

**GRAND TRAVERSE COUNTY BOARD OF COMMISSIONERS
STUDY SESSION**

**Wednesday, April 12, 2017
5:30 p.m.**

**Governmental Center, Commission Chambers
400 Boardman Avenue
Traverse City, Michigan 49684**

The purpose of this study session is to review and discuss the Memorandum on Summary of the County's Unfunded Pension Liability and Options to Address the Resulting Financial Instability and the Pension Advisory Board's Recommendation.

Please remember this Study Session is to review information only. No formal action will be taken at the meeting.

If you are planning to attend and you have a disability requiring any special assistance at the meeting, please notify the County Clerk immediately at 922-4760.

AGENDA

- 1. OPENING CEREMONIES OR EXERCISES**
- 2. ROLL CALL**
- 3. FIRST PUBLIC COMMENT**

Any person shall be permitted to address a meeting of the Board of Commissioners which is required to be open to the public under the provision of the Michigan Open Meetings Act. Public Comment shall be carried out in accordance with the following Board Rules and Procedures:

Any person wishing to address the Board shall state his or her name and address.

No person shall be allowed to speak more than once on the same matter, excluding time needed to answer Commissioners' questions, if any. The Chairperson shall control the amount of time each person shall be allowed to speak, which shall not exceed three (3) minutes. The Chairperson may, at his or her discretion, extend the amount of time any person is allowed to speak.

Public comment will be solicited during the two public comment periods noted in Rule 5.4, Order of Business. However, public comment will generally be received at any time during the meeting regarding a specific topic currently under discussion by the board. Members of the public wishing to comment should raise their hand or pass a note to the clerk in order to be recognized, and shall not address the board until called upon by the chairperson.

- 4. OPTIONS AND RECOMMENDATIONS TO ADDRESS UNFUNDED PENSION AND OTHER POST EMPLOYMENT (OPEB) LIABILITIES..... 2**

- A. Presentation by County Administration and Finance Director
- B. Presentation by Pension Advisory Board
- C. Discussion of Increasing Multiplier to 2.5 for Non-Contract Employees

MERS Representatives and John Axe will be present at the request of the Board of Commissioners.

- 5. DISCUSSION:**
- 6. SECOND PUBLIC COMMENT (Refer to Rules under Public Comment above)**
- 7. ADJOURNMENT**



Memorandum

Grand Traverse County
Administration
400 Boardman Avenue
Traverse City, Michigan 49684
(231) 922-4780 Fax (231) 922-4636

TO: Board of Commissioners

FROM: Tom Menzel, County Administrator *22m*
Jennifer DeHaan, Deputy County Administrator
Jody Lundquist, Finance Director

DATE: April 6, 2017

SUBJECT: Implementation of Pension Advisory Board Recommendations

On April 3, 2017, the Pension Advisory Board recommended several actions for the Board of Commissioners to consider. This memo is to provide additional information regarding the implementation of those recommendations.

In brief, the Pension Advisory Board recommended that the County extend the amortization schedule, identify additional funds to pay down the debt, require employee contributions, and take steps to lessen future market volatility on the pension debt.

The following is additional information that will assist should you choose to implement the specific recommendations of the Pension Advisory Board:

1. Pursue extending the current amortization schedule to 16-years with a one-time payment of \$5.6 million. This amount of a one-time payment will stabilize the County's annual pension payment to \$5.85 million in future years. The one-time payment will be made in 2017 along with the County's annual payment for a total payment of \$10,838,504.
2. If a dedicated millage is pursued to pay down the debt, the additional funding will help to stabilize the pension payments should the market not perform to the actuarial assumptions. The following table illustrates options that may be available:

Millage Rate	Number of Years	Average Cost Per Household	Annual Property Tax Revenue	Total Property Tax Revenue Collected
0.25	5	\$ 19.48	\$ 1,142,872	\$ 5,714,360
0.5	5	\$ 38.95	\$ 2,285,744	\$ 11,428,720
1	5	\$ 77.90	\$ 4,571,488	\$ 22,857,440
0.5	8	\$ 38.95	\$ 2,285,744	\$ 18,285,952

3. Utilize a portion of the available fund balance in the Commission on Aging to pay down that specific departmental defined benefit pension obligation to the extent permitted by law. MERS is establishing a separate division for these retirees, such that the annual contribution for the COA divisions could come from the millage and not be supplanted with County General Fund dollars as it has been done in the past. We expect this could

reduce the impact of the \$5.6 million on the General Fund. The Commission on Aging will then also make direct contributions on an annual basis if actuarial assumptions change and require additional contributions.

4. Similar to the Commission on Aging, the Friend of the Court currently has a \$1.4 million projected fund balance for the year ending 2016. The current agreement from 1996 agreement that has not been updated in nearly 21-years requires the Friend of the Court to maintain a fund balance of 50% of the Court's annual operating budget. The current balance exceeds this amount by \$408,294. Reviewing and updating the agreement will allow the County to utilize the fund balance to immediately reduce the pension costs associated with members of this division. The Circuit Court Association serving both the Circuit Court and Friend of the Court is the County's largest division that has active members and there is no employee contribution.

The use of excess fund balance was not reviewed in detail by the Pension Advisory Board but was an additional option that we thought the Board should consider to lessen the impact of market volatility and positively improve the County's funded status in those specific divisions.



GRAND TRAVERSE COUNTY

400 BOARDMAN AVENUE
TRAVERSE CITY, MI 49684-2577

ADMINISTRATION
FAX

(231) 922-4780
(231) 922-4636

TO: Board of Commissioners

FROM: Pension Advisory Board

DATE: April 6, 2017

SUBJECT: Recommendations for Resolving the County's Unfunded Pension and Other Post-Employment Benefits Liabilities

On April 3, 2017, the Pension Advisory Board (the Board) met in a special meeting to discuss options. The following memo provides additional details regarding options for the County's unfunded pension and other post-employment benefits (OPEB) liabilities.

The Board supports the goals of the County to effectively resolve these liabilities, recognizing the unfunded liability as a debt that must be paid to the beneficiaries. It supports the County Administrator in his efforts to negotiate defined benefit plan changes to reduce the future liability and equitably share the benefits cost with remaining active defined benefit employees. At this time, the Board believes that MERS should continue to administer the County's defined benefit plan.

In order to accomplish these objectives, the Board makes the following recommendations to the Board of Commissioners:

1. Pursue a dedicated pension millage – The Board recognizes that additional funding to the County's pension plan is necessary beyond what the County's current operating millage will support without dramatic cuts to current County services. A dedicated millage that is restricted to funding the pension debt should be pursued.
2. Extend the current amortization schedule with MERS to a reasonable length – Currently County Administration has proposed two scenarios resulting in an extended schedule of up to 16 years. Either scenario could be pursued.
3. Establish and fund an Irrevocable Pension Stabilization Trust – Future market volatility will continue to impact the funding status of the County regardless of the payment period or funding status. A trust with use restricted for the benefit of the pension plan could lessen strain on the County's annual budget and ensure adequate funding to the pension plan in years of unexpected annual contribution increases due to market volatility.
4. Establish an Irrevocable OPEB Trust – Pre-funding retiree healthcare is shown to be more cost effective than pay-as-you-go funding and lessens future financial burden. The Board supports establishing a Trust as soon as possible and continuing the practice of making contributions to pre-fund this cost in the annual operating budget as was done in 2016 and 2017.

The Citizen members of the Board unanimously expressed a lack of support for bonding and do not recommend issuing long-term securities to fund the pension plan under any circumstance.

Each of the recommendations made by the Pension Advisory Board to the Board of Commissioners may take a number of forms. The specific terms under which the recommendations are left to the determination of the Board of Commissioners.



Memorandum

Grand Traverse County
Administration
400 Boardman Avenue
Traverse City, Michigan 49684
(231) 922-4780 Fax (231) 922-4636

TO: Pension Advisory Board

FROM: Tom Menzel, County Administrator *222m*
Jennifer DeHaan, Deputy County Administrator *JDH*
Jody Lundquist, Finance Director *JL*

DATE: March 31, 2017

SUBJECT: Summary of the County's Unfunded Pension Liability and Options to Address the Resulting Financial Instability

The following information is provided to assist the Board in deliberating on the options which are available to address the County's Unfunded Pension and Other Post-Employment Benefits (OPEB) Liabilities.

In order to effectively plan for the long term resolution of the County's Unfunded Pension and OPEB Liabilities, the County must consider all options that:

1. Identify additional sources of funding to pay down the debt as quickly as possible
2. Reduce the ongoing cost of benefits, thereby lowering the growth rate of the liability
3. Develop strategies to soften the impact of market volatility on future annual required contributions which strain operating budget decisions

BACKGROUND

Pension benefits for County employees are constitutionally guaranteed in the State of Michigan¹. To that end, there is no doubt that the County will be financially responsible for honoring the promises of the past, unless there is State intervention. As the County's Defined Benefit Plan fiduciary, MERS' primary responsibility is to ensure that adequate assets are maintained to meet the funding requirements for current and future payment of pension benefits to County retirees.

Each year an annual actuarial valuation is performed to determine the funding status of the County's Defined Benefit Plan and set the annual required contribution (ARC). The annual actuarial valuation is the best resource for understanding the County's Defined Benefit Plan and Unfunded Pension Liability.

¹ State Constitution (Excerpt), Section 24. Constitution of Michigan of 1963. Attached as Appendix A.

Summary of Unfunded Pension Debt

The most recent actuarial valuation (2015) provided by MERS identified the following²:

- The County's total accrued pension liability is \$95,902,694 of which it has assets valued at \$43,314,958 based on a 7.75% rate of return assumption: which amounts to a funded ratio of 45%. Leaving \$52,587,736 unfunded as of December 31, 2015.
- In 2015, The County had 88 active employees (current employees accruing benefits) and 276 retirees that are drawing pension benefits through the Defined Benefit Plan.
- The annual required contribution for the County in 2015 was \$4,213,993 while it paid out \$6,519,458 to pension beneficiaries; a net *reduction* of plan assets of \$2,305,465 before taking into account fees and investment activity.
- As of this valuation, Grand Traverse County is the lowest funded County in MERS and the County's assets continue to fall as payouts increase to beneficiaries. A Summary of OPEB and Pension Liabilities prepared by the Michigan Association of Counties (MAC) from 2014 audited financial statements confirms this position but for all Counties in the State of Michigan³.
- Due to the County's status of "closed" for all Defined Benefit Plan divisions, MERS policies and industry best practice require the application of an accelerated amortization schedule to pay off the unfunded liability over a finite period of time. The County will have 11 years remaining on its amortization schedule beginning in 2017.

How Did the County Get Here?

Board members and County staff are often asked how the County reached such a low funding rate when many others across the State have been able to meet their obligations and even maintain their pension programs for employees. The financial conditions of the County's Unfunded Liability are clearly articulated in a report provided by MERS, which is summarized below⁴.

- In 1990, the County's funded ratio was 101%.
- In 1992, the County's funded ratio dropped to 82% when it adopted 2% multipliers.
- In 1993, the County's funded ratio dropped to 62% when it adopted 2.5% multipliers for early retirement and provided a 2.5% annual Cost of Living Adjustment.
- In 1994, the County continued to increase pension multipliers to 2.5% for additional divisions which was MERS highest standard for a multiplier at that time.
- In 2000, the County closed 12 of the 14 divisions for the defined benefit program and offered a temporary early retirement incentive that provided a 3% multiplier with 18-years of service. This continued to be offered to various divisions between 2000-2005.
- Between 2000 and 2005, the County's funded ratio was reduced from 63% to 49%.
- Between 2009-2011 the County requested a three-year freeze of the County's amortization table, resulting in short-term stabilized payments for the County while the County's unfunded liability continued to grow.

