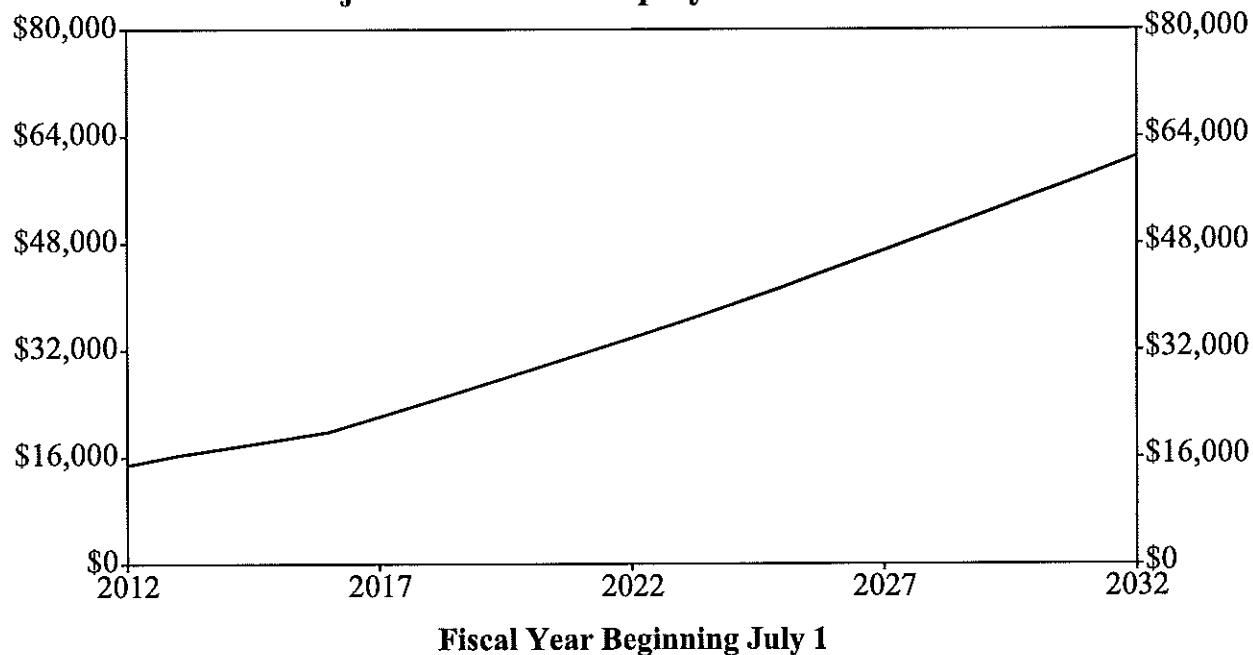
The most recent 15 years of benefit changes are reflected in this table. For a complete benefit history see Table 25.

## City of Madison Heights (6308)

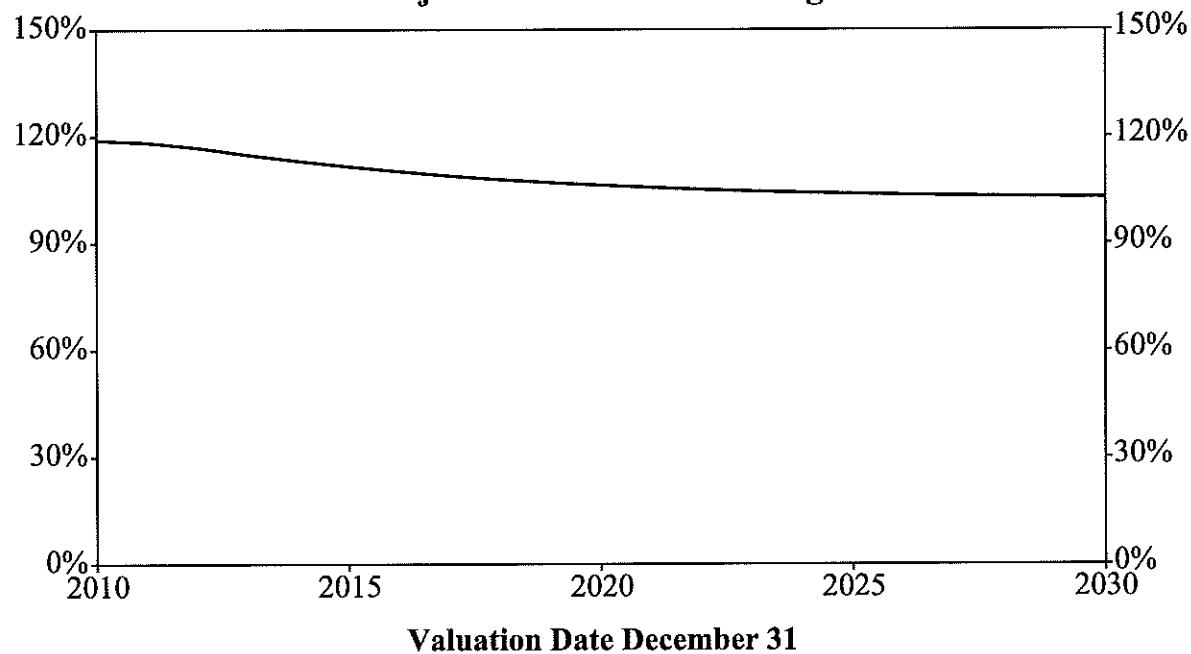
### Division 14 - Disptchrs

#### Chart 17.5F

##### Projected Annual Employer Contributions



##### Projected Funded Percentage



Note: Please refer to page 87 for a discussion of the projection.

**City of Madison Heights (6308)**

**Division 14 - Disptchrs**

**Table 18F**  
**Flow of Active Membership**

Year Ended 12/31	Retired	Disabled	Died (Survivor Benefit)	Other Termination		Transfer		New Member	End of Year
				Vested	Non-Vested	Out	In		
2001					(3)			4	11
2002					(1)			3	13
2003					(4)				9
2004								1	10
2005					(2)			1	9
2006									9
2007	(1)							1	9
2008									9
2009				(1)					8
2010				(1)	(1)				6

**Table 19F**  
**Flow of Vested Former Members**

Year Ended 12/31	Retired	Return To Work	Died (Survivor Benefit)	Forfeit Benefit	Transfer		New	End of Year
					Out	In		
2001								1
2002								1
2003								1
2004								1
2005								1
2006								1
2007								1
2008								1
2009							1	2
2010							2	4

# City of Madison Heights (6308)

## Division 14 - Disptchrs

**Table 20F**  
**Flow of Retirees and Beneficiaries**

Year Ended 12/31	Added to Rolls			Removed from Rolls			Year End	
	Number@	Annual Benefits	Benefit Adjust.*	Number	Annual Benefits	Benefit Adjust.#	Number	Annual Benefits
2001		\$	\$		\$	\$	0	\$ 0
2002							0	0
2003							0	0
2004							0	0
2005							0	0
2006							0	0
2007	1	13,799					1	13,799
2008							1	13,799
2009							1	13,799
2010							1	13,799

@ Includes beneficiaries of retirees who died during the year.

\* Includes where applicable E, E-1, and E-2 benefits, and corrections.

# Includes where applicable C-2 and Accelerated Option benefits, and corrections.

# City of Madison Heights (6308)

## Division 14 - Disptchrs

**Table 21F**  
**Flow of Valuation Assets (Actuarial Value)**

Year Ended 12/31	Contributions		Investment Income	Benefit Payments	Member Contrib. Refunds	Transfer*		Balance
	Employer	Member				Out	In	
2001	\$ 19,577	\$ 0	\$ 20,553	\$ 0	\$ 0	\$ 0	\$ 0	\$ 274,979
2002	15,723	0	13,717	0	0	0	0	304,419
2003	13,034	0	28,350	0	0	0	0	345,803
2004	16,207	0	25,356	0	0	0	0	387,366
2005	18,173	0	26,375	0	0	0	0	431,914
2006	24,698	0	36,027	0	0	0	0	492,639
2007	30,389	0	40,260	(8,050)	0	0	0	555,238
2008	28,599	0	27,953	(13,799)	0	0	0	597,991
2009	29,076	0	37,573	(13,799)	0	0	0	650,841
2010	30,701	0	43,283	(13,799)	0	0	0	711,026

\* Transfers out and in are usually related to the transfer of participants between divisions or municipalities, and to employer and member payments for service credit purchases (if any) that the governing body has approved.

**Table 22F**  
**Actuarial Accrued Liabilities - Comparative Schedule**

Valuation Date December 31	Accrued Liabilities	Valuation Assets	Funded Percent	Unfunded Accrued Liability	UAL as Percent of Annual Payroll
2001	\$ 165,075	\$ 274,979	167%	\$ (109,904)	0%
2002	208,779	304,419	146	(95,640)	0
2003	276,465	345,803	125	(69,338)	0
2004	358,288	387,366	108	(29,078)	0
2005	400,812	431,914	108	(31,102)	0
2006	468,735	492,639	105	(23,904)	0
2007	594,383	555,238	93	39,145	9
2008	649,991	597,991	92	52,000	13
2009	626,054	650,841	104	(24,787)	0
2010	599,044	711,026	119	(111,982)	0

# City of Madison Heights (6308)

## Table 23

### GASB 25 And GASB 27 Information

The following information has been prepared to provide the information necessary to comply with GASB Statements Number 25 and 27. Statement 25 is effective for fiscal years beginning after June 15, 1996 and Statement 27 is effective for fiscal years beginning after June 15, 1997.