² MERS Annual Valuation, 2015. Attached as Appendix B.

³ MAC Summary Tables of OPEB and Pension Liabilities for Michigan Counties. Attached as Appendix C.

⁴ MERS Presentation for Grand Traverse County – Pension Advisory Board, November 10, 2016, page 23. Attached as Appendix D.

- In 2015, the County closed the remaining two Defined Benefit Plan divisions (Circuit Court Supervisors and Circuit Court Association). It is important to note, that while closing plans reduces the growth of the County's Pension Liability, it also impacts the amortization table and expedites payments.

The cumulative impact of enhancing benefits, such as the 3% multipliers, followed by and during periods of market volatility compounded the cost to the County exponentially. As a result of these combined events, the County's funded status dropped from 101% in 1990 to 45% in 2015.

What Current Efforts are Being Undertaken to Address the Unfunded Liability?

Since early 2016, the County Board and County Administration have been working to address a variety of issues related to the County's Pension Liability. We have met on numerous occasions with MERS and presented the County's Pension Stabilization Plan to the MERS Board in July 2016. Since that time, there have been numerous communications and efforts by MERS to assist the County in identifying a solution that stabilizes the County's pension payments, increases assets more quickly, and maintains benefits promised to employees.

In addition, the County Board has made structural changes to pension benefits that are provided to employees and continue to work towards negotiating other changes with the Collective Bargaining Units. Because pension benefits are currently categorized as an issue that is subject to the bargaining process, making changes to reduce the County's future pension benefits is difficult, if not impossible, unless a Collective Bargaining Unit is willing to agree to different terms.

In summary, the following actions have been taken by the Board and County Administration in the past year:

- Created a community awareness of the County's debt and the increasing burden that the increasing pension payments will have on the services that are provided.
- Retained the former State Budget Director and County Controller/Administrator, Mary Lannoye, to conduct a study of the County's Pension Liability.
- Eliminated the option for pension beneficiaries to "buy-time" to add to their pension benefit. The ability to buy-time increases the County's unfunded liability.
- Established the County's Pension Stabilization Plan and presented this to MERS in July 2016⁵.
- Identified \$5.1 million in available assets to set-aside to fund the County's unfunded pension benefits and to stabilize the County's Annual Required Contribution.
- Participated in the West Michigan Policy Forum (WMPF) comprised of business leaders and legislators. The WMPF commissioned the former Controller of the United States Government Accountability Office to conduct an independent study of the unfunded liability of seven local units of government in the State of Michigan. The study found that the County was more realistically funded at a rate of 32% based upon a more realistic discount rate of 3.46%⁶. The study also reported total retirement burden (including retiree healthcare) of \$2,212 per Grand Traverse County household.

⁵ Pension Stabilization Plan Memorandum dated July 13, 2016. Attached as Exhibit E.

⁶ West Michigan Policy Forum Presentation: The Retirement Plans Challenge in Michigan. 2016. Attached as Appendix F.

- Established the Pension Advisory Board to serve as a vehicle to maintain transparency about the Pension, to review the County's Defined Contribution Plan, and to make sure that in no future year, does the County make decisions that negatively impact the financial status of the County.
- The County Board has now required that non-contract defined benefit employees contribute 10% of their gross annual income to their defined benefit pension and reduced the multiplier for the defined benefit program from 2.5 to 1.25 going forward. All benefits earned up until January 1, 2017 remained unchanged.
- As a result of the County's efforts as well as the deteriorating financial structures of other local units of government, MERS adopted a "policy" in August 2016 which would allow the County to request a one-time extension of its amortization schedule pending a plan sustainability analysis.
- Successful completion of contract negotiations with the American Federation of State, County, and Municipal Employees (AFSCME) bargaining unit.
- Participation in Michigan Association of Counties work group to discuss the ongoing work of the Governor's Pension and OPEB task force.

OPTIONS

As stated previously, all actions to resolve the County's significant Unfunded Pension Liability should seek to address three main objectives: funding the liability, reducing the total liability, and stabilizing the County's annual operating budget. At the heart of the issue is, if the only way to resolve the unfunded liability is to fund it, how do we lessen the amount that we owe and identify resources to pay it?

OBJECTIVE 1: Identify additional sources of funding

The only true method of resolving the County's Unfunded Pension Liability and to ensure the ongoing sustainability of the Defined Benefit Pension Plan is to accelerate funding to the Plan as quickly as possible to offset cash flow and benefit from long-term returns on investments. Those communities that have weathered the same storms as the County have done so largely as a result of taking action to reduce future liabilities by closing plans or reducing benefits sooner and making annual contributions to their plans beyond the minimum annual required contribution.

OBJECTIVE 2: Reducing the County's total pension debt

The County has closed all of its plans to new hires limiting the ongoing cost of the Defined Benefit Plan to those already receiving benefits and active employees still earning benefits until retirement. While the benefits of current retirees are constitutionally protected and may not be altered, measures are being taken to reduce the impact of increasing liabilities accrued on future benefits to be paid to active employees.

OBJECTIVE 3: Reduce the County's Defined Benefit Plan assets' exposure to market volatility

The greatest risk to the long term stability and funding status of the County's Pension Liability is the exposure of the Plan's assets to market volatility. In order to soften the impact of negative financial performance on the County's Defined Benefit plan, which increases the Unfunded

Pension Liability and raises annual required contributions, an analysis performed by Hilltop Securities recommends extending the County's amortization as long as possible while establishing a Pension Stabilization Irrevocable Trust⁷.

Developing a Long Term Strategy

In 2014, the State of Michigan required all municipalities to submit a report on Unfunded Accrued Liabilities of the local unit as part of its Economic Vitality Incentive/County Incentive Program to receive state revenue sharing payments. The Michigan Municipal League and MERS collaborated on a template approved by Michigan Department of Treasury in order assist municipalities in reporting the initiatives undertaken to reduce and resolve their unfunded pension liabilities. This template is a useful summary of actions that may be taken to resolve pension debt and is provided for your reference⁸.

In preparation for analyzing a number of the options presented in the following pages, the County requested MERS run cost projections and provide amortization schedules on a number of scenarios⁹. Payments for the current baseline scenario begin at \$5.2 million as budgeted in 2017 and accelerate to \$9.5 million in 2028. Upon reaching a projected funding status of 77%, payments fall in 2029 to \$1.5 million and decrease each year thereafter. It is important to keep this point of reference in mind as any strategy should seek to modify this schedule in such a way that all three objectives are accomplished.

NOTE: The Baseline scenario reflects the County's current Plan provisions *with* a phase-in of the recent change in actuarial assumptions as budgeted for 2017. For purposes of preparing the various projections, MERS was not able to provide the scenarios with the phase-in of recent changes to actuarial assumptions (mortality tables, etc.). The additional projected scenarios were prepared *without* the phase-in in order to provide the most conservative estimates. The current plan provisions are shown with and without the phase-in in order to illustrate the impact of the phase-in on the County's current payment schedule and allow for a baseline comparison for the options that follow.

⁷ Grand Traverse County Pension Analysis. Hilltop Securities. Draft dated February 6, 2017. Attached as Appendix G.

⁸ Economic Vitality Incentive Program/County Incentive Program Category 3: Unfunded Accrued Liability Plan Template. 2014. Attached as Appendix H.

⁹ Grand Traverse Co – Estimated Projected Employer Contributions and Funded Ratios. Attached as Appendix I.

Baseline: Current Amortization Schedule with Plan Provisions

Valuation Year Ending	Budget Year Beginning 1/1	Baseline (Current Plan Provisions)			
		Actuarial Accrued Liability	Funded %	Required ARC With Phase-In	Baseline ARC WITHOUT Assumption Phase-In
12/31/2015	2017	95,953,788	45%	\$5,238,504	\$5,771,544
12/31/2016	2018	97,049,968	45%	\$5,782,044	\$6,121,380
12/31/2017	2019	97,873,181	45%	\$6,351,144	\$6,500,448
12/31/2018	2020	98,442,222	45%	\$6,932,820	\$6,911,652
12/31/2019	2021	98,776,535	45%	\$7,495,200	\$7,322,568
12/31/2020	2022	98,914,314	48%	\$7,762,176	\$7,583,820
12/31/2021	2023	98,855,402	51%	\$8,053,380	\$7,869,432
12/31/2022	2024	98,544,693	55%	\$8,319,252	\$8,128,416
12/31/2023	2025	97,967,806	60%	\$8,596,368	\$8,398,368
12/31/2024	2026	97,139,005	65%	\$8,881,932	\$8,676,540
12/31/2025	2027	96,086,432	71%	\$9,180,444	\$8,967,360
12/31/2026	2028	94,766,225	77%	\$9,493,272	\$9,272,208
12/31/2027	2029	93,186,759	85%	\$1,491,924	\$1,419,420
12/31/2028	2030	91,351,891	94%	\$1,245,540	\$1,213,416
12/31/2029	2031	89,273,030	95%	\$1,009,068	\$992,268
12/31/2030	2032	86,970,303	96%	\$994,152	\$975,696
12/31/2031	2033	84,434,393	97%	\$968,904	\$948,360
12/31/2032	2034	81,646,621	98%	\$994,764	\$973,380
12/31/2033	2035	78,667,528	99%	\$45,828	\$45,888
12/31/2034	2036	75,554,783	100%	\$40,956	\$41,016

Option #1 - Employee Contributions

Historically, the County has not required employees to contribute directly to the Defined Benefit Plan to assist in funding their pension benefits. While there are arguments from various Bargaining Units and Elected Officials that employees waived annual salary adjustments in return for increased pension benefits, there was no corresponding additional payment from the County to MERS to cover the rising costs. Essentially, the prior Administration and the Board of Commissioners promised employees additional benefits without recognizing the corresponding annual increase in payments. This ineffective method of benefit funding would have only been conceptually successful in funding benefits had the employee performed their entire length of service eligible for the enhanced benefit at the reduced wage.

To help better understand the magnitude of the direct employee contribution to the Defined Benefit Pension, the County receives monthly invoice statements. The most recent one, attached to this document, prescribes that the Employer was required to contribute \$428,061 and the employees collectively contributed \$4,943 to the Defined Benefit Plan¹⁰.

As of January 1, 2017 there are two Collective Bargaining Units that contribute .67% (TPOAM) and 2% (POAM) of their gross annual income. Non-contract employees began contributing 10% of their gross annual income. In February 2017, the Board approved a contract with the AFSCME which requires an annual contribution from the only defined benefit employee of 6%. In contrast, Circuit Court Judge Power assumed negotiations with the Circuit Court Association and Circuit Court Supervisors in December 2016 maintaining a status quo agreement with the two Defined Benefit Plan divisions that closed most recently and contain the largest number of active defined benefit employees; no employee contributions or changes to the bridge benefit plan were included as was requested by the County.

¹⁰ MERS Invoice 00067932-20. Attached as Appendix J.

In February, the Board received a memo from Finance Director Jody Lundquist outlining the financial impact if the non-contract employees that are required to contribute 10% are reduced to 6% or a 3% contribution. The memo concluded that should the Board change the required employee contribution from 10% to a 6% the County would need to identify \$17,511 from its existing FY 2017 or Fund Balance to cover the reduced rate of contribution. Likewise, if the Board change the required employee contribution from 10% to 3% the County would need to identify \$30,643 from its existing FY2017 budget or Fund balance to cover the reduced rate of employee contributions.

Analysis of the financial impact of all active defined benefit employees contributing 6% was included in the analysis of bridging benefits. The combined impact is described further below.