All entries and the annual employer contribution amount were based on the actuarial methods and assumptions used in the December 31, 2010 actuarial valuation. The entry age normal actuarial method was used to determine the disclosure entries.

#### GASB 25 Information (as of 12/31/2010)

##### Actuarial Accrued Liability

Retirees and beneficiaries currently receiving benefits	\$21,093,583
Terminated employees (vested former members) not yet receiving benefits	1,320,100
Non-vested terminated employees (pending refunds of accumulated member contributions)	20,379
Current employees -	
Accumulated employee contributions including allocated investment income	734,191
Employer financed	<u>10,957,903</u>
Total Actuarial Accrued Liability	\$34,126,156
Net Assets Available for Benefits at Actuarial Value (Market Value is \$22,828,428 )	<u>26,547,659</u>
Unfunded (Overfunded) Actuarial Accrued Liability	\$7,578,497

#### GASB 27 Information (as of 12/31/2010)

Fiscal Year Beginning	July 1, 2012
Annual Required Contribution (ARC)	\$ 1,045,296*
Amortization Factor Used - Underfunded Liabilities (28 years)	0.055889
Amortization Factor Used - Underfunded Liabilities (26 years)	0.058519
Amortization Factor Used - Underfunded Liabilities (20 years)	0.069773
Amortization Factor Used - Underfunded Liabilities (30 year level \$)	0.085453
Amortization Factor Used - Overfunded Liabilities (10 years)	0.119963

\* Based on valuation payroll (based on projected fiscal year payroll for divisions that will have no new hires). For divisions that are open to new hires the actual required contribution will be based on current monthly payroll (during the fiscal year beginning July 1, 2012) times the computed employer contribution rate(s) shown in Tables 15 and 16. The ARC shown here is the sum of the ARC's calculated separately for each division.

# City of Madison Heights (6308)

**Table 24**

## **Development of Projected Unfunded Accrued Liability At Beginning of Fiscal Year (July 1, 2012)**

Division	Unfunded Accrued Liability 12/31/2010	Employer Normal Cost	Expected Employer Contrib.	Interest	Unfunded Accrued Liability 7/1/2012	Projected Fiscal Year Payroll
01 - Non-Union #	\$ 2,798,812	\$ 191,929	\$ (415,530)	\$ 331,611	\$ 2,906,822	\$ -
10 - Gnrl Crth #	237,960	34,472	(53,610)	28,175	246,997	-
11 - Dept of Pu #	2,333,873	121,535	(330,984)	274,915	2,399,339	-
12 - AFSCME #	1,291,051	79,833	(162,702)	154,409	1,362,591	-
13 - Cler Tmst #	1,028,783	139,313	(246,834)	120,509	1,041,771	-
14 - Disptchrs	(111,982)	42,232	(40,134)	(13,755)	(123,639)	329,689

# *This division will have no new hires.*

The unfunded accrued liability as of December 31, 2010 (see Table 13) is projected to the beginning of the fiscal year for which employer contributions are being calculated (July 1, 2012). This allows the 2010 valuation to take into account the expected future contributions that are based on past valuations. This projection process will result in more stable computed contribution rates, and was first used for the December 31, 2004 actuarial valuations.

The projected unfunded accrued liability is amortized over the appropriate period (see Table 16 for each division) to determine the amortization payment. For divisions that will have no new hires this is the dollar amortization payment. For divisions that are open to new hires this payment is divided by the projected fiscal year payroll to determine the amortization payment as a percentage of active member payroll. The resulting amortization contributions are displayed in Table 16 for each division.

# City of Madison Heights (6308)

## Table 25

### Benefit Provision History

The following benefit provision history is provided by MERS. Any corrections to this history or discrepancies between this information and information displayed elsewhere in the valuation report should be reported to your Regional Manager in the MERS Office of Marketing and Employer Services.

#### Division 01 - Non-Union and Department Heads

##### Provisions by Date

7/1/2010	DC Adoption Date 07-01-2010
7/1/1995	Benefit B-4 (80% max)
1/1/1987	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/1987	Benefit B-3
1/1/1987	Benefit F55 (With 15 Years of Service)
1/1/1985	Benefit C-2/Base B-1
7/1/1984	Member Contribution Rate 0.00%
7/1/1975	Benefit C-1 (Old)
2/9/1970	Covered by Act 88
7/1/1956	10 Year Vesting
7/1/1956	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1956	Benefit C (Old)
7/1/1956	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
	Fiscal Month - July

#### Division 10 - Gnrl Crth

##### Provisions by Date

10/1/2006	DC Adoption Date 10-01-2006
7/1/1998	Benefit F50 (With 25 Years of Service)
7/1/1998	Member Contribution Rate 3.04%
7/1/1998	Benefit B-2
7/1/1990	Benefit F55 (With 15 Years of Service)
7/1/1990	Benefit C-2/Base B-1
7/1/1984	Member Contribution Rate 0.00%
7/1/1975	10 Year Vesting
7/1/1975	Benefit C-1 (Old)
7/1/1975	Benefit FAC-5 (5 Year Final Average Compensation)
2/9/1970	Covered by Act 88
	Fiscal Month - July

#### Division 11 - Dept of Public Svcs TPOAM

##### Provisions by Date

4/1/2010	Temporary 30 Years & Out (04/01/2010 - 06/30/2010)
8/1/2006	DC Adoption Date 08-01-2006
1/1/2005	Member Contribution Rate 2.34%

# City of Madison Heights (6308)

## Table 25 (continued)

### Benefit Provision History

#### Division 11 - Dept of Public Svcs TPOAM

##### Provisions by Date

7/1/2004	Benefit B-3 (80% max)
7/1/2004	Member Contribution Rate 3.09%
1/1/1994	Benefit B-2
1/1/1994	Benefit F55 (With 15 Years of Service)
1/1/1994	Member Contribution Rate 1.50%
1/1/1987	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1987	Benefit C-2/Base B-1
1/1/1987	10 Year Vesting
7/1/1984	Member Contribution Rate 0.00%
2/9/1970	Covered by Act 88
	Fiscal Month - July

#### Division 12 - AFSCME

##### Provisions by Date

7/1/2010	DC Adoption Date 07-01-2010
7/1/2004	Member Contribution Rate 2.44%
8/1/2003	Member Contribution Rate 3.26%
8/1/2003	Benefit B-3 (80% max)
7/1/2003	Member Contribution Rate 0.82%
6/1/1998	Member Contribution Rate 1.63%
6/1/1998	Benefit B-2
7/1/1987	Benefit F55 (With 15 Years of Service)
7/1/1987	Benefit C-2/Base B-1
7/1/1984	10 Year Vesting
7/1/1984	Member Contribution Rate 0.00%
7/1/1984	Benefit FAC-5 (5 Year Final Average Compensation)
2/9/1970	Covered by Act 88
	Fiscal Month - July

#### Division 13 - Cler Tmst

##### Provisions by Date

7/1/2010	DC Adoption Date 07-01-2010
7/1/2004	Member Contribution Rate 0.00%
7/1/2003	Member Contribution Rate 0.90%
1/1/1994	10 Year Vesting
1/1/1994	Benefit B-2
1/1/1994	Member Contribution Rate 1.80%
1/1/1994	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1994	Benefit F55 (With 15 Years of Service)
2/9/1970	Covered by Act 88
	Fiscal Month - July

# **City of Madison Heights (6308)**

## **Table 25 (continued)**

### **Benefit Provision History**

#### **Division 14 - Disptchrs**

##### Provisions by Date

12/1/2003 Benefit B-2  
7/1/1990 Benefit C-2/Base B-1  
7/1/1990 Benefit FAC-5 (5 Year Final Average Compensation)  
7/1/1990 10 Year Vesting  
7/1/1990 Member Contribution Rate 0.00%  
7/1/1990 Benefit F55 (With 15 Years of Service)  
2/9/1970 Covered by Act 88  
Fiscal Month - July

#### **Division 106068 - DC - 106068**

##### Provisions by Date

7/1/2010 Loans  
7/1/2010 Pickup  
7/1/2010 Rollovers  
Fiscal Month - July

#### **Division 106069 - DC - 106069**

##### Provisions by Date

7/1/2010 Loans  
7/1/2010 Rollovers  
7/1/2010 Pickup  
Fiscal Month - July

#### **Division 106434 - DC - 106434**

##### Provisions by Date

8/1/2006 Loans  
8/1/2006 Pickup  
8/1/2006 Rollovers  
Fiscal Month - July

## **APPENDIX**

**SUMMARY OF  
PLAN PROVISIONS  
AND  
ACTUARIAL ASSUMPTIONS  
AND  
ACTUARIAL FUNDING METHOD**

**AS OF DECEMBER 31, 2010**

**FOR THE  
MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM  
OF MICHIGAN**

## INTRODUCTION

An actuarial valuation is the mathematical process that estimates plan liabilities and employer contribution requirements for purposes of financing the retirement system. This process is repeated annually to update the liabilities and contribution requirements for changes in member census and plan features, and to reflect actual plan experience in the process. The valuation reflects the present provisions of the Municipal Employees' Retirement Act of 1984, as amended by 1996 Public Act 220 (as amended), as embodied in the MERS Plan Document (as revised). The specific benefit provisions in effect for each municipality are listed in Table 1 in the results section of the report.

In addition to utilizing current membership and financial data, an actuarial valuation requires the use of a series of assumptions regarding uncertain future events. The assumptions and methods used in the December 31, 2010 actuarial valuation are those adopted by the Retirement Board. The actuarial assumptions were last revised as of December 31, 2010 to reflect the results of the study of plan experience covering the period from December 31, 2003 through December 31, 2008.

There have been no changes in the funding method which was adopted by the Retirement Board commencing with the December 31, 1993 valuations. The basic funding method is entry age normal and employer contribution amounts are developed as a level percentage of payroll.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA). Gabriel, Roeder, Smith & Company is an independent firm of consultants and actuaries.

Details on MERS plan provisions, actuarial assumptions, and actuarial methodology follow this section.

### **ASSUMPTION AND METHOD CHANGES FOR THE DECEMBER 31, 2010 ACTUARIAL VALUATION**

The December 31, 2010 actuarial valuation reflects the following changes in the actuarial assumptions and methods:

- Temporary lower wage inflation assumption (see page 77).
- New assumption related to increases in final average compensation for some municipalities (see page 78)
- The standard amortization period for positive unfunded accrued liabilities is maintained at 28 years.

The effects of these changes are shown in the note below Table 16 for each division.

## **SUMMARY OF PLAN PROVISIONS - DEFINED BENEFIT PLAN \***

The benefits summarized in this section are intended only as general information regarding the Municipal Employees' Retirement System of Michigan. They are not a substitute for Act. No. 220 of the Public Acts of 1996, and the MERS Plan Document as revised. If any conflict occurs between the information in this summary and Act. No. 220 of the Public Acts of 1996, as amended, or the MERS Plan Document, as revised, the provisions of Act. No. 220 and the MERS Plan Document govern.

### **Eligibility for Retirement (Plan Section 10)**

Age 60 with 10 or more years of credited service (reduced to 8 or 6 years if either Benefit V-8 or V-6, respectively, is adopted).

Age 55 with 15 or more years of credited service (reduced benefit unless Benefit F55 is adopted).

Age 50 with 25 or more years of credited service (reduced benefit unless Benefit F50 is adopted).

The retirement allowance is reduced  $\frac{1}{2}$  of 1% for each complete month that the retirement date precedes the age at which full normal retirement benefits are available. The reduction may be partially or fully waived by adopting Benefit F55 and/or Benefit F50 and/or Benefit F(N).

### **Optional Retirement Programs (Unreduced Benefits) (Plan Section 10)**

Benefit F50 - Age 50 with a required period of credited service of either 25 or 30 years.

Benefit F55 - Age 55 with a required period of credited service of 15, 20, 25 or 30 years.

Benefit F(N) - Any age with a required period of credited service of either 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 or 30 years.

### **Mandatory Retirement**

None.

### **Deferred Retirement (Plan Section 12)**

Termination of membership before age 60 other than by retirement or death, after 10 years of credited service (8 or 6 years if Benefit V-8 or V-6 is adopted). Retirement allowance begins upon application filed with MERS and satisfaction of the eligibility requirements for retirement. The deferred retirement allowance is computed in the same manner as a service retirement allowance, based on the benefit program in effect as of the date of termination of membership.

Rights to an allowance are forfeited if the member's accumulated contributions are refunded after termination of employment.

\* Please see page 72 for a description of the Hybrid Plan.

## **Service Retirement Allowance (Plan Sections 13-19)**

Credited service at time of termination of membership is multiplied by:

- |                 |  |
|-----------------|--|
| Benefit A       | - 1.0% of a member's final average compensation (FAC). Benefit A may not be adopted after January 2, 1986.   |
| Benefit C New   | - 1.3% of FAC.   |
| Benefit C Old   | - Sum of 1.0% times the first \$4,200 of FAC, plus 1.5% times the portion of FAC over \$4,200. Benefit C Old may not be adopted after January 2, 1986.   |
| Benefit C-1 New | - 1.5% of FAC.   |
| Benefit C-1 Old | - Sum of 1.2% times the first \$4,200 of FAC, plus 1.7% times the portion of FAC over \$4,200. Benefit C-1 Old may not be adopted after January 2, 1986.   |
| Benefit B-1     | - 1.7% of FAC.   |
| Benefit C-2     | - 2.0% of FAC, payable until attainment of the age at which unreduced Social Security benefits are available (currently age 66 for normal retirement, gradually increasing to age 67). Upon attainment of this age, the benefit reverts to the basic Benefit A, C New, C Old, C-1 New, C-1 Old or B-1. |
| Benefit B-2     | - 2.0% of FAC.   |
| Benefit B-3     | - 2.25% of FAC, with a maximum benefit of 80% of FAC.  |
| Benefit B-4     | - 2.5% of FAC, with a maximum benefit of 80% of FAC.   |

## **Maximum Benefit Payable by MERS (Plan Section 55)**

The maximum benefit that may be paid by MERS is governed by Section 415 of the Internal Revenue Code (see page 75). Benefits in excess of the maximum benefit will be paid by the MERS Excess Benefit Plan under Plan Section 55A.

## **Act 88 (Reciprocal Retirement Act, 1961 P.A. 88)**

If the municipality has elected to come under the provision of Act 88 (see Table 1), service with former and future public employers in Michigan may be used to satisfy the service eligibility conditions of MERS. MERS maintains a statewide Act 88 adoption list:

[www.mersofmich.com/images/stories/Forms/Member/form\\_77.pdf](http://www.mersofmich.com/images/stories/Forms/Member/form_77.pdf)

## **Final Average Compensation (Plan Sections 2A(6) and 2A(11))**

MERS plan benefits are based on a member's final average compensation (FAC), subject to the dollar compensation limits under Section 401(a)(17) of the Internal Revenue Code (see page 75). For this purpose, final average compensation means one-fifth of the aggregate amount of compensation (as defined in the MERS Plan Document, Section 2A(6)) paid to a member during the period of 5 consecutive years of the member's credited service in which the aggregate compensation paid is highest, known as FAC-5. Adoption of Benefit FAC-3 results in final average compensation being averaged over 3 years, instead of 5 years.

## **Disability Retirement Allowance (Plan Section 24)**

Total and permanent disability while employed by a participating municipality and after meeting the vesting requirement of the benefit program. The service requirement is waived if the disability is the natural and proximate result of duty-connected causes.

The allowance is computed in the same manner as a service retirement allowance, except that the reduction for retirement before age 60 is not applied.

If disability is due to duty-connected causes, the amount of the retirement allowance shall not be less than 25% of the member's final average compensation.

Adoption of optional Benefit Program D-2 will provide a retirement allowance for a duty-connected disability that is the greater of:

- (i) 25% of the member's final average compensation; or
- (ii) A benefit based on 10 years of credited service in addition to the member's actual period of service, provided the total years of service do not exceed the greater of 30 years or the member's actual period of service.

## **Non-Duty Death Allowance (Plan Sections 26 and 28)**

If a member or vested former member with the minimum years of service required to be vested dies before retirement, a monthly survivor allowance may be payable.

If the member is married, the spouse is the automatic beneficiary unless the spouse, in writing, declines a benefit in favor of another named beneficiary.

A contingent survivor beneficiary (named in an Option II Contingent Beneficiary Designation form filed with MERS) will receive a retirement allowance computed in the same manner as a service retirement allowance, based on service and final average compensation at death, but reduced to reflect an Option II (100% joint and survivor) election. The reduction for retirement before age 60 is not applied. Payment of a retirement allowance to the contingent survivor beneficiary of a deceased member commences immediately. Payment of a retirement allowance to the contingent survivor beneficiary of a deceased vested former member commences on the date the member would have first satisfied eligibility for retirement with an unreduced service retirement allowance.

If there is no named beneficiary and the member leaves a spouse, the spouse will receive an Option II survivor allowance. Payment of a retirement allowance to the surviving spouse of a deceased member commences immediately. Payment of a retirement allowance to the surviving spouse of a deceased vested former member commences on the date the member would have first satisfied eligibility for retirement for an unreduced service retirement allowance. The amount of a surviving spouse's retirement allowance shall be 85% of the deceased member's or deceased vested former member's accrued retirement allowance computed in the same manner as a service retirement allowance, based on service and final average compensation at time of death.