Option # 2 - Bridging Benefits for Active Employees

Bridged benefits for active employees essentially freeze the pensions already earned as of the effective date and begin accruing a new benefit under revised benefit terms. In this way, the benefits already promised and earned by the employees are honored while the total obligation for future benefits is reduced.

Scenario 1 of the MERS projection illustrates that bridging benefits and requiring contributions for all remaining divisions to align with the AFSCME contract will result in annual savings of approximately \$242,476 per year and total savings over the 12-year amortization period of \$4.9 million.

Scenario 1: Bridging Benefits to 1.25% Multiplier and Requiring 6% Contribution for All Active DB Employees

Valuation Year Ending	Budget Year Beginning 1/1	Scenario 1: Bridge Remaining Divisions to 1.5% Multiplier (Frozen FAC) and 6% Employee Rate (Option 2)			Baseline
		Actuarial Accrued Liability	Funded %	Required Annual Employer Contribution	ARC WITHOUT Assumption Phase-In
12/31/2015	2017	95,509,426	45%	\$5,366,856	\$5,771,544
12/31/2016	2018	96,260,254	45%	\$5,723,292	\$6,121,380
12/31/2017	2019	96,514,266	45%	\$6,120,852	\$6,500,448
12/31/2018	2020	96,442,284	45%	\$6,546,540	\$6,911,652
12/31/2019	2021	96,115,094	46%	\$6,968,256	\$7,322,568
12/31/2020	2022	95,595,090	48%	\$7,246,116	\$7,583,820
12/31/2021	2023	94,814,797	51%	\$7,550,124	\$7,869,432
12/31/2022	2024	93,759,610	55%	\$7,827,912	\$8,128,416
12/31/2023	2025	92,485,181	59%	\$8,115,624	\$8,398,368
12/31/2024	2026	91,013,724	64%	\$8,410,536	\$8,676,540
12/31/2025	2027	89,369,728	70%	\$8,718,840	\$8,967,360
12/31/2026	2028	87,470,584	77%	\$9,041,556	\$9,272,208
12/31/2027	2029	85,342,468	85%	\$1,239,456	\$1,419,420
12/31/2028	2030	83,039,527	94%	\$1,045,536	\$1,213,416
12/31/2029	2031	80,571,723	95%	\$840,228	\$992,268
12/31/2030	2032	77,949,839	96%	\$834,300	\$975,696
12/31/2031	2033	75,154,623	97%	\$816,612	\$948,360
12/31/2032	2034	72,174,217	98%	\$846,624	\$973,380
12/31/2033	2035	69,071,809	99%	\$12,312	\$45,888
12/31/2034	2036	65,889,396	100%	\$12,096	\$41,016

Option #3 - Extending the Amortization Schedule

An extension to the County's current amortization schedule will lower the annual required contributions due to the Defined Benefit Pension plan, similar to refinancing a home mortgage, however future market volatility may impact future annual required contributions positively or negatively upon annual actuarial valuation. Lower annual payments resulting from an extended schedule create a larger buffer in which increases to annual payments may be absorbed without threatening County services.

The County requested that, under the new amortization extension policy, MERS perform a sustainability analysis on the County's 14 divisions to determine the longest amortization period MERS would be likely to approve. Preliminary results indicated that actuaries would not support an amortization schedule longer than 16 years and that a lump sum contribution of at least \$5 million would be required to extend the Defined Benefit Plan over that period.

In response, the County requested that MERS identify a lump sum amount and amortization period that would allow the County to sustain annual contribution amounts not to exceed \$5.85 million per year. This method would accomplish the payment stabilization that bonding seeks, with the same level of risk but with less formality, less cost, and without the duplicity of obligations to both retirees and bondholders. The resulting analysis is shown in the Projection Table labeled Scenario 2.

Scenario 2: 16-year Amortization Schedule with \$5.6 million lump sum payments and level annual contributions

Scenario 2: \$5.6M Lump Sum with Level Payments; Extend 12-Year Amort to 16-Year (Div. 13 and 17 Remain on Same Schedule) (Option 3)					Baseline
Valuation Year Ending	Budget Year Beginning 1/1	Actuarial Accrued Liability	Funded %	Required Annual Employer Contribution	ARC WITHOUT Assumption Phase-In
12/31/2015	2017	95,953,788	45%	\$11,371,544	\$5,771,544
12/31/2016	2018	97,049,968	45%	\$5,850,000	\$6,121,380
12/31/2017	2019	97,873,181	52%	\$5,850,000	\$6,500,448
12/31/2018	2020	98,442,222	52%	\$5,850,000	\$6,911,652
12/31/2019	2021	98,776,535	53%	\$5,850,000	\$7,322,568
12/31/2020	2022	98,914,314	54%	\$5,850,000	\$7,583,820
12/31/2021	2023	98,855,402	56%	\$5,850,000	\$7,869,432
12/31/2022	2024	98,544,693	59%	\$5,850,000	\$8,128,416
12/31/2023	2025	97,967,806	61%	\$5,850,000	\$8,398,368
12/31/2024	2026	97,139,005	64%	\$5,850,000	\$8,676,540
12/31/2025	2027	96,086,432	67%	\$5,850,000	\$8,967,360
12/31/2026	2028	94,766,225	70%	\$5,850,000	\$9,272,208
12/31/2027	2029	93,186,759	73%	\$5,850,000	\$1,419,420
12/31/2028	2030	91,351,891	77%	\$5,850,000	\$1,213,416
12/31/2029	2031	89,273,030	81%	\$5,850,000	\$992,268
12/31/2030	2032	86,970,303	86%	\$5,850,000	\$975,696
12/31/2031	2033	84,434,393	92%	\$947,640	\$948,360
12/31/2032	2034	81,646,621	98%	\$972,504	\$973,380
12/31/2033	2035	78,667,528	99%	\$44,820	\$45,888
12/31/2034	2036	75,554,783	100%	\$39,684	\$41,016

Option #4 - Establishing a Pension Stabilization Irrevocable Trust

The Pension Advisory Board has sought out legal advice regarding the establishment of an irrevocable trust under Michigan State statute. Currently, there are several communities in the State which have established OPEB trusts for their retiree healthcare obligations; however, no such irrevocable trust has been established for the sole purpose of pension payment stabilization

towards unfunded pension liabilities. Grand Traverse County will be the first in the State to establish a pension stabilization irrevocable trust, thus, leading the way for other communities to establish sustainability in funding their debt.

A pension stabilization irrevocable trust is similar to a designated fund that can be managed internally or by a third-party with assets legally restricted for the purpose of funding the County's Defined Benefit Plan. The terms of the trust will be established by the Board of Commissioners in consultation with the Pension Advisory Board. All funds that are designated to the Trust will be only available for the use of paying down Pension and retiree healthcare debt. In order to alleviate short term budgetary strain, but limit use to times of financial distress, parameters for use of Trust assets may include that transfers from the Trust to MERS may only occur upon an increase in annual required contribution of 20% from the prior year.

Option #5 - Pension Bonding

Several communities in the State of Michigan have bonded their indebtedness in order to reduce and stabilize payments. The following is a list of the pros and cons related to this:

Pros of Bonding	Cons of Bonding
<ul style="list-style-type: none"> Provides a funding mechanism to immediately reduce pension debt 	<ul style="list-style-type: none"> Replaces one debt for another, bond payments must be included in annual budget process in lieu of pension payments
<ul style="list-style-type: none"> Stabilizes annual payments by replacing accelerated pension amortization schedule with constant bond amortization schedule 	<ul style="list-style-type: none"> Downturn in market resulting in decrease in plan assets may create an unfunded pension liability, prompting annual required contributions to MERS in addition to annual bond payments
<ul style="list-style-type: none"> Seeks to benefit from long-term investment performance providing higher rates of return to the pension plan than the bond interest rate 	<ul style="list-style-type: none"> The bonding amortization period may not exceed the County's pension amortization period limiting the ability to maximize gains from long-term investment performance
	<ul style="list-style-type: none"> Normal cost of benefits accrued by active employees will continue to be billed and paid in addition to bond payments

Public Act 329 of 2012 governs the issuance of bonds for funding a community's Unfunded Pension Liability¹¹. Approval to issue long-term securities must be granted by the State Treasurer through a formal application process.

The Bonding Analysis performed by MERS considered two scenarios each at the actuarial and market valuation of assets and at varying assumed rates of return¹². The first scenario assumes

¹¹ Public Act 329 of 2012 Guidelines Revised January 26, 2016, Michigan Department of Treasury. Attached as Appendix K.

¹² Grand Traverse Co (2803) – All Divisions – Projections of Amortization Payment of Unfunded Accrued Liability and Normal Cost. Attached as Appendix L.

the current plan and amortization schedule. The second assumes a lump-sum payment of \$5.1 million and extension of the amortization schedule to 16 years. Market valuation of assets results in a more conservative approach to pension plan funding but also results in higher annual payments. Payments shown do not take into consideration additional costs associated with bond issuance.

Option #6 - Additional Sources of Revenue and/or Funding

As noted, many municipalities have avoided the County's current situation of significant unfunded pension liability by identifying sources of pension contributions during their annual budgeting process or by identifying dedicated revenue streams. Additional voluntary contributions beyond the annual minimum requirement improve the position of the County's Defined Benefit Plan by putting assets to work sooner. These investments and its projected returns reduce long-term valuation of the County's Pension Liability and Net Assets, paying off the debt sooner and reducing required annual payments.

Identifying additional sources of funding through budgeting – The Board of Commissioners may consider adopting budgeting policies that:

1. Dedicate all proceeds from asset sales
2. Committing future property tax revenue growth to contributions above the annual required amount
3. Fund annual required contributions at the market valuation level or lower assumed rate of return assumption (both are included in the annual actuarial valuation for reference)

Utilize fund balance as available – Certain County funds may have unrestricted fund balance in excess of applicable fund balance policies that may be utilized to pay off the unfunded pension liability associated with the fund's specific employees. County staff is currently working to provide MERS with data to separate employees and retirees by Fund and division in order to calculate their associated liability.

Dedicated millage – The County could seek electorate support of a dedicated property tax millage for a finite period of time. According to estimates prepared by the County's Treasurer, a one (1.0) mill assessment would generate approximately \$4,571,488 per year. Based on the average taxable value of residential class homes of \$77,900 in 2016, this would result in approximately \$77.90 per year per household.

Operating millage restoration (Headlee Amendment Reset) – A vote of the people would also be necessary to restore the County's operating millage from 4.9823 in 2016 to the 6.2000 originally authorized by County voters in 1974. Estimates provided by the County Treasurer indicate that the Headlee reset would result in approximately \$5,566,701 additional revenue and cost approximately \$94.86 per year per household. Additional research regarding the County's allocation of allowable millage rates will be researched by the County's legal counsel.

MERS provided a projection for additional contributions of \$4 million per year for five years beginning in 2018 while maintaining the annual required contribution. Analysis of this scenario is applicable to either a dedicated millage or commitment of increased property tax revenue under an operating millage restoration. Please refer to Projection Table Scenario 3.

Scenario 3: Baseline assumptions with additional property tax revenue of \$4 million

Valuation Year Ending	Budget Year Beginning 1/1	Scenario 3: Additional \$4 Million in Years 2018 - 2022 (Option 6)			Baseline
		Actuarial Accrued Liability	Funded %	Total/Required Annual Employer Contribution	ARC WITHOUT Assumption Phase-In
12/31/2015	2017	95,953,788	45%	\$5,771,544	\$5,771,544
12/31/2016	2018	97,049,968	45%	\$10,121,380	\$6,121,380
12/31/2017	2019	97,873,181	45%	\$10,010,044	\$6,500,448
12/31/2018	2020	98,442,222	50%	\$9,884,200	\$6,911,652
12/31/2019	2021	98,776,535	55%	\$9,774,604	\$7,322,568
12/31/2020	2022	98,914,314	61%	\$9,482,500	\$7,583,820
12/31/2021	2023	98,855,402	68%	\$5,198,544	\$7,869,432
12/31/2022	2024	98,544,693	75%	\$5,357,544	\$8,128,416
12/31/2023	2025	97,967,806	78%	\$5,523,720	\$8,398,368
12/31/2024	2026	97,139,005	82%	\$5,694,276	\$8,676,540
12/31/2025	2027	96,086,432	86%	\$5,873,436	\$8,967,360
12/31/2026	2028	94,766,225	90%	\$1,740,720	\$9,272,208
12/31/2027	2029	93,186,759	96%	\$610,536	\$1,419,420
12/31/2028	2030	91,351,891	97%	\$610,284	\$1,213,416
12/31/2029	2031	89,273,030	97%	\$612,672	\$992,268
12/31/2030	2032	86,970,303	98%	\$618,684	\$975,696
12/31/2031	2033	84,434,393	98%	\$628,752	\$948,360
12/31/2032	2034	81,646,621	99%	\$642,132	\$973,380
12/31/2033	2035	78,667,528	99%	\$43,224	\$45,888
12/31/2034	2036	75,554,783	100%	\$38,484	\$41,016

Option #7 - Hybrid Option

Implementation of hybrid plans are often used as a negotiating tool to transition open defined benefit plans to defined contribution plans. In the case of the County, all Defined Benefit Plan divisions are currently closed. According to MERS actuaries, based on the low level of funding of our current Defined Benefit Plan, they would NOT recommend immediately extending the amortization schedule upon reopening the Plan to hybrid members.

It is also important to note that bonding will prohibit hybrid plans from being offered as all plans must be closed by State statute. Similarly, offering a hybrid plan will prohibit any potential for bonding.

Option #8 – Alter MERS Administration of Pension Plan

At this time the County's ability to exit MERS is unduly burdensome. Although discontent with the annual investment performance and level of risk maintained to reach annual return assumptions has been expressed by a number of Board and citizen members, no recommendation for extracting the County's Defined Benefit Plan from MERS is provided at this time. Although the County has discussed alternate investment vehicles with MERS that would provide lower risk, such individualization is not available. Alternate investment strategies with lower long-term rate of returns assumptions would decrease the County's Unfunded Pension Liability and increase its annual required contributions.

SUMMARY AND RECOMMENDATIONS

A summary of the options is presented in the table below with the impact each option has on each of the three identified objectives.

OPTIONS	Objective 1: Increase Funding	Objective 2: Reduce Liability	Objective 3: Lessen Market Volatility	Supporting documentation	Length of Amortization	Lump Sum Required	Maximum Annual Payment
No action	x			Baseline	12	No	\$ 9,272,208
Employee Contributions	x			Scenario 3	12	No	\$ 9,041,556
Bridged Benefits for Active DB Employees		x		Scenario 3	12	No	\$ 9,041,556
Additional Employer Contributions	x						
Amortization Extension with Lump Sum	x		x	Scenario 2	16	Yes	\$ 5,850,000
Property Tax Revenue (1 mill)	x			Scenario 1	12	Yes	\$ 10,010,044
Bonding	x			CBIZ Report	Must follow MERS		
Pension Stabilization Trust	x		x	Hilltop Analysis			
Hybrid Plan				No impact, actuaries do not support opening amortization			
Amortization schedule extension			x	No approval without lump sum			
Request MERS identify alternate portfolio risk options			x	Reduced rate of return assumptions will increase unfunded liability and ARC			

The most comprehensive long term strategy for resolving the County's Unfunded Pension and OPEB liabilities are consistent with the Government Officer's Finance Association's best practice recommendations and combine a number of the options identified in this summary¹³.

The most cohesive combination of options recommended for consideration include:

1. Increasing funding to the plan through employee contributions
2. Reducing the future liability by bridging benefits of active Defined Benefit employees
3. Making a lump sum payment to the Defined Benefit Plan and extending the amortization schedule to at least 16 years
4. Identifying additional sources of funding through annual budgeting practices, asset sale proceeds, millage restoration, and use of unrestricted fund balance
5. Establish Irrevocable Trusts for Pension Stabilization and OPEB
6. Continue the FY2016 practice of including annual contributions to OPEB funding

¹³ GFOA Sustainable Funding Practices for Defined Benefit Pensions and Other Postemployment Benefits (OPEB). Attached as Appendix M.

STATE CONSTITUTION (EXCERPT)
CONSTITUTION OF MICHIGAN OF 1963

§ 24 Public pension plans and retirement systems, obligation.

Sec. 24. The accrued financial benefits of each pension plan and retirement system of the state and its political subdivisions shall be a contractual obligation thereof which shall not be diminished or impaired thereby.

Financial benefits, annual funding.

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

History: Const. 1963, Art. IX, § 24, Eff. Jan. 1, 1964.



MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM OF MICHIGAN
ANNUAL ACTUARIAL VALUATION REPORT DECEMBER 31, 2015
GRAND TRAVERSE CO (2803)



Spring, 2016

Grand Traverse Co

In care of:
Municipal Employees' Retirement System of Michigan
1134 Municipal Way
Lansing, Michigan 48917

This report presents the results of the Annual Actuarial Valuation, prepared as of December 31, 2015. The report includes the determination of liabilities and contribution rates resulting from the participation of Grand Traverse Co (2803) in the Municipal Employees' Retirement System of Michigan ("MERS"). MERS is a nonprofit organization, independent from the State, that has provided retirement plans for municipal employees for more than 65 years. Grand Traverse Co 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.

The purpose of the December 31, 2015 annual actuarial valuation is to:

- Measure funding progress
- Establish contribution requirements for the fiscal year beginning January 1, 2017
- Provide actuarial information in connection with applicable Governmental Accounting Standards Board (GASB) statements

This valuation report should not be relied upon for any other purpose. Reliance on information contained in this report by anyone for anything other than the intended purpose could be misleading.

The valuation uses financial data, plan provision data, and participant data as of December 31, 2015 furnished by MERS. In accordance with Actuarial Standards of Practice No. 23, the data was checked for internal and year to year consistency as well as general reasonableness, but was not otherwise audited. CBIZ Retirement Plan Services does not assume responsibility for the accuracy or completeness of the data used in this valuation.

The actuarial assumptions and methods are adopted by the MERS Retirement Board, and are reviewed every five years in an Experience Study. The most recent study was completed in 2015, and this December 31, 2015 valuation report reflects changes in assumptions and methods. Please refer to the division-specific assumptions described in table(s) in this report, and to the Appendix on the MERS website at:

www.mersofmich.com/Portals/0/Assets/Resources/AAV-Appendix/MERS-2015AnnualActuarialValuation-Appendix.pdf.



The actuarial assumptions used for this valuation produce results that we believe are reasonable.

To the best of our knowledge, this report is complete and accurate, was prepared in conformity with generally recognized actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and is 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 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).

This information is purely actuarial in nature. It is not intended to serve as a substitute for legal, accounting or investment advice.

This report was prepared at the request of the Retirement Board and may be provided only in its entirety by the municipality to other interested parties (MERS customarily provides the full report on request to associated third parties such as the auditor for the municipality). CBIZ Retirement Plan Services is not responsible for the consequences of any unauthorized use.

You should notify MERS if you disagree with anything contained in the report or are aware of any information that would affect the results of the report that have not been communicated to us. If you have reason to believe that the plan provisions are incorrectly described, that important plan provisions relevant to this valuation are not described, that conditions have changed since the calculations were made, that the information provided in this report is inaccurate or is in anyway incomplete, or if you need further information in order to make an informed decision on the subject matter in this report, please contact your Regional Manager at 1.800.767.MERS(6377).

Sincerely,

Cathy Nagy, MAAA, FSA
Jim Koss, MAAA, ASA
Curtis Powell, MAAA, EA
Alan Sonnanstine, MAAA, ASA

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Executive Summary

New Actuarial Assumptions and Methods

The actuarial assumptions and methods are adopted by the MERS Retirement Board, and are reviewed every five years in an Experience Study. The Experience Study is a comprehensive, detailed analysis that reviews MERS' funding policy and compares actual experience with the current actuarial assumptions; the study recommends adjustments as necessary. The most recent study was completed in 2015, and this December 31, 2015 valuation report reflects several changes in actuarial assumptions.

The main assumption and method changes were:

- The mortality table was adjusted to reflect longer lifetimes.
- The assumed annual rate of investment return, net of all expenses, was lowered from 8% to 7.75%.
- The asset smoothing was changed from 10 to 5 years.
- The amortization period was moved to a fixed period amortization for the December 31, 2014 annual valuations.
 - o The period will continue to gradually decrease for both open and closed divisions until the current unfunded accrued liability (UAL) is completely paid off.
 - o Moving to this type of "fixed period amortization" means that all unfunded liabilities will be fully funded by a specific date in the future.
 - o Once the amortization period drops below 15 years (10 years for closed divisions), any future liability and asset gains or losses will be spread over a 15-year fixed period for open divisions and a 10-year fixed period for closed divisions — creating "layers" of UAL on an annual basis.
 - o This transparent method allows tracking of what changed your UAL, and sets a fixed period in time in which that UAL change will be fully funded.

Various other actuarial assumptions were revised, but the revisions had a smaller impact than the two assumption changes above (first two bullets). For a summary of all of the actuarial assumptions and methods, please refer to the division-specific assumptions described on the last page of this report, and to the [Appendix](#).

The new amortization period layers and the new 5-year asset smoothing do not impact this 2015 annual valuation, other than the 6 year projections. These method changes will first impact the December 31, 2016 annual valuations.

The impacts of the assumption changes on the funded ratio and the required employer contributions are displayed on the next few pages. While these changes in assumptions will mean larger liabilities and contributions than anticipated by the prior assumptions for most employers, they will ensure each employer makes reasonable progress towards funding the unfunded liabilities of the employer. When

discussing changes in assumptions it is important to remember that, although the assumptions used impact the annual contributions, the true cost of the plan will be based on what will actually happen in the future – independent of the assumptions used. MERS recognizes that many municipalities are already taking steps to reduce their UAL. The MERS Board approved a “phase in” of the total impact of the assumption changes over the next 5 years (impacting fiscal years beginning 2017 – 2021) as an option for you. Of course, if the employer pays less in the first 4 years, they will likely have to pay somewhat more in later years.

MERS created a dedicated resource page on their website, www.mersofmich.com, regarding this topic, with links to frequently asked questions, upcoming events and additional details.

Impacts from the Assumption Changes

The new actuarial assumptions changed your December 31, 2015 percent funded from 48% to 45%, a change of -3%.

The new assumptions changed your total monthly employer contribution requirement, before any phase-in, from \$432,490 to \$488,013, a change of \$55,523 (a 13% increase). Under the 5-year phase-in the first year increase is instead 3% (from \$432,490 to \$443,593 monthly).

Additional detail is shown on the following pages.

Funded Ratio and Required Employer Contributions

The MERS Defined Benefit Plan is an agent multiple-employer plan, meaning that assets are pooled for investment purposes but separate accounts are maintained for each individual employer. Each municipality is responsible for their own plan liabilities; MERS does not borrow from one municipality's account to pay for another.

The funded ratio of a plan is the percentage of the dollar value of the accrued benefits that is covered by the actuarial value of assets.

Your Funded Ratio:

For comparison purposes, we have included your December 31, 2015 funded ratio if it had been calculated under the previous assumptions. Note: Your actual funded level as of December 31, 2015 is the amount listed under the new assumptions.