The amount of a surviving spouse's benefit is always the larger of i) the benefit computed as a contingent survivor beneficiary, and ii) the 85% of accrued retirement allowance benefit described above.

If there is no named beneficiary and no retirement allowance being paid to a surviving spouse, unmarried children under age 21 will be paid an equal share of 50% of the deceased member's or deceased vested former member's accrued retirement allowance. The reduction for retirement before age 60 is not applied.

If no retirement allowance becomes payable at death, the member's accumulated contributions, if any, are paid to the beneficiary or to the decedent's estate.

## **Duty-Connected Death Allowance (Plan Section 27)**

A duty death allowance, computed in the same manner as a non-duty death allowance, may be payable to a spouse or children if death occurs as the natural and proximate result of performance of duty with a participating municipality. The vesting requirement is waived, and the minimum benefit is 25% of the deceased member's final average compensation.

Adoption of optional Benefit Program D-2 will provide a retirement allowance for a duty-connected death that is the greater of:

- (i) 25% of the member's final average compensation; or
- (ii) A benefit based on 10 years of credited service in addition to the member's actual period of service, provided the total years of service do not exceed the greater of 30 years or the member's actual period of service.

## **Member Contributions (Plan Sections 32 and 35)**

Each member contributes a percent of annual compensation, as selected by the municipality, on the member's annual compensation up to the compensation limit under Section 401(a)(17) of the Internal Revenue Code (see page 75). Any percentage from 0% to 10% (in 0.1% increments) may be selected. A 3%/5% contribution program was available prior to 1985 and may be continued (until any new benefit programs are adopted), but not adopted, after 1984. Under this program the member contributes 3% of the first \$4,200 of annual compensation and 5% of portions of annual compensation over \$4,200. Interest is credited to accumulated member contributions each December 31 (and reflected in the Annual Member Statement provided to each member) at a rate determined by MERS, currently the one-year U.S. Treasury Bill rate determined as of each December 31. The interest rate credited for the 12-month period ending on the valuation date was 0.28%.

If a member leaves the employ of the municipality, or dies, without a retirement allowance or other benefit payable on his/her account, the member's accumulated contributions plus interest (as described above) are refunded with spousal consent, to the member, if living, or to the member's surviving spouse, if any, or to a named beneficiary (after spousal consent, if applicable).

**Note for MERS' Defined Contribution Program (Plan Section 19A):** The Annual Actuarial Valuation addresses assets and liabilities for participation under MERS' Defined Benefit Programs. MERS' Defined Contribution Program (Benefit Program DC), which first became available for adoption in late 1997, is not addressed in the valuation results as it is not a defined benefit program.

## **Post-Retirement Adjustments (Plan Sections 20-22)**

Benefit E – provides a one-time benefit increase to present retirants and beneficiaries. The amount of the increase is equal to a fixed percentage of the present benefit, or a fixed dollar amount times the number of years since the later of retirement or the date specified in the resolution. Benefit E may be readopted from time to time.

Benefit E-1 – provides automatic 2.5% annual non-compounded benefit increases to persons (and their beneficiaries) retired before the effective date of Benefit E-1. Such increases are further limited to increases in the Consumer Price Index (CPI) if Benefit E-1 was adopted before January 1, 1999. For all adoptions or readoptions after that date, the increase is an automatic 2.5% non-compounded increase without any CPI limitation.

Benefit E-2 – provides automatic 2.5% annual non-compounded benefit increases to persons (and their beneficiaries) retired on or after the effective date of Benefit E-2. Such increases are further limited to increases in the Consumer Price Index (CPI) if Benefit E-2 was adopted before January 1, 1999. For all adoptions or readoptions after that date, the increase is an automatic 2.5% non-compounded increase without any CPI limitation.

## **Death-After-Retirement Surviving Spouse Benefit (Plan Sections 23 and 23A)**

A retiring member electing form of payment SL (straight life retirement allowance) is normally paid a lifetime retirement allowance, with payments terminating at death. The retiring member could provide benefits to a surviving spouse or another named beneficiary (see below) by electing Option II (100% continuation to beneficiary) or Option II-A (75% continuation to beneficiary) or Option III (50% continuation to beneficiary). A surviving spouse is automatically the beneficiary to an Option II, II-A or III allowance unless the spouse, in writing, relinquishes the benefit to the member electing a straight life allowance or to another named beneficiary. Electing these alternate forms of payment would lower the retiring member's retirement allowance.

If Benefit Program RS50% is adopted, a member retiring on or after the effective date of Benefit RS50% may elect form of payment SL and still provide a 50% survivor benefit to the member's spouse. To be eligible for a surviving spouse benefit, the retiring member and spouse must have been married to each other both at the time of death and during the full one-year period just before retirement.

## **DROP+ Delayed Retirement Option Partial Lump Sum (Plan Section 10(6))**

Any member who is eligible to retire with full, immediate retirement benefits has the option to:

- (i) Retire immediately and receive a monthly benefit payable immediately, or
- (ii) Delay his or her retirement date and continue to work.

If the member is covered by Benefit Program DROP+ and the member retires at least 12 months after first becoming eligible for unreduced benefits, at actual retirement the member *has the option* to receive a partial lump sum and a reduced monthly benefit:

- (i) The member can elect a lump sum equal to 12, 24, 36, 48, or 60 times the member's monthly accrued benefit (if the member has delayed retirement at least that many months).
- (ii) For each 12 months included in the lump sum, the member's lifetime benefit is reduced by the DROP+ Percentage adopted by the employer. The employer can adopt any of the following DROP+ reduction percentages: 4%, 5%, 6%, 7%, or 8%.

## **SUMMARY OF PLAN PROVISIONS - HYBRID PLAN \***

The benefits summarized in this section are intended only as general information regarding the Municipal Employees' Retirement System of Michigan. They are not a substitute for Act. No. 220 of the Public Acts of 1996, and the MERS Plan Document as revised. If any conflict occurs between the information in this summary and Act. No. 220 of the Public Acts of 1996, as amended, or the MERS Plan Document, as revised, the provisions of Act. No. 220 and the MERS Plan Document govern.

### **Part I - Defined Benefit Portion of Hybrid Plan**

#### **Eligibility for Retirement (Plan Section 19B)**

Age 60 and 6 or more years of service.

#### **Optional Retirement Programs (Unreduced Benefits) (Plan Section 10)**

None

#### **Mandatory Retirement**

None

#### **Deferred Retirement (Plan Sections 12 and 19B)**

Termination of membership before age 60 other than death, after 6 years of credited service. Retirement allowances begin upon application filed with MERS, at age 60 or later. The deferred retirement allowance is computed in the same manner as a service retirement allowance, based on the final average compensation and years of service at termination.

#### **Service Retirement Allowance (Plan Section 19B)**

Credited service at time of termination is multiplied by:

Hybrid 1.0%	1.0% of a member's final average compensation (FAC)
Hybrid 1.25%	1.25% of FAC
Hybrid 1.5%	1.5% of FAC

\* Please see page 65 for a description of the Defined Benefit Plan.

### **Maximum Benefit Payable by MERS (Plan Section 55)**

The maximum benefit that may be paid by MERS is governed by Section 415 of the Internal Revenue Code (see page 75). Benefits in excess of the maximum benefit will be paid by the MERS Excess Benefit Plan under Plan Section 55A.

### **Act 88 (Reciprocal Retirement Act, 1961 P.A. 88)**

If the municipality has elected to come under the provision of Act 88 (see Table 1), service with former and future public employers in Michigan may be used to satisfy the service eligibility conditions of MERS. MERS maintains a statewide Act 88 adoption list:

[http://www.mersofmich.com/images/stories/Forms/Member/form\\_77.pdf](http://www.mersofmich.com/images/stories/Forms/Member/form_77.pdf)

### **Final Average Compensation (Plan Sections 2A(6), 2A(11) and 19(B))**

Computed under defined benefit plan Benefit Program FAC-3.

### **Disability Retirement Allowance (Plan Section 24)**

Benefits are the same as under the defined benefit plan, except that optional Benefit Program D-2 does not apply.

### **Non-Duty Death Allowance (Plan Sections 26 and 28)**

Benefits are the same as under the defined benefit plan.

### **Duty-Connected Death Allowance (Plan Section 27)**

Benefits are the same as under the defined benefit plan, except that optional Benefit Program D-2 does not apply.

### **Member Contributions (Plan Section 19B)**

None

### **Post-Retirement Adjustments (Plan Sections 20-22)**

None

### **Death-After-Retirement Surviving Spouse Benefit (Plan Sections 23 and 23A)**

The same optional forms of payment are available as under the defined benefit plan, except that optional Benefit Program RS50% does not apply.

### **DROP+ Delayed Retirement Option Partial Lump Sum (Plan Section 10(6))**

None

## **Part II - Defined Contribution Portion of Hybrid Plan**

### **Employer Contributions (Plan Section 19B)**

Contribution Amount - Any percentage of compensation allowed by federal law.

Vesting Schedule - One of the following vesting schedules for employer contributions can be adopted by the employer:

1. Immediate vesting upon participation, or
2. 100% vesting after stated years (participant is 100% vested after not to exceed maximum 5 years of service ("cliff" vesting)), or
3. Graded vesting percentages per year of service, not to exceed maximum 6 years of service for 100% vesting, nor be less than certain stated minimums

### **Member Contributions (Plan Section 19B)**

Contribution Amount - Any amount allowed by federal law and subject to procedures established by the Retirement Board.

Vesting Schedule - 100% immediate vesting

**Municipal Employees' Retirement System of Michigan**  
**IRC Section 415(b)(1)(A) Benefit Dollar Limits - 2011**

The limits are based on the retiree's age at retirement. The limit at ages 62-65 is indexed with inflation, in \$5,000 increments. The limits at earlier ages are then increased proportionately. The limit applies to the retiree's or beneficiary's employer-financed straight life benefit, except in the case of an Option II, IIA, or III election with the retiree's spouse as named beneficiary, in which case the limit applies to the employer-financed portion of the reduced joint and survivor benefit.

Age at Retirement	General Employees	Police and Fire Members #
35	\$ 35,498	\$ 195,000
36	37,513	195,000
37	39,655	195,000
38	41,934	195,000
39	44,361	195,000
40	46,947	195,000
41	49,705	195,000
42	52,648	195,000
43	55,793	195,000
44	59,154	195,000
45	62,753	195,000
46	66,608	195,000
47	70,744	195,000
48	75,185	195,000
49	79,961	195,000
50	85,103	195,000
51	90,649	195,000
52	96,639	195,000
53	103,118	195,000
54	110,140	195,000
55	117,764	195,000
56	126,057	195,000
57	135,094	195,000
58	144,963	195,000
59	155,763	195,000
60	167,610	195,000
61	180,638	195,000
62	195,000	195,000
63	195,000	195,000
64	195,000	195,000
65 & older	195,000	195,000

# Requires that the member have at least 15 years of police, fire, and/or armed forces service as defined in the final regulations issues on April 5, 2007. Otherwise, use the limits for general members.

**IRC Section 401(a)(17) Compensation Limit - 2011**

For 2011 the IRC Section 401(a)(17) limit is \$245,000. This limit is indexed with inflation in \$5,000 increments.

## ACTUARIAL ASSUMPTIONS

### Actuarial Assumptions

To calculate MERS contribution requirements, assumptions are made about future events that could affect the amount and timing of benefits to be paid and the assets to be accumulated. The economic and demographic assumptions include:

- An assumed rate of investment return that is used to discount liabilities and project what plan assets will earn.
- A mortality table projecting the number of members who will die before retirement and the duration of benefit payments after retirement.
- Assumed retirement rates projecting when members will retire and commence receiving retirement benefits.
- A set of withdrawal and disability rates to estimate the number of members who will leave the work force before retirement.
- Assumed rates of pay increase to project member compensation in future years.

The actuarial assumptions used in connection with this December 31, 2010 actuarial valuation are unchanged from the December 31, 2009 valuation assumptions, with the exceptions noted on page 64. The actuarial assumptions currently utilized are summarized below and on the following pages.

### Interest Rate

Funding plan benefits involves the accumulation of assets to pay benefits in the future. These assets are invested and the net rate of investment earnings is a significant factor in determining the contributions required to support the ultimate cost of benefits. For the 2010 actuarial valuation, the net long-term investment yield is assumed to be 8%. This assumption was first used for the December 31, 1981 actuarial valuations.

The reader should note that, given that the actuarial value of assets is currently 16% higher than the market value, meeting the actuarial assumption in the next few years will require average annual market returns that exceed the 8% investment return assumption.

**Please see the Comments on the the Investment Markets on page 3 .**

## Pay Increases

Because benefits are based on a member's final average compensation, it is necessary to make an assumption with respect to each member's estimated pay progression. The pay increase assumption used in the actuarial valuation projects annual pay increases of 4.5% (1% for calendar years 2011-2014) plus a percentage based on an age-related scale to reflect merit, longevity and promotional pay increases.

The pay increase assumption for selected ages is shown below. The 4.5% long-term wage inflation assumption was first used for the December 31, 1997 actuarial valuations. The merit and longevity pay increase assumption was first used for the December 31, 2004 actuarial valuations.

Age	Base (Wage Inflation) <sup>#</sup>	Merit and Longevity	Total Percentage Increase in Pay
20	4.50%	8.40%	12.90%
25	4.50	5.33	9.83
30	4.50	3.26	7.76
35	4.50	2.05	6.55
40	4.50	1.30	5.80
45	4.50	0.81	5.31
50	4.50	0.52	5.02
55	4.50	0.30	4.80
60	4.50	0.00	4.50

<sup>#</sup> For calendar years 2011, 2012, 2013 and 2014, the wage inflation assumption is 1%, instead of 4.5%. This assumption was first used for the December 31, 2010 actuarial valuations.

## Inflation

Although no specific price inflation assumption is needed for this valuation, the 4.5% long-term wage inflation assumption would be consistent with a price inflation of 3% to 4%.

## Payroll Growth

For divisions that are open to new hires, the number of active members is projected to remain constant, and the total payroll is projected to increase 4.5% annually in the long term (1% annually for calendar years 2011 - 2014). This assumption was first used for the December 31, 1997 actuarial valuations.

## **Increase in Final Average Compensation**

The 1999-2003 and 2004-2008 experience studies determined that for some retirees of some municipalities, the actual final average compensation (FAC) at retirement was larger than would be expected based on reported annual pays and FAC's for the years just before retirement. Some possible sources for the differences are:

- Lump sum payments for unused paid time off. Unused sick leave payouts have been excluded from FAC since the mid 1970s. However, since that time it has become popular to combine sick and vacation time into paid time off, which is included in the FAC. Consequently, the lump sums that are includable in FAC have grown over the years.
- Extra overtime pay during the final year of employment. Our studies only reflect any increase in overtime during the final year, not any increase that occurs during the full 3 to 5 year averaging period.

We analyzed the variation among municipalities. The amount of unexpected FAC increase varies quite a bit between municipalities. Some municipalities show no sign of FAC loading, while other municipalities show increases above the average increase. This is presumably the result of different personnel policies among municipalities.

The Retirement Board adopted new FAC assumptions to be first used for the December 31, 2010 annual actuarial valuations. These assumptions reflect an FAC load of 0% to 4% for each municipality, based on the municipality's experience. The FAC increase assumption(s) for your municipality are shown in the table below.

Division	FAC Increase Assumption
All divisions	0.00%

## Withdrawal Rates

The withdrawal rates are used to estimate the number of employees at each age that are expected to terminate employment before qualifying for retirement benefits. The withdrawal rates do not apply to members eligible to retire, and do not include separation on account of death or disability. The assumed rates of withdrawal applied in the current valuation are based on years of service, and scaled up or down according to each division's experience.

Division	Withdrawal Rate Scaling Factor
All divisions	90%

The base withdrawal rates (see the table below) are multiplied by the scaling factor to obtain the assumed withdrawal rates.

Sample rates of withdrawal from active employment, before application of the scaling factor, are shown below. These rates were first used for the December 31, 2008 actuarial valuations.

Sample Years of Service	% of Active Members Withdrawing Within the Next Year
0	20.00%
1	17.00
2	14.00
3	11.00
4	9.00
5	6.50
10	5.00
15	3.70
20	3.00
25	2.70
30	2.60
34 and over	2.40

## Retirement Rates

A schedule of retirement rates is used to measure the probability of eligible members retiring during the next year. The retirement rates for Normal Retirement are determined by each member's replacement index at the time of retirement. The replacement index is defined as the approximate percentage of the member's pay (after reducing for MERS member contributions) that will be replaced by the member's benefit at retirement. The index is calculated as:

$$\text{Replacement Index} = 100 \times \text{Accrued Benefit} \div [\text{Pay less Member Contributions}]$$

Retirement rates for Early (reduced) Retirement are determined by the member's age at early retirement.

The revised Normal Retirement rates below were first used for the December 31, 2009 actuarial valuations. The Early Retirement rates were first used for the December 31, 2004 actuarial valuations.

### NORMAL RETIREMENT

Sample Replacement Index	Percent of Eligible Active Members Retiring Within Next Year
5	5%
10	11
15	16
20	19
25	20
30	20
35	20
40	20
45	20
50	20
55	21
60	22
65	24
70	24
75	28
80	32
85	38
90	45
95	48
100+	50

### EARLY RETIREMENT - REDUCED BENEFIT

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year
50	2%
51	2
52	3
53	5
54	8
55	4
56	4
57	4
58	6
59	8

## **Disability Rates**

Disability rates are used in the valuation to estimate the incidence of member disability in future years.

The assumed rates of disablement at various ages are shown below. These rates were first used for the December 31, 2004 actuarial valuations.