	New Assumptions	Previous Assumptions	
	12/31/2015	12/31/2015	12/31/2014
Funded Ratio	45%	48%	48%

Michigan Law requires that pension plans be pre-funded, meaning money is set aside now to pay for future benefits. Pension plans are usually funded by employer and employee contributions, and investment income.

How quickly a plan attains the 100% funding goal depends on many factors such as:

- The current funded ratio
- The future experience of the plan
- The amortization period

It is more important to look at the trend in the funded ratio over a period of time than at a particular point in time.

Your Required Employer Contributions:

Your computed employer contributions are shown in the following table. Employee contributions, if any, are in addition to the computed employer contributions. Note: Your minimum required contribution is the amount listed under the new assumptions, with phase-in. For comparison purposes, we have included your computed employer contribution if it had been calculated under the previous assumptions.

	Percentage of Payroll				Monthly \$ Based on Valuation Payroll			
	New Assumptions		Previous Assumptions		New Assumptions		Previous Assumptions	
	Phase-in	Full Impact			Phase-in	Full Impact		
Valuation Date:	12/31/2015	12/31/2015	12/31/2015	12/31/2014	12/31/2015	12/31/2015	12/31/2015	12/31/2014
Fiscal Year Beginning:	January 1, 2017	January 1, 2017	January 1, 2017	January 1, 2016	January 1, 2017	January 1, 2017	January 1, 2017	January 1, 2016
Division								
01 - Gnrl Tmstr	-	-	-	-	\$ 57,802	\$ 64,070	\$ 56,237	\$ 51,150
02 - Deputies POAM	-	-	-	-	62,179	67,487	60,853	56,306
10 - Elctd Empl	-	-	-	-	36,068	39,796	35,138	32,182
11 - Gnrl NonCntrct	-	-	-	-	16,890	19,106	16,336	14,055
12 - AFSCME	-	-	-	-	11,994	13,138	11,710	10,296
13 - Circuit Ct	-	-	-	26.21%	37,784	41,748	36,795	31,926
14 - Hlth Dept Un	-	-	-	-	15,381	18,009	14,726	13,826
15 - Dist Crt Tmstr	-	-	-	-	21,408	23,584	20,863	19,379
16 - TPOAM	-	-	-	-	6,977	7,705	6,793	6,444
17 - Cirtct Crt Spvs	-	-	-	49.39%	7,078	7,786	6,899	6,426
18 - Exempt	-	-	-	-	87,680	95,708	85,671	81,750
20 - Sheriff POLC	-	-	-	-	54,459	58,839	53,364	49,611
21 - Dispatch Unit	-	-	-	-	42	202	2	236
23 - Srgts Tmstrs	-	-	-	-	27,851	30,835	27,103	24,938
Municipality Total					\$ 443,593	\$ 488,013	\$ 432,490	\$ 398,525

Under the new assumptions, both the full impact and the phased in employer contribution requirements are shown in the table above. The phase in allows the employer to spread the increase of the new actuarial assumptions over 5 fiscal years. By default, MERS will invoice you the phased in contribution amount. However, MERS strongly encourages employers to contribute more than the minimum required contribution, including paying the full amount of the impact of the changes, if possible.

Employee contribution rates reflected in the valuations are shown below:

Valuation Date:	Employee Contribution Rate	
	12/31/2015	12/31/2014
Division		
01 - Gnrl Tmstr	0.00%	0.00%
02 - Deputies POAM	2.00%	2.00%
10 - Elctd Empl	0.00%	0.00%

Valuation Date:	Employee Contribution Rate	
	12/31/2015	12/31/2014
Division		
11 - Gnrl NonCtrct	0.00%	0.00%
12 - AFSCME	0.00%	0.00%
13 - Circuit Ct	0.00%	0.00%
14 - Hlth Dept Un	0.00%	0.00%
15 - Dist Crt Tmstr	0.00%	0.00%
16 - TPOAM	0.67%	0.67%
17 - Circt Crt Spvs	0.00%	0.00%
18 - Exempt	0.00%	0.00%
20 - Sheriff POLC	0.00%	0.00%
21 - Dispatch Unit	0.00%	0.00%
23 - Srgts Tmstrs	0.00%	0.00%

The employer may contribute more than the minimum required contributions, as these additional contributions will earn investment income and may result in lower future contribution requirements. **MERS strongly encourages employers to contribute more than the minimum contribution shown above.**

Assuming that experience of the plan meets actuarial assumptions:

- To accelerate to a 100% funding ratio in 10 years, estimated monthly employer contributions for the entire employer would be \$ 576,243, instead of \$ 488,013.
- To accelerate to a 100% funding ratio in 20 years, estimated monthly employer contributions for the entire employer would be \$ 489,016, instead of \$ 488,013.

If you are interested in making additional contributions, please contact MERS and they can assist you with evaluating your options.

How and Why Do These Numbers Change?

In a defined benefit plan contributions vary from one annual actuarial valuation to the next as a result of the following:

- Changes in benefit provisions (see Table 2)
- Changes in actuarial assumptions and methods (see the [Appendix](#))
- Experience of the plan (investment experience and demographic experience); this is the difference between actual experience of the plan and the actuarial assumptions

Actuarial valuations do not affect the ultimate cost of the plan; the benefit payments (current and future) determine the cost of the plan. Actuarial valuations only affect the timing of the contributions into the plan. Because assumptions are for the long term, plan experience will not match the actuarial

assumptions in any given year (except by coincidence). Each annual actuarial valuation will adjust the required employer contributions up or down based on the prior year's actual experience.

Comments on Asset Smoothing

The actuarial value of assets, used to determine both your funded ratio and your required employer contribution, is based on a smoothed value of assets (10-year smoothing prior to 2016; 5-year smoothing beginning in 2016). A smoothing method reduces the volatility of the valuation results, which affects your required employer contribution and funded ratio. The smoothed actuarial rate of return for 2015 was 5.21%.

As of December 31, 2015 the actuarial value of assets is 113% of market value. This means that meeting the actuarial assumption in the next few years will require average annual market returns that exceed the 7.75% investment return assumption.

If the December 31, 2015 valuation results were based on market value on that date instead of smoothed funding value: i) the funded percent of your entire municipality would be 40% (instead of 45%); and ii) your total employer contribution requirement for the fiscal year starting January 1, 2017 would be \$ 6,415,248 (instead of \$ 5,856,156).

The asset smoothing method is a powerful tool for reducing the volatility of your required employer contributions. **However, if the current 13% difference between the smoothed value and the market value of assets is not made up, the result would be gradual increases in your employer contribution requirement over the next few years (to around the levels described above).**

Risk Characteristics of Defined Benefit Plans

It is important to understand that retirement plans, by their nature, are exposed to certain risks. While risks cannot be eliminated entirely, they can be mitigated through various strategies. Below are a few examples of risk (this is not an all-inclusive list):

- Economic - investment return, wage inflation, etc.
- Demographic - longevity, disability, retirement, etc.
- Plan Sponsor and Employees - contribution volatility, attract/retain employees, etc.

The MERS Retirement Board adopts certain assumptions and methods to mitigate the economic and demographic risks, and the contribution volatility risks. For example, the investment risk is the largest economic risk and is mitigated by having a balanced portfolio and a clearly defined investment strategy. Demographic risks vary based on the age of the workforce and are mitigated by preparing special studies called experience studies on a regular basis to determine if the assumptions used are reasonable compared to the experience. Risk may be mitigated through a plan design that provides benefits that are sustainable in the long run. An Experience Study is completed every five years to review the assumptions and methods. The next Experience Study will be completed in 2020.

Alternate Scenarios to Estimate the Potential Volatility of Results ("What If Scenarios")

The calculations in this report are based on assumptions about long-term economic and demographic behavior. These assumptions will never materialize in a given year, except by coincidence. Therefore the results will vary from one year to the next. The volatility of the results depends upon the characteristics of the plan. For example:

- Open divisions that have substantial assets compared to their active employee payroll will have more volatile employer contribution rates due to investment return fluctuations.
- Open divisions that have substantial accrued liability compared to their active employee payroll will have more volatile employer contribution rates due to demographic experience fluctuations.
- Small divisions will have more volatile contribution patterns than larger divisions because statistical fluctuations are relatively larger among small populations.
- Shorter amortization periods result in more volatile contribution patterns.

The analysis in this section is intended to review the potential volatility of the actuarial valuation results. It is important to note that calculations in this report are mathematical estimates based upon assumptions regarding future events, which may or may not materialize. Actuarial calculations can and do vary from one valuation to the next, sometimes significantly depending on the group's size.

Many assumptions are important in determining the required employer contributions.

For example:

- Lower investment returns would result in higher required employer contributions, and vice-versa.

- Smaller than projected pay increases would lower required employer contributions.
- Reductions in the number of active employees would lower required contribution dollars, but would usually increase the contribution rate expressed as a percentage of (the now lower) payroll.
- Retirements at earlier ages than projected would usually increase required employer contributions.
- More non-vested terminations of employment than projected would decrease required contributions.
- More disabilities or survivor (death) benefits than projected would increase required contributions.
- Longer lifetimes after retirement than projected would increase required employer contributions.

In the table below, we show the impact of varying one actuarial assumption: the future annual rate of investment return. Lower investment returns would result in higher required employer contributions, and vice-versa.

The relative impact of each investment return scenario below will vary from year to year, as the participant demographics change. The impact of each scenario should be analyzed for a given year, not from year to year. The results in the table are based on the December 31, 2015 valuation, and are for the municipality in total, not by division. These results do not reflect a 5-year phase in of the impact of the new actuarial assumptions.

	Assumed Future Annual Smoothed Rate of Investment Return			
	Lower Future Annual Returns		Valuation Assumption	Higher Returns
	5.75%	6.75%	7.75%	8.75%
12/31/2015 Valuation Results				
Accrued Liability	\$ 118,266,764	\$ 106,126,361	\$ 95,902,694	\$ 87,226,972
Valuation Assets	\$ 43,314,958	\$ 43,314,958	\$ 43,314,958	\$ 43,314,958
Unfunded Accrued Liability	\$ 74,951,806	\$ 62,811,403	\$ 52,587,736	\$ 43,912,014
Funded Ratio	37%	41%	45%	50%
Monthly Normal Cost	\$ 72,936	\$ 56,088	\$ 43,449	\$ 33,879
Monthly Amortization Payment	\$ 570,118	\$ 504,716	\$ 444,564	\$ 388,643
Total Employer Contribution¹	\$ 643,054	\$ 560,804	\$ 488,013	\$ 422,622

¹ If assets exceed accrued liabilities for a division, the division's amortization payment is negative and is used to reduce the division's employer contribution requirement. If the overfunding credit is larger than the normal cost, the division's full credit is included in the municipality's amortization payment above but the division's total contribution requirement is zero. This can cause the displayed normal cost and amortization payment to not add up to the displayed total employer contribution.

Six Year Projection Scenarios

The table on the following page illustrates the plan's projected liabilities and computed employer contributions for the next six fiscal years, under the new actuarial assumptions and under three future economic/assumption scenarios. All four projections take into account the past financial losses that will continue to affect the smoothed rate of return for the next four years. Under the 7.75% scenarios, two sets of projections are shown:

- Based on the phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. This projects your minimum required contribution.
- Based on no phase-in of the increased contribution requirements.

The 7.75% scenarios provide an estimate of computed employer contributions based on current actuarial assumptions, and a projected 7.75% market return. The other two scenarios may be useful if the municipality chooses to budget more conservatively, and make contributions in addition to the minimum requirements. The 6.75% and 5.75% projections provide an indication of the potential required employer contribution if MERS were to realize investment returns of 6.75% and 5.75% over the long-term.