Sample Ages	Percent Becoming Disabled Within Next Year
20	0.02%
25	0.02
30	0.02
35	0.06
40	0.06
45	0.11
50	0.24
55	0.41
60	0.41
65	0.41

85% of the disabilities are assumed to be non-duty and 15% of the disabilities are assumed to be duty related. For those plans which have adopted disability provision D-2, 70% of the disabilities are assumed to be non-duty and 30% are assumed to be duty related.

## **Mortality Table**

In estimating the amount of the reserves required at the time of retirement to pay a member's benefit for the remainder of his or her lifetime, it is necessary to make an assumption with respect to the probability of surviving to retirement and the life expectancy after retirement.

The mortality table used to project the mortality experience of plan members is a 50% Male - 50% Female blend of the 1994 Group Annuity Mortality Table. For disabled retirees, the regular mortality table is used with a 10-year set forward in ages to reflect the higher expected mortality rates of disabled members. These mortality tables were first used for the December 31, 2004 actuarial valuations.

90% of active member deaths are assumed to be non-duty deaths and 10% of the deaths are assumed to be duty related.

The life expectancies and mortality rates projected for **non-disabled** members are shown below for selected ages:

Age	Expected Years of Life Remaining	Mortality Rates
20	61.55	0.04%
25	56.68	0.05
30	51.82	0.06
35	46.97	0.07
40	42.13	0.09
45	37.34	0.13
50	32.60	0.20
55	27.98	0.34
60	23.53	0.62
65	19.40	1.16
70	15.66	1.87
75	12.24	2.99
80	9.25	5.07

The life expectancies and mortality rates projected for **disabled** members are shown below for selected ages:

Age	Expected Years of Life Remaining	Mortality Rates
20	51.82	0.06%
25	46.97	0.07
30	42.13	0.09
35	37.34	0.13
40	32.60	0.20
45	27.98	0.34
50	23.53	0.62
55	19.40	1.16
60	15.66	1.87
65	12.24	2.99
70	9.25	5.07
75	6.81	8.25
80	4.85	13.46

## Miscellaneous and Technical Assumptions

- Loads - None
- Marriage Assumptions - 70% of males and 70% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
- Pay Increase Timing - Beginning of valuation year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
- Pay Adjustment - None.
- Decrement Timing - Decrements of all types are assumed to occur mid-year.
- Future Service - Members are assumed to earn 1.0 years of service in each future year.
- Eligibility Testing - 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.
- Benefit Service - Exact fractional service is used to determine the amount of benefit payable. Benefit service is the service used in the benefit formula.
- Eligibility Service - The larger of reported Eligibility Service and reported Vesting Service was used as eligibility service in the valuation. Eligibility service is the service used to meet the conditions for retirement, and is generally equal to or larger than benefit service.
- Decrement Relativity - Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
- Decrement Operation - Disability and withdrawal do not operate during retirement eligibility.
- Normal Form of Payment - Future retiring members are assumed to elect:

<u>Form of Payment</u>	<u>Percentage</u>
SL	40%
II	30
IIA	10
III	15
IV	5

- Incidence of Contributions - 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.
- Maximum Compensation - The dollar compensation limits under Section 401(a)(17) of the Internal Revenue Code are projected to increase 4.5% annually. No member or employer contributions are projected to be made on the portion of any member's annual compensation in excess of the IRC Section 401(a)(17) limit for the year.

## Miscellaneous and Technical Assumptions (continued)

- |                                |   |
|--------------------------------|---|
| Maximum Benefit                | <ul style="list-style-type: none"><li>- The dollar benefit limitations under Section 415 of the Internal Revenue Code are projected to increase 4.5% annually. Employee divisions 02, 20-29 (Police), 05 and 50-59 (Fire) are presumed eligible for the public safety benefit limits. No benefits in excess of the IRC section 415 limits are projected to be paid, except as provided under the Qualified Excess Benefit Arrangement, Plan Section 55A.</li></ul>                            |
| Member Contribution Interest - | <ul style="list-style-type: none"><li>- The interest rate credited on member contributions is the one-year Treasury Bill rate as of December 31, determined annually. The long-term rate assumed in the valuation is 4%, which is consistent with the 3% to 4% price inflation assumption.</li></ul>  |
| DROP+ Assumptions              | <ul style="list-style-type: none"><li>- Each eligible member is assumed to make the DROP+ election with the most valuable combination of lump sum and reduced monthly benefit.</li><li>- The retirement probabilities on page 80 are used for members who are <i>not</i> covered by Benefit Program DROP+. For members covered by Benefit Program DROP+, it is assumed that retirement will be delayed long enough to become eligible for at least 4 years worth of DROP+ lump sum.</li></ul> |

## **ACTUARIAL FUNDING METHOD**

The Retirement Board has adopted funding methodology for the Retirement System to achieve the following major objectives:

- Develop level required contribution rates as a percentage of payroll (for divisions that are open to new hires);
- Finance benefits earned by present employees on a current basis;
- Accumulate assets to enhance members' benefit security;
- Produce investment earnings on accumulated assets to help meet future benefit costs;
- Make it possible to estimate the long-term actuarial cost of proposed amendments to System provisions; and
- Assist in maintaining the Retirement System's long-term financial viability.

The basic funding objective is a level pattern of cost as a percentage of pay throughout each member's working lifetime. The funding method used in this actuarial valuation – the entry age normal cost method – is intended to i) meet this objective, and ii) result in a relatively level long-term contribution requirement as a percentage of pay. This actuarial method was first used for the December 31, 1993 actuarial valuations.

Under the entry age normal cost method, the total actuarially-determined contribution requirement is equal to the sum of the normal cost plus the payment required to fund the unfunded actuarial accrued liability over a period of years. Funding or amortizing the unfunded actuarial accrued liability includes a payment toward the liability (principal) plus a payment to reflect the time value of money (interest).

### **Normal Cost**

In general terms, the normal cost is the cost of benefit rights accruing on the basis of current service. Technically, the normal cost rate is the level percentage-of-pay contribution required each year, with respect to each member, to accumulate over his or her projected working lifetime the reserves needed to meet the cost of earned benefits. The normal cost represents the ultimate cost of the Retirement System, if the unfunded liability is paid up and the actual experience of the System conforms to the assumptions.

## **Actuarial Accrued Liability**

The total actuarial present value of future benefits is computed using the valuation's actuarial assumptions. Subtracting the present value of future normal costs results in the actuarial accrued liability.

The total actuarial accrued liability essentially represents the amount that would have been accumulated as of December 31, 2010, if contributions sufficient to meet the normal costs of the Retirement System had been made each year in the past, benefit provisions had always been the same as current benefit provisions, and actual past experience had always conformed to current actuarial assumptions. If assets equaled the total accrued liability, there would be no unfunded liability and future contribution requirements would consist solely of the calculated normal cost rates.

## **Amortization of Unfunded Actuarial Accrued Liability**

The unfunded actuarial accrued liability is projected to the beginning of the fiscal year for which employer contributions are being calculated (see page 59 for a description of the projection). The projected unfunded accrued liability is then amortized by level percent of payroll contributions over a period of years. Active member payroll is assumed to increase 4.5% a year for the purpose of determining the level percent contributions.

The standard amortization period to fund the unfunded liability is 28 years for positive unfunded liabilities in the 2010 valuation. This period will be reduced by one year in each of the next eight annual valuations, reaching 20 years in the 2018 valuation. Beginning with the 2019 valuation the 20 year period will be reestablished with each annual valuation. Section 20m of Act No. 314 of the Public Acts of 1965 as amended (MCL 38.1140m) requires that the amortization period not exceed 30 years.

The standard amortization period for negative unfunded liabilities is 10 years, with the 10 year period reestablished with each annual actuarial valuation.

For divisions that are closed to new hires, and the new hires are not covered by MERS defined benefit or hybrid provisions (in a linked division, as discussed on page 90), the otherwise applicable MERS-wide standard amortization period for positive unfunded liabilities in effect in the valuation year in which the division is closed is decreased annually by 2 years until the period reaches 5 years. At that point, the amortization period will remain at 5 years.

Shorter amortization periods may be elected by a municipality (but not shorter than 5 years for

negative unfunded liabilities).

Table 16 in the results section of this report indicates the current length of the amortization period for each division. Note that when the 10 year amortization is used for negative unfunded liabilities, Table 16 reports the amortization in two parts: i) a long term credit based on the long term amortization period (usually the standard amortization period described above), plus ii) an overfunding credit resulting from using a 10 year amortization.

In calculating the annual required contribution (ARC) for reporting and disclosure purposes under Statement Nos. 25 and 27 of the Governmental Accounting Standards Board, the following amortization methods are used:

- A level percentage of payroll amortization is used, based on the amortization periods described in the previous paragraph and based on the assumption that payroll increases 4.5% per year.
- For divisions that are less than 100% funded and are closed to new hires (and new hires are not covered by MERS defined benefit or hybrid provisions in a linked division, as discussed on page 90), a 30-year level dollar amortization is used, if it results in a higher amortization payment.