Valuation Year Ending 12/31	Fiscal Year Beginning 1/1	Actuarial Accrued Liability	Valuation Assets	Funded Percentage	Computed Annual Employer Contribution
7.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return					
WITH 5-YEAR PHASE-IN					
2015	2017	\$ 95,902,694	\$ 43,314,958	45%	\$ 5,323,116
2016	2018	97,066,901	43,385,717	45%	5,858,160
2017	2019	98,032,976	43,758,826	45%	6,415,728
2018	2020	98,782,348	44,428,500	45%	6,986,676
2019	2021	99,324,950	45,444,801	46%	7,542,288
2020	2022	99,658,837	48,203,874	48%	7,803,636
NO 5-YEAR PHASE-IN					
2015	2017	\$ 95,902,694	\$ 43,314,958	45%	\$ 5,856,156
2016	2018	97,066,901	43,385,717	45%	6,197,484
2017	2019	98,032,976	44,354,191	45%	6,565,044
2018	2020	98,782,348	45,418,761	46%	6,965,508
2019	2021	99,324,950	46,635,134	47%	7,369,656
2020	2022	99,658,837	49,458,513	50%	7,625,280
6.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return					
NO 5-YEAR PHASE-IN					
2015	2017	\$ 106,126,361	\$ 43,314,958	41%	\$ 6,729,648
2016	2018	107,218,272	42,973,137	40%	7,082,136
2017	2019	108,088,021	44,475,417	41%	7,453,536
2018	2020	108,716,578	46,058,322	42%	7,865,112
2019	2021	109,114,011	47,758,207	44%	8,281,224
2020	2022	109,278,901	51,150,330	47%	8,552,016
5.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return					
NO 5-YEAR PHASE-IN					
2015	2017	\$ 118,266,764	\$ 43,314,958	37%	\$ 7,716,648
2016	2018	119,245,537	42,560,377	36%	8,081,436
2017	2019	119,974,652	44,720,119	37%	8,457,264
2018	2020	120,434,568	46,934,389	39%	8,881,620
2019	2021	120,635,649	49,216,945	41%	9,310,608
2020	2022	120,577,357	53,039,359	44%	9,624,564

Employer Contribution Details (Without a 5-year Phase-In) For the Fiscal Year Beginning January 1, 2017

Table 1

Division	Amort. Period for Unfund. Liab. ^{4,5}	Employer Contributions ¹			Blended Employer Contribut. ⁶	Employee Contribution Rate	Employee Contribut. Conversion Factor ²
		Normal Cost	Unfunded Accrued Liability	Total Computed Employer Contribut.			
Percentage of Payroll							
01 - Gnrl Tmstr	12	-	-	-		0.00%	
02 - Deputies POAM	12	-	-	-		2.00%	
10 - Elctd Empl	12	-	-	-		0.00%	
11 - Gnrl NonCntrct	12	-	-	-		0.00%	
12 - AFSCME	12	-	-	-		0.00%	
13 - Circuit Ct	21	-	-	-		0.00%	
14 - Hlth Dept Un	12	-	-	-		0.00%	
15 - Dist Crt Tmstr	12	-	-	-		0.00%	
16 - TPOAM	12	-	-	-		0.67%	
17 - Cirtc Crt Spvs	21	-	-	-		0.00%	
18 - Exempt	12	-	-	-		0.00%	
20 - Sheriff POLC	12	-	-	-		0.00%	
21 - Dispatch Unit	12	-	-	-		0.00%	
23 - Srgts Tmstrs	12	-	-	-		0.00%	
Estimated Monthly Contribution³							
01 - Gnrl Tmstr	12	\$ 3,650	\$ 60,420	\$ 64,070			
02 - Deputies POAM	12	2,874	64,613	67,487			
10 - Elctd Empl	12	1,902	37,894	39,796			
11 - Gnrl NonCntrct	12	1,210	17,896	19,106			
12 - AFSCME	12	1,204	11,934	13,138			
13 - Circuit Ct	21	17,474	24,274	41,748			
14 - Hlth Dept Un	12	1,981	16,028	18,009			
15 - Dist Crt Tmstr	12	896	22,688	23,584			
16 - TPOAM	12	714	6,991	7,705			
17 - Cirtc Crt Spvs	21	1,510	6,276	7,786			
18 - Exempt	12	3,396	92,312	95,708			
20 - Sheriff POLC	12	2,053	56,786	58,839			
21 - Dispatch Unit	12	0	202	202			
23 - Srgts Tmstrs	12	4,585	26,250	30,835			
Total Municipality		\$ 43,449	\$ 444,564	\$ 488,013			
Estimated Annual Contribution³		\$ 521,388	\$ 5,334,768	\$ 5,856,156			

¹ The above employer contribution requirements are in addition to the employee contributions, if any.

² If employee contributions are increased/decreased by 1.00% of pay, the employer contribution requirement will decrease/increase by the Employee Contribution Conversion Factor. The conversion factor is usually under 1%, because employee contributions may be refunded at termination of employment, and not used to fund retirement pensions. Employer contributions will all be used to fund pensions.

- ³ For divisions that are open to new hires, estimated contributions are based on projected fiscal year payroll. Actual contributions will be based on actual reported monthly pays, and will be different from the above amounts. 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 description of Open Divisions and Closed Divisions in the [Appendix](#).
- ⁴ If projected assets exceed projected liabilities as of the beginning of the January 1, 2017 fiscal year, the negative unfunded accrued liability is amortized (spread) over 10 years. This amortization is used to reduce the employer contribution rate. Note that if the overfunding credit is larger than the normal cost, the full credit is shown above but the total contribution requirement is zero. This will cause the displayed normal cost and unfunded accrued liability contributions to not add across.
- ⁵ If the division is closed to new hires, with new hires not covered by MERS Defined Benefit Plan or Hybrid Plan provisions, the amortization period will decrease as follows: Under Amortization Option A, the period will decrease by 2 years each valuation year, until it reaches 6 or 5 years. Then it decreases by 1 year each valuation year until the UAL is paid off. Under Amortization Option B, the period will decrease by 2 years each valuation year, until it reaches 16 or 15 years. Thereafter, the period will reduce by 1 year each valuation year, until the UAL is paid off. This will result in amortization payments that increase faster than the usual 3.75% each year. If the division is closed to new hires, with new hires (and transfers) covered by MERS Defined Benefit Plan or Hybrid Plan provisions, the standard open division amortization period will apply.
- ⁶ For linked divisions, the employer will be invoiced the Total Required Employer Contribution rate shown above for each linked division (a contribution rate for the open division; a contribution dollar for the closed-but-linked division), unless the employer elects to contribute the Blended Employer Contribution rate shown above, by contacting MERS at 800-767-2308.

Note that the Employer Contribution Details shown in Table 1 do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 1 above. The contribution requirements including the 5-year phase-in are shown on page 8.

Please see the Comments on Asset Smoothing.

Benefit Provisions

Table 2

01 - Gnrl Tmstr: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	6/1/2000	6/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)
02 - Deputies POAM: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.80% to Age 65 (80% max); 2.50% after Age 65 (80% max)	2.80% to Age 65 (80% max), 2.50% after Age 65 (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	2%	2%
DC Plan for New Hires:	7/1/2000	7/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)
10 - Elctd Empl: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	6/1/2000	6/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

Table 2 (continued)

11 - Gnrl NonCtrct: Closed to new hires

	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	5/1/2000	5/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

12 - AFSCME: Closed to new hires

	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	5/1/2000	5/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

13 - Circuit Ct: Closed to new hires

	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	1/1/2016	
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

Table 2 (continued)

14 - Hlth Dept Un: Closed to new hires

	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	5/1/2000	5/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

15 - Dist Crt Tmstr: Closed to new hires

	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	6/1/2000	6/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

16 - TPOAM: Closed to new hires

	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% to Age 65 (80% max); 2.25% after Age 65 (80% max)	2.50% to Age 65 (80% max), 2.25% after Age 65 (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	0.67%	0.67%
DC Plan for New Hires:	6/1/2000	6/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

Table 2 (continued)

17 - Cirtc Crt Spvs: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	1/1/2016	
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

18 - Exempt: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	5/1/2000	5/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

20 - Sheriff POLC: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.80% Multiplier (80% max)	2.80% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	25 and Out	25 and Out
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	6/1/2000	6/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

Table 2 (continued)

21 - Dispatch Unit: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	55/25	55/25
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	0%	0%
DC Plan for New Hires:	6/1/2000	6/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)
23 - Srgts Tmstrs: Closed to new hires		
	2015 Valuation	2014 Valuation
Benefit Multiplier:	2.80% Multiplier (80% max)	2.80% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	50/25	50/25
Early Retirement (Reduced):	55/15	55/15
Final Average Compensation:	5 years	5 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	0%	0%
DC Plan for New Hires:	6/1/2000	6/1/2000
Act 88:	Yes (Adopted 4/6/1967)	Yes (Adopted 4/6/1967)

Participant Summary

Table 3

Division	2015 Valuation		2014 Valuation		2015 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
01 - Gnrl Tmstr							
Active Employees	7	\$ 349,024	8	\$ 385,382	54.4	19.5	19.6
Vested Former Employees	9	58,796	10	59,257	52.3	8.3	13.8
Retirees and Beneficiaries	71	1,004,136	68	977,713	71.1		
02 - Deputies POAM							
Active Employees	5	\$ 285,527	6	\$ 337,678	45.1	17.7	17.7
Vested Former Employees	5	71,631	5	72,449	48.7	12.3	13.4
Retirees and Beneficiaries	29	871,869	28	832,578	66.8		
10 - Elctd Empl							
Active Employees	3	\$ 189,936	4	\$ 217,407	60.0	23.4	23.4
Vested Former Employees	1	1,434	1	1,434	52.8	8.0	8.0
Retirees and Beneficiaries	20	601,908	19	575,319	73.0		
11 - Gnrl NonCntrct							
Active Employees	3	\$ 128,160	5	\$ 186,656	50.0	17.0	17.0
Vested Former Employees	6	33,913	4	19,863	56.2	10.0	10.6
Retirees and Beneficiaries	27	411,240	27	389,882	71.5		
12 - AFSCME							
Active Employees	2	\$ 116,912	3	\$ 164,905	46.4	17.5	17.5
Vested Former Employees	2	28,816	2	28,816	48.5	10.8	14.4
Retirees and Beneficiaries	6	168,979	5	135,368	65.1		
13 - Circuit Ct							
Active Employees	33	\$ 1,518,027	32	\$ 1,461,683	48.4	10.3	11.8
Vested Former Employees	6	68,158	6	68,158	50.3	10.3	11.2
Retirees and Beneficiaries	20	445,339	19	403,560	68.1		
14 - Hlth Dept Un							
Active Employees	6	\$ 291,538	6	\$ 299,002	60.0	24.1	24.1
Vested Former Employees	9	46,952	9	51,190	52.4	6.6	12.8
Retirees and Beneficiaries	24	298,770	23	289,896	68.4		
15 - Dist Crt Tmstr							
Active Employees	2	\$ 109,408	2	\$ 108,664	49.5	25.1	25.1
Vested Former Employees	3	32,399	3	32,399	53.6	12.6	12.6
Retirees and Beneficiaries	13	326,342	13	325,099	64.4		
16 - TPOAM							
Active Employees	3	\$ 126,371	3	\$ 125,763	55.1	23.9	23.9
Vested Former Employees	3	24,515	3	24,515	54.4	11.3	13.6
Retirees and Beneficiaries	4	86,500	4	86,500	68.0		

Table 3 (continued)

Division	2015 Valuation		2014 Valuation		2015 Valuation		
	Number	Annual Payroll ¹	Number	Annual Payroll ¹	Average Age	Average Benefit Service ²	Average Eligibility Service ²
17 - Cirtc Crt Spvs							
Active Employees	2	\$ 154,620	2	\$ 156,144	58.6	18.6	18.6
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	3	69,470	3	68,225	69.2		
18 - Exempt							
Active Employees	6	\$ 377,885	9	\$ 559,302	53.8	23.0	23.0
Vested Former Employees	3	51,288	4	71,580	57.2	13.3	13.3
Retirees and Beneficiaries	35	1,250,809	33	1,140,115	65.6		
20 - Sheriff POLC							
Active Employees	2	\$ 153,234	2	\$ 150,444	43.9	20.1	20.7
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	13	674,827	13	664,676	64.1		
21 - Dispatch Unit							
Active Employees	0	\$ 0	0	\$ 0	0.0	0.0	0.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	4	41,124	5	46,707	66.7		
23 - Srgts Tmstrs							
Active Employees	6	\$ 413,351	6	\$ 404,907	46.9	21.0	21.0
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	7	268,145	7	263,249	66.0		
Total Municipality							
Active Employees	80	\$ 4,213,993	88	\$ 4,557,937	50.8	16.6	17.3
Vested Former Employees	47	417,902	47	429,661	52.6	9.8	12.6
Retirees and Beneficiaries	<u>276</u>	6,519,458	<u>267</u>	6,198,887	68.6		
Total Participants	403		402				

¹ Annual payroll for active employees; annual deferred benefits payable for vested former employees; annual benefits being paid for retirees and beneficiaries.