## **Termination Liability**

The termination liability represents the value of the benefits that have been earned as of the valuation date based on final average compensation and benefit service as of the valuation date. All active members are assumed to terminate employment on the valuation date. Vested and non-vested active members are assumed to retire at the first age when the member would be eligible for unreduced deferred retirement benefits, assuming no continued employment after the valuation date (non-vested benefits are assumed to commence at age 60).

## **Projections of Employer Contributions and Funded Percentage**

The 20-year projections of employer contributions and funded percentages displayed in Chart 17.5 are based on the following assumptions:

- All demographic assumptions will be met during the projection period, including the assumption that active members' pays increase in accordance with the pay increase assumption (see page 77). If the number of active members remains constant, projected total active member payroll will increase about 4.5% annually (1% annually for calendar years 2011-2014), the wage inflation assumption. For open divisions (an open division is open to newly hired employees), this projected payroll growth results in

increasing employer contributions even when the employer contribution rate is stable or slowly declining.

- The actuarial value of assets will earn the assumed 8% return each year during the projection period (see **Comments on the Investment Markets on page 3**).
- There will be no benefit changes during the projection period.
- The employer contributions through July 1, 2012 are not affected, and are based on previous annual actuarial valuations.
- For open divisions (new hires are added to the division), the number of active members is assumed to remain constant. However, if an open division is linked to a division that will have no new hires (whose new hires, transfers and rehires enter the open division - see page 90), the total number of active members in the linked divisions (combined) is assumed to remain constant. For closed divisions (no new hires), the number of active members is assumed to gradually decline to zero, based on the assumptions for retirement, disability, termination, and death.

**The projected contribution amounts should not be used for short term budgeting purposes because the assumptions are designed to be a long term expectation of future events. These projections illustrate the long term pattern of employer contributions under current funding policies. A projection of contribution rates for budgeting purposes would require additional short-term actuarial analysis, which is beyond the scope of this report.**

Most open division projections (an open division is open to newly hired employees, transfers and rehires - see page 90) will show a very gradual change, up or down, in the funded percentage toward 100% funding. For divisions that are currently less than 100% funded, the reader may be surprised at how long it takes to approach 100% funding. This happens because the standard amortization period for unfunded accrued liabilities, after declining to 20 years in the 2018 annual actuarial valuations, will be reset each year thereafter to a new 20 year period. This results in more stable employer contribution rates, but also a very gradual approach to 100% funding. Additional employer contributions would accelerate the funding progress.

A closed division (no new hires) that is not linked to an open division (see page 90 for a discussion of linked divisions) and is less than 100% funded will have a projected employer contribution that increases each year for the first 11-12 years after closure. This results in a more rapid amortization of unfunded accrued liabilities and a more rapid increase in the division's funded percentage. This is necessary to ensure that the division has adequate assets to pay benefits. However, the closed division's funded percentage may start to decline several years after all the members have retired. Once the average age of the retiree-only division reaches the late 70's or older, the 5-year

amortization period may result in insufficient assets to cover the pension payout. This issue was reviewed in the 2004-2008 study of MERS experience, and beginning with the December 31, 2011 valuation, a minimum contribution will become effective, based on cash flow needs. The projections in this report reflect the minimum contribution requirement, if applicable, in fiscal years starting in 2013 and later.

A few open divisions will see a decline in the funded percentage. This is usually an open division with a very small number of active members (often only one) and a much larger number of retirees. Because the division is open to new hires, the standard amortization period is used. For many years this may result in a declining funded percentage, before the funded percentage begins to head up toward 100% funding. The minimum contribution requirement based on cash flow needs (see previous paragraph) will keep the funded percentage from going negative. However, such a division should be considered a candidate for either merging with a different division, or an accelerated funding schedule.

A division with no new hires that is linked to an open division within the same employee classification (with new hires, transfers and rehires – see page 90 for a discussion of linked divisions) will typically show a projected funded percentage that declines and may even become negative. This is an expected condition, because the standard open division amortization policy applies to a division with no new hires that is linked to an open division. The linked division with no new hires is allowed to share the assets of the linked open division. The division with no new hires alone will run out of assets; however, the combined linked divisions will not run out of assets and the combined funded percentage will head towards 100%. For a linked division the projections also show a dashed line that represents the combined projection of all the linked divisions.

A small number of divisions currently have negative assets, and a negative funded percentage. These are generally divisions for which many or most of the employees have been transferred to a different division, with the bulk of the assets also being transferred to the other division. Negative assets means the division is temporarily borrowing from better funded divisions within the same municipality. The minimum contribution requirement based on cash flow needs will result in a positive funded percentage by 2014 or 2015. However such a division should be considered a candidate for either merging with a different division, or an accelerated funding schedule.

Some divisions are so well funded that no future employer contributions will be needed; assuming that there are no major changes in the covered participants, benefit provisions are not changed, and the actuarial assumptions are met. Assets substantially exceed present liabilities. The funded percentage will continue to increase during the projection period. Such a division may be a

candidate for a reallocation of assets among other divisions, if appropriate.

For divisions that are affected by employer contribution rate caps, the projections of employer contributions in Chart 17.5 do not reflect the impact of the employer cap provision. Member contribution rates are assumed to remain constant at the rates shown in Table 1. The projected employer contribution rate is allowed to move up or down, as needed, to adequately fund the benefit obligations. In other words, projection of the future impact of the employer cap provision is beyond the scope of the Chart 17.5 projections. Future annual actuarial valuation reports will, of course, reflect (in the results) the application of the then-current employer cap provision.

## **Open Divisions and Closed Divisions**

Open divisions will include the future new hires within an employee classification (bargaining unit). Rehired members will also become members of the open division. Members transferred to the employee classification will also become members of the open division, unless the Alternate Transfer Provision is adopted by the municipality. In the latter case, each transferring member is given a choice of entering the open division or a closed division within the employee classification (if there are still active members in the closed division, and the closed division is of the same type - defined benefit, hybrid, or defined contribution - as the division from which the member transferred).

There may also be one or more divisions within the employee classification that no longer accept new hires. These are generally referred to as closed divisions, but in some situations are linked to the open division with the new hires (for actuarial valuation purposes - see Linked Divisions below). Note that a division is also treated like a closed division if the division has no active members reported as of the valuation date.

## **Linked Divisions**

The closed division funding policy described at the bottom of page 86 was adopted by the Retirement Board (Amortization Policy for Closed Divisions Within Open Municipalities, as revised by the Retirement Board on March 9, 2010). The purpose is to ensure that a defined benefit (DB) division that is closed to new hires does not run out of money. Funding the unfunded liabilities over the MERS standard amortization period will likely deplete a closed division's assets before the death of the last participant in the division. Assets cannot be shared between the closed DB division and a defined contribution (DC) plan covering the new hires, or a non-MERS DB plan covering the new hires, even if the employees are part of the same employee classification (bargaining unit).

However, if the new hires, transfers and rehires are covered by a new tier of benefits in the MERS

DB Plan (including the DB portion of the MERS Hybrid Plan), there can be a sharing of employer assets between the DB division with no new hires (with the old benefit structure) and the DB/Hybrid division covering the new hires within the same employee classification. The employer can avoid the required more rapid amortization of the unfunded liabilities by putting new hires into a MERS DB or MERS Hybrid division, instead of a DC plan or non-MERS DB plan.

If a division with no new hires is “linked” to an open MERS DB division, this is indicated in Table 1, in the footnote to Table 16, and in the projections in Chart 17.5. Both the linked divisions will use the standard open division funding policy.

## ASSET VALUATION METHOD

The actuarial value of assets is determined on the basis of a method that calculates expected investment income at the valuation rate of return and adds a portion of the difference between the expected investment income and actual investment income earned on a market value basis. The difference in investment income between expected return and market return is recognized over a 10-year period at the rate of 10% per year. This asset valuation method was first adopted for the December 31, 2005 valuation, and is applied as follows:

Actuarial Value equals:

- (a) Actuarial value of assets from the previous actuarial valuation, plus
- (b) Aggregate employer and member contributions since the last valuation, minus
- (c) Benefit payments and refunds of member contributions since the last valuation, plus
- (d) Estimated investment income at the 8% valuation interest rate, 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. The portion recognized in the valuation is 10% of the current year's gain (loss) plus 10% of the gain (loss) from each of the 9 preceding years. The cumulative difference between the market value and valuation assets as of December 31, 2005 is recognized over 9 years.

During 2010, the approximate net investment return on average total assets at actuarial value (determined as the actuarial value of investment income divided by the average actuarial value of assets during the year) was 5.74%. The corresponding amounts for 2009, 2008, 2007 and 2006 were 5.30%, 4.73%, 8.12%, and 8.14%, respectively.

For the December 31, 2010 valuation, the actuarial value of assets is equal to 116.29% of market value (compared to 125.17%, 139.15%, 98.85%, and 98.62% in 2009, 2008, 2007, and 2006, respectively). This percentage is applied to each division's reported market value of assets to estimate the actuarial value of assets for the division. The chart on page 93 provides the details of the derivation of the actuarial value of assets for the retirement system in the aggregate.

The reader should note that, given that the actuarial value of assets is currently 16% higher than the market value, meeting the actuarial assumption in the next few years will require average annual market returns that exceed the 8% investment return assumption.

**Please see the Comments on the Investment Markets on page 3 .**

**Municipal Employees' Retirement System of Michigan**  
**Derivation of Actuarial Value of Assets**

Valuation Date December 31:	2001	2002	2003	2004	2005
1. Beginning of Year Assets					
a) Market Value	\$ 3,788,886,471	\$ 3,647,820,869	\$ 3,285,304,333	\$ 4,071,997,180	\$ 4,619,201,287
b) Valuation Assets	3,791,423,339	4,034,377,419	4,134,404,645	4,459,492,020	4,732,208,229
2. End of Year Market Value Assets	3,647,820,869	3,285,304,333	4,071,997,180	4,619,201,287	4,906,288,690
3. Net Additions to Market Value					
a) Net Contributions	154,103,475	167,427,558	223,450,393	223,057,268	277,589,524
b) Net Investment Income = (3d) - (3a) - (3c)	(93,269,286)	(324,926,459)	792,139,959	577,562,751	288,223,418
c) Benefit Payments	(201,899,791)	(205,017,635)	(228,897,505)	(253,415,912)	(278,725,539)
d) Total Additions to Market Value = (2) - (1a)	(141,065,602)	(362,516,536)	786,692,847	547,204,107	287,087,403
4. Average Valuation Assets =					
(1b) + .5x[(3a) + (3c)]	3,767,525,181	4,015,582,381	4,131,681,089	4,444,312,698	4,731,640,222
5. Expected Income at Valuation Rate = 8% x (4)	301,402,014	321,246,590	330,534,487	355,545,016	378,531,218
6. Gain (Loss) = (3b) - (5)	(394,671,300)	(646,173,049)	461,605,472	222,017,735	(90,307,800)
7. Phased-In Recognition of Investment Return					
a) Current Year: 0.2 x (6)	(78,934,260)	(129,234,610)	(129,234,610)	44,403,547	(18,061,560)
b) First Prior Year	(79,670,266)	(78,934,260)	(78,934,260)		44,403,547
c) Second Prior Year	63,981,441	(79,670,266)	(79,670,266)		
d) Third Prior Year	40,228,410	63,981,441	63,981,441		
e) Fourth Prior Year	43,743,057	40,228,408	40,228,408		
f) 1999-2003 Years Combined	N/A	N/A	N/A		
g) Total Recognized Investment Gain (Loss)	(10,651,618)	(183,629,287)	(183,629,287)	0	(96,873,710)
8. Change in Valuation Assets					
(3a) + (3c) + (5) + (7g)	242,954,080	100,027,226	325,087,375	0	(52,470,163)
9. End of Year Assets					
a) Market Value = (2)	3,647,820,869	3,285,304,333	4,071,997,180	4,619,201,287	4,906,288,690
b) Valuation Assets = (1b) + (8)	4,034,377,419	4,134,404,645	4,459,492,020	4,732,208,229	5,039,071,709
c) Difference Between Market & Valuation Assets	(386,556,550)	(849,100,312)	(387,494,840)	(113,006,942)	(132,783,019)
10. Recognized Rate of Return = [(5) + (7g)] / (4)	7.72%	3.43%	8.00%	6.82%	6.51%
11. Market Rate of Return	(2.48%)	(8.95%)	24.13%	14.24%	6.24%
12. Valuation Asset Adjustment Factor = (9b) / (9a)	1.105969	1.258454	1.095161	1.024465	1.027064

**Municipal Employees' Retirement System of Michigan**  
**Derivation of Actuarial Value of Assets (cont.)**

Valuation Date December 31:	2006	2007	2008	2009	2010
1. Beginning of Year Assets					
a) Market Value	\$ 4,906,288,690	\$ 5,590,042,317	\$ 6,071,046,914	\$ 4,512,260,955	\$ 5,276,645,338
b) Valuation Assets	5,039,071,709	5,512,924,466	6,001,040,078	6,278,731,673	6,604,608,397
2. End of Year Market Value Assets	5,590,042,317	6,071,046,914	4,512,260,955	5,276,645,338	5,971,593,444
3. Net Additions to Market Value					
a) Net Contributions	371,505,157	386,942,952	374,214,134	413,354,720	423,489,032
b) Net Investment Income = (3d) - (3a) - (3c)	622,409,716	442,377,206	(1,553,001,917)	771,066,207	733,059,352
c) Benefit Payments	(310,161,246)	(348,315,561)	(379,998,176)	(420,036,544)	(461,600,278)
d) Total Additions to Market Value = (2) - (1a)	683,753,627	481,004,597	(1,558,785,959)	764,384,383	694,948,106
4. Average Valuation Assets =					
(1b) + .5x[(3a) + (3c)]	5,069,743,665	5,532,238,162	5,998,148,057	6,275,390,761	6,585,552,774
5. Expected Income at Valuation Rate = 8% x (4)	405,579,493	442,579,053	479,851,845	502,031,261	526,844,222
6. Gain (Loss) = (3b) - (5)	216,830,223	(201,847)	(2,032,853,762)	269,034,946	206,215,130
7. Phased-In Recognition of Investment Return					
a) Current Year: 0.1 x (6)	21,683,022	(20,185)	(203,285,376)	26,903,495	20,621,513
b) First Prior Year	(14,753,669)	21,683,022	(20,185)	(203,285,376)	26,903,495
c) Second Prior Year		(14,753,669)	21,683,022	(20,185)	(203,285,376)
d) Third Prior Year			(14,753,669)	21,683,022	(20,185)
e) Fourth Prior Year				(14,753,669)	21,683,022
f) Fifth Prior Year					(14,753,669)
g) Sixth Prior Year					
h) Seventh Prior Year					
i) Eighth Prior Year					
j) Ninth Prior Year					
k) Total Recognized Investment Gain (Loss)	6,929,353	6,909,168	(196,376,208)	(169,472,713)	(148,851,200)
8. Change in Valuation Assets					
(3a) + (3c) + (5) + (7k)	473,852,757	488,115,612	277,691,595	325,876,724	339,881,776
9. End of Year Assets					
a) Market Value = (2)	5,590,042,317	6,071,046,914	4,512,260,955	5,276,645,338	5,971,593,444
b) Valuation Assets = (1b) + (8)	5,512,924,466	6,001,040,078	6,278,731,673	6,604,608,397	6,944,490,173
c) Difference Between Market & Valuation Assets	77,117,851	70,006,836	(1,766,470,718)	(1,327,963,059)	(972,896,729)
10. Recognized Rate of Return = [(5) + (7k)] / (4)	8.14%	8.12%	4.73%	5.30%	5.74%
11. Market Rate of Return	12.61%	7.89%	(25.59%)	17.10%	13.94%
12. Valuation Asset Adjustment Factor = (9b) / (9a)	0.986204	0.988469	1.391482	1.251668	1.162921

**Municipal Employees' Retirement System of Michigan**  
**Derivation of Actuarial Value of Assets (cont.)**

Valuation Date December 31:	2011	2012	2013	2014	2015
1. Beginning of Year Assets					
a) Market Value					
b) Valuation Assets					
2. End of Year Market Value Assets					
3. Net Additions to Market Value					
a) Net Contributions					
b) Net Investment Income = (3d) - (3a) - (3c)					
c) Benefit Payments					
d) Total Additions to Market Value = (2) - (1a)					
4. Average Valuation Assets = (1b) + .5x[(3a) + (3c)]					
5. Expected Income at Valuation Rate = 8% x (4)					
6. Gain (Loss) = (3b) - (5)					
7. Phased-In Recognition of Investment Return					
a) Current Year: 0.1 x (6)	20,621,513				
b) First Prior Year	26,903,495	20,621,513			
c) Second Prior Year	(203,285,376)	26,903,495			
d) Third Prior Year	(20,185)	(203,285,376)	20,621,513		
e) Fourth Prior Year	21,683,022	(20,185)	26,903,495		
f) Fifth Prior Year	(14,753,669)	21,683,022	(203,285,376)	20,621,513	
g) Sixth Prior Year		(14,753,669)	(20,185)	26,903,495	
h) Seventh Prior Year			21,683,022	(20,185)	
i) Eighth Prior Year			(14,753,669)	21,683,022	
j) Ninth Prior Year				(14,753,667)	(20,185)
k) Total Recognized Investment Gain (Loss)					21,683,025
8. Change in Valuation Assets					
(3a) + (3c) + (5) + (7k)					
9. End of Year Assets					
a) Market Value = (2)					
b) Valuation Assets = (1b) + (8)					
c) Difference Between Market & Valuation Assets					
10. Recognized Rate of Return = [(5) + (7k)] / (4)					
11. Market Rate of Return					
12. Valuation Asset Adjustment Factor = (9b) / (9a)					
					(134,097,528)
					(148,851,198)
					(148,851,200)
					(148,851,200)