² Description can be found under Miscellaneous and Technical Assumptions in the [Appendix](#).

Reported Assets (Market Value)

Table 4

Division	2015 Valuation		2014 Valuation	
	Employer and Retiree ¹	Employee ²	Employer and Retiree ¹	Employee ²
01 - Gnrl Tmstr	\$ 5,364,563	\$ 55	\$ 5,877,750	\$ 5,232
02 - Deputies POAM	3,342,222	129,391	3,605,428	140,409
10 - Elctd Empl	2,877,216	0	3,132,596	30,766
11 - Gnrl NonCntrct	2,414,418	9,612	2,682,289	9,550
12 - AFSCME	1,146,406	0	1,204,455	0
13 - Circuit Ct	5,148,095	1,787	5,232,193	1,776
14 - Hlth Dept Un	2,929,695	6,713	3,124,967	6,670
15 - Dist Crt Tmstr	1,813,294	27,520	1,897,051	27,342
16 - TPOAM	714,209	16,611	740,617	15,663
17 - Cirtc Crt Spvs	379,515	0	379,325	0
18 - Exempt	6,262,050	0	6,671,944	0
20 - Sheriff POLC	2,682,318	4,997	2,883,400	4,964
21 - Dispatch Unit	328,594	869	379,753	863
23 - Srgts Tmstrs	2,518,361	31,608	2,524,380	31,404
Municipality Total	\$ 37,920,956	\$ 229,163	\$ 40,336,148	\$ 274,639
Combined Reserves	\$ 38,150,119		\$ 40,610,787	

¹ Reserve for Employer Contributions and Benefit Payments

² Reserve for Employee Contributions

The December 31, 2015 valuation assets are equal to 1.135382 times the reported market value of assets (compared to 1.059937 as of December 31, 2014). The derivation of valuation assets is described, and detailed calculations of valuation assets are shown, in the [Appendix](#).

Flow of Valuation Assets

Table 5

Year Ended 12/31	Employer Contributions		Employee Contributions	Investment Income	Benefit Payments	Employee Contribution Refunds	Net Transfers	Valuation Asset Balance
	Required	Additional						
2005	\$ 2,744,813		\$ 79,907	\$ 2,000,875	\$ (4,150,039)	\$ (1,903)	\$ (8,227,203)	\$ 35,193,962
2006	3,023,727		11,840	2,763,825	(4,290,011)	(7,968)	1	36,695,376
2007	3,275,854		10,516	2,946,194	(4,440,906)	0	0	38,487,034
2008	3,441,339		10,208	1,735,368	(4,564,382)	0	0	39,109,567
2009	3,572,015		11,169	1,530,820	(4,775,061)	0	0	39,448,510
2010	3,960,432		11,704	2,058,865	(4,832,231)	0	0	40,647,280
2011	3,962,869	\$ 0	10,903	2,029,332	(5,004,129)	(11,734)	0	41,634,521
2012	3,879,285	0	10,039	1,769,653	(5,382,916)	0	0	41,910,582
2013	3,964,682	0	8,727	2,339,803	(5,789,889)	0	1	42,433,906
2014	4,258,800	0	8,176	2,352,134	(6,008,142)	0	0	43,044,874
2015	4,479,187	0	6,978	2,054,023	(6,270,104)	0	0	43,314,958

Notes:

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

Additional employer contributions, if any, are shown separately starting in 2011. Prior to 2011, additional contributions are combined with the required employer contributions.

In the actuarial valuation additional employer contributions are combined with required contributions and used to reduce computed future required employer contributions.

The investment income column reflects the recognized investment income based on the smoothed value of assets. It does not reflect the market value investment return in any given year.

Actuarial Accrued Liabilities and Valuation Assets As of December 31, 2015

Table 6

Division	Actuarial Accrued Liability	Valuation Assets ¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
01 - Gnrl Tmstr				
Active Employees	\$ 1,871,090	\$ 55	0.0%	\$ 1,871,035
Vested Former Employees	448,950	0	0.0%	448,950
Retirees And Beneficiaries	10,691,120	6,090,836	57.0%	4,600,284
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	\$ 13,011,160	\$ 6,090,891	46.8%	\$ 6,920,269
02 - Deputies POAM				
Active Employees	\$ 1,492,846	\$ 83,589	5.6%	\$ 1,409,257
Vested Former Employees	425,395	44,279	10.4%	381,116
Retirees And Beneficiaries	9,454,788	3,812,217	40.3%	5,642,571
Pending Refunds	<u>1,522</u>	<u>1,522</u>	100.0%	<u>0</u>
Total	\$ 11,374,551	\$ 3,941,607	34.7%	\$ 7,432,944
10 - Elctd Empl				
Active Employees	\$ 1,216,296	\$ 0	0.0%	\$ 1,216,296
Vested Former Employees	10,724	0	0.0%	10,724
Retirees And Beneficiaries	6,385,272	3,266,739	51.2%	3,118,533
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	\$ 7,612,292	\$ 3,266,739	42.9%	\$ 4,345,553
11 - Gnrl NonCntrct				
Active Employees	\$ 503,273	\$ 0	0.0%	\$ 503,273
Vested Former Employees	340,265	9,612	2.8%	330,653
Retirees And Beneficiaries	3,944,306	2,742,588	69.5%	1,201,718
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	\$ 4,787,844	\$ 2,752,200	57.5%	\$ 2,035,644
12 - AFSCME				
Active Employees	\$ 520,205	\$ 0	0.0%	\$ 520,205
Vested Former Employees	163,995	0	0.0%	163,995
Retirees And Beneficiaries	1,981,436	1,301,609	65.7%	679,827
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	\$ 2,665,636	\$ 1,301,609	48.8%	\$ 1,364,027
13 - Circuit Ct				
Active Employees	\$ 4,236,526	\$ 231,564	5.5%	\$ 4,004,962
Vested Former Employees	565,835	565,835	100.0%	0
Retirees And Beneficiaries	5,049,684	5,049,684	100.0%	0
Pending Refunds	<u>0</u>	<u>0</u>	0.0%	<u>0</u>
Total	\$ 9,852,045	\$ 5,847,083	59.3%	\$ 4,004,962

Table 6 (continued)

Division	Actuarial Accrued Liability	Valuation Assets ¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
14 - Hlth Dept Un				
Active Employees	\$ 1,878,263	\$ 57,737	3.1%	\$ 1,820,526
Vested Former Employees	330,603	330,603	100.0%	0
Retirees And Beneficiaries	2,945,605	2,945,605	100.0%	0
Pending Refunds	0	0	0.0%	0
Total	\$ 5,154,471	\$ 3,333,945	64.7%	\$ 1,820,526
15 - Dist Crt Tmstr				
Active Employees	\$ 790,651	\$ 17,314	2.2%	\$ 773,337
Vested Former Employees	209,107	10,206	4.9%	198,901
Retirees And Beneficiaries	3,695,893	2,062,507	55.8%	1,633,386
Pending Refunds	0	0	0.0%	0
Total	\$ 4,695,651	\$ 2,090,027	44.5%	\$ 2,605,624
16 - TPOAM				
Active Employees	\$ 604,569	\$ 11,320	1.9%	\$ 593,249
Vested Former Employees	163,475	5,291	3.2%	158,184
Retirees And Beneficiaries	864,063	813,149	94.1%	50,914
Pending Refunds	0	0	0.0%	0
Total	\$ 1,632,107	\$ 829,760	50.8%	\$ 802,347
17 - Cirtc Crt Spvs				
Active Employees	\$ 752,099	\$ 0	0.0%	\$ 752,099
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	727,975	430,894	59.2%	297,081
Pending Refunds	0	0	0.0%	0
Total	\$ 1,480,074	\$ 430,894	29.1%	\$ 1,049,180
18 - Exempt				
Active Employees	\$ 2,522,694	\$ 0	0.0%	\$ 2,522,694
Vested Former Employees	528,037	0	0.0%	528,037
Retirees And Beneficiaries	14,698,653	7,109,819	48.4%	7,588,834
Pending Refunds	0	0	0.0%	0
Total	\$ 17,749,384	\$ 7,109,819	40.1%	\$ 10,639,565
20 - Sheriff POLC				
Active Employees	\$ 1,073,025	\$ 4,997	0.5%	\$ 1,068,028
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	8,518,429	3,046,132	35.8%	5,472,297
Pending Refunds	0	0	0.0%	0
Total	\$ 9,591,454	\$ 3,051,129	31.8%	\$ 6,540,325
21 - Dispatch Unit				
Active Employees	\$ 0	\$ 0	0.0%	\$ 0
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	398,071	374,066	94.0%	24,005
Pending Refunds	0	0	0.0%	0
Total	\$ 398,071	\$ 374,066	94.0%	\$ 24,005

Table 6 (continued)

Division	Actuarial Accrued Liability	Valuation Assets ¹	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
23 - Srgts Tmstrs				
Active Employees	\$ 2,729,540	\$ 31,608	1.2%	\$ 2,697,932
Vested Former Employees	0	0	0.0%	0
Retirees And Beneficiaries	3,168,414	2,863,581	90.4%	304,833
Pending Refunds	0	0	0.0%	0
Total	\$ 5,897,954	\$ 2,895,189	49.1%	\$ 3,002,765
Total Municipality				
Active Employees	\$ 20,191,077	\$ 438,184	2.2%	\$ 19,752,893
Vested Former Employees	3,186,386	965,826	30.3%	2,220,560
Retirees and Beneficiaries	72,523,709	41,909,426	57.8%	30,614,283
Pending Refunds	<u>1,522</u>	<u>1,522</u>	100.0%	<u>0</u>
Total Participants	\$ 95,902,694	\$ 43,314,958	45.2%	\$ 52,587,736

¹ Includes both employer and employee assets.

Please see the Comments on Asset Smoothing.

See the MERS Fiscal Responsibility Policy on the MERS website at:

http://www.mersofmich.com/Portals/0/Assets/PageResources/MERS/PlanDocument/Pension/MERSPlanDocument_Section46.pdf .

Actuarial Accrued Liabilities - Comparative Schedule

Table 7

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2001	\$ 63,054,329	\$ 37,124,063	59%	\$ 25,930,266
2002	68,579,572	37,803,420	55%	30,776,152
2003	73,682,260	40,355,536	55%	33,326,724
2004	78,893,261	42,747,512	54%	36,145,749
2005	71,993,673	35,193,962	49%	36,799,711
2006	74,170,541	36,695,376	49%	37,475,165
2007	76,407,968	38,487,034	50%	37,920,934
2008	78,874,560	39,109,567	50%	39,764,993
2009	79,212,816	39,448,510	50%	39,764,306
2010	80,396,593	40,647,280	51%	39,749,313
2011	82,943,903	41,634,521	50%	41,309,382
2012	85,327,602	41,910,582	49%	43,417,020
2013	86,837,752	42,433,906	49%	44,403,846
2014	88,858,803	43,044,874	48%	45,813,929
2015	95,902,694	43,314,958	45%	52,587,736

Notes: Actuarial assumptions were revised for the 2004, 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Division 01 - Gnrl Tmstr

Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 10,325,889	\$ 5,967,260	58%	\$ 4,358,629
2006	10,549,526	6,156,912	58%	4,392,614
2007	10,776,575	6,342,148	59%	4,434,427
2008	10,908,406	6,302,740	58%	4,605,666
2009	11,561,373	6,558,152	57%	5,003,221
2010	11,424,423	6,582,556	58%	4,841,867
2011	11,843,656	6,610,874	56%	5,232,782
2012	11,985,994	6,465,882	54%	5,520,112
2013	11,897,652	6,279,954	53%	5,617,698
2014	12,160,082	6,235,590	51%	5,924,492
2015	13,011,160	6,090,891	47%	6,920,269

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-01: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	22	\$ 838,088	\$ 34,464	0.00%
2006	22	851,554	\$ 36,527	0.00%
2007	19	782,807	\$ 36,492	0.00%
2008	18	742,412	\$ 39,788	0.00%
2009	22	934,425	\$ 47,989	0.00%
2010	20	825,902	\$ 40,777	0.00%
2011	15	597,424	\$ 41,363	0.00%
2012	9	403,625	\$ 43,390	0.00%
2013	9	423,524	\$ 46,314	0.00%
2014	8	385,382	\$ 51,150	0.00%
2015	7	349,024	\$ 64,070	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 02 - Deputies POAM

Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 9,568,971	\$ 3,827,178	40%	\$ 5,741,793
2006	10,398,772	3,977,752	38%	6,421,020
2007	10,572,996	4,033,073	38%	6,539,923
2008	10,768,703	4,004,514	37%	6,764,189
2009	10,701,502	3,953,427	37%	6,748,075
2010	10,980,374	4,031,566	37%	6,948,808
2011	10,751,233	3,998,449	37%	6,752,784
2012	10,428,948	3,943,303	38%	6,485,645
2013	10,447,819	3,954,931	38%	6,492,888
2014	10,652,829	3,970,351	37%	6,682,478
2015	11,374,551	3,941,607	35%	7,432,944

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-02: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	12	\$ 556,513	\$ 37,159	2.00%
2006	11	539,082	\$ 43,332	2.00%
2007	10	487,534	\$ 46,144	2.00%
2008	10	482,715	\$ 51,723	2.00%
2009	10	522,685	\$ 56,122	2.00%
2010	11	571,704	\$ 52,616	2.00%
2011	9	495,997	\$ 50,263	2.00%
2012	7	395,897	\$ 49,597	2.00%
2013	7	394,590	\$ 52,281	2.00%
2014	6	337,678	\$ 56,306	2.00%
2015	5	285,527	\$ 67,487	2.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 10 - Elctd Empl

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 4,766,212	\$ 2,697,945	57%	\$ 2,068,267
2006	5,417,322	2,980,716	55%	2,436,606
2007	5,586,194	3,135,031	56%	2,451,163
2008	5,855,103	3,246,390	55%	2,608,713
2009	5,851,512	3,258,709	56%	2,592,803
2010	5,877,052	3,332,315	57%	2,544,737
2011	5,986,353	3,397,920	57%	2,588,433
2012	6,461,568	3,408,607	53%	3,052,961
2013	7,035,577	3,453,063	49%	3,582,514
2014	7,132,459	3,352,964	47%	3,779,495
2015	7,612,292	3,266,739	43%	4,345,553

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-10: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	8	\$ 340,960	\$ 15,235	0.00%
2006	9	453,467	\$ 19,956	0.00%
2007	9	462,111	\$ 19,587	0.00%
2008	7	371,560	\$ 21,757	0.00%
2009	7	375,221	\$ 23,076	0.00%
2010	7	377,111	\$ 20,561	0.00%
2011	7	389,161	\$ 21,006	0.00%
2012	4	117,947	\$ 22,944	0.00%
2013	5	227,538	\$ 29,513	0.00%
2014	4	217,407	\$ 32,182	0.00%
2015	3	189,936	\$ 39,796	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 11 - Gnrl NonCntrct

Table 8-11: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 4,890,367	\$ 3,281,617	67%	\$ 1,608,750
2006	5,068,519	3,432,139	68%	1,636,380
2007	5,268,503	3,581,712	68%	1,686,791
2008	5,214,604	3,457,474	66%	1,757,130
2009	4,588,290	3,084,926	67%	1,503,364
2010	4,669,757	3,095,343	66%	1,574,414
2011	4,751,136	3,100,329	65%	1,650,807
2012	4,839,552	3,025,879	63%	1,813,673
2013	4,261,412	2,859,952	67%	1,401,460
2014	4,388,006	2,853,180	65%	1,534,826
2015	4,787,844	2,752,200	58%	2,035,644

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-11: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	19	\$ 631,218	\$ 15,604	0.00%
2006	17	588,606	\$ 15,814	0.00%
2007	18	632,422	\$ 16,535	0.00%
2008	17	604,821	\$ 17,705	0.00%
2009	11	379,478	\$ 14,348	0.00%
2010	11	394,718	\$ 14,172	0.00%
2011	11	405,460	\$ 14,629	0.00%
2012	9	357,294	\$ 16,227	0.00%
2013	7	251,095	\$ 12,413	0.00%
2014	5	186,656	\$ 14,055	0.00%
2015	3	128,160	\$ 19,106	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 12 - AFSCME

Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 2,169,962	\$ 948,100	44%	\$ 1,221,862
2006	2,188,982	976,678	45%	1,212,304
2007	2,282,388	1,052,495	46%	1,229,893
2008	2,290,121	1,095,951	48%	1,194,170
2009	2,332,887	1,152,786	49%	1,180,101
2010	2,312,927	1,215,057	53%	1,097,870
2011	2,396,865	1,275,124	53%	1,121,741
2012	2,468,177	1,308,809	53%	1,159,368
2013	2,289,091	1,223,109	53%	1,065,982
2014	2,384,378	1,276,646	54%	1,107,732
2015	2,665,636	1,301,609	49%	1,364,027

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-12: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	6	\$ 279,934	\$ 9,737	0.00%
2006	5	239,439	\$ 9,499	0.00%
2007	5	249,754	\$ 10,325	0.00%
2008	4	197,272	\$ 10,118	0.00%
2009	4	204,505	\$ 10,933	0.00%
2010	3	154,836	\$ 8,753	0.00%
2011	3	152,730	\$ 8,929	0.00%
2012	3	163,927	\$ 9,698	0.00%
2013	3	160,508	\$ 9,443	0.00%
2014	3	164,905	\$ 10,296	0.00%
2015	2	116,912	\$ 13,138	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 13 - Circuit Ct

Table 8-13: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 4,520,846	\$ 2,844,829	63%	\$ 1,676,017
2006	4,864,761	3,188,761	66%	1,676,000
2007	5,373,383	3,558,283	66%	1,815,100
2008	5,855,965	3,852,685	66%	2,003,280
2009	5,928,418	4,139,444	70%	1,788,974
2010	6,330,011	4,489,559	71%	1,840,452
2011	6,926,998	4,816,949	70%	2,110,049
2012	7,523,644	5,033,501	67%	2,490,143
2013	8,057,792	5,295,395	66%	2,762,397
2014	8,566,719	5,547,677	65%	3,019,042
2015	9,852,045	5,847,083	59%	4,004,962

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-13: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	33	\$ 1,260,812	19.71%	0.00%
2006	33	1,286,742	19.81%	0.00%
2007	32	1,365,238	20.14%	0.00%
2008	32	1,341,226	21.24%	0.00%
2009	33	1,388,691	20.55%	0.00%
2010	33	1,421,621	20.40%	0.00%
2011	33	1,468,692	21.53%	0.00%
2012	32	1,439,084	24.31%	0.00%
2013	33	1,486,735	24.91%	0.00%
2014	32	1,461,683	26.21%	0.00%
2015	33	1,518,027	\$ 41,748	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 14 - Hlth Dept Un

Table 8-14: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 3,943,501	\$ 2,938,374	75%	\$ 1,005,127
2006	4,145,408	3,078,266	74%	1,067,142
2007	4,088,601	3,220,180	79%	868,421
2008	4,178,965	3,255,428	78%	923,537
2009	4,368,790	3,250,291	74%	1,118,499
2010	4,487,813	3,289,310	73%	1,198,503
2011	4,598,531	3,318,801	72%	1,279,730
2012	4,730,638	3,350,845	71%	1,379,793
2013	4,678,265	3,273,583	70%	1,404,682
2014	4,796,527	3,319,338	69%	1,477,189
2015	5,154,471	3,333,945	65%	1,820,526

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-14: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	10	\$ 409,688	\$ 9,572	0.00%
2006	9	401,475	\$ 10,142	0.00%
2007	8	353,192	\$ 8,507	0.00%
2008	7	336,964	\$ 9,563	0.00%
2009	8	372,920	\$ 11,990	0.00%
2010	8	382,349	\$ 11,401	0.00%
2011	8	378,675	\$ 11,600	0.00%
2012	8	384,699	\$ 12,747	0.00%
2013	6	297,266	\$ 12,553	0.00%
2014	6	299,002	\$ 13,826	0.00%
2015	6	291,538	\$ 18,009	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 15 - Dist Crt Tmstr

Table 8-15: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 3,927,545	\$ 1,709,234	44%	\$ 2,218,311
2006	4,060,744	1,778,330	44%	2,282,414
2007	4,179,916	1,876,802	45%	2,303,114
2008	4,345,638	1,929,905	44%	2,415,733
2009	4,378,954	1,959,589	45%	2,419,365
2010	4,447,711	2,007,391	45%	2,440,320
2011	4,562,462	2,005,979	44%	2,556,483
2012	4,805,945	2,047,895	43%	2,758,050
2013	4,885,373	2,025,622	42%	2,859,751
2014	4,405,308	2,039,735	46%	2,365,573
2015	4,695,651	2,090,027	45%	2,605,624

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-15: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	7	\$ 288,314	\$ 15,762	0.00%
2006	7	299,881	\$ 16,961	0.00%
2007	7	314,080	\$ 17,462	0.00%
2008	6	270,936	\$ 19,274	0.00%
2009	6	278,420	\$ 20,999	0.00%
2010	3	151,218	\$ 17,746	0.00%
2011	2	103,794	\$ 18,469	0.00%
2012	3	158,033	\$ 21,402	0.00%
2013	2	106,549	\$ 22,507	0.00%
2014	2	108,664	\$ 19,379	0.00%
2015	2	109,408	\$ 23,584	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 16 - TPOAM

Table 8-16: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 1,294,871	\$ 750,080	58%	\$ 544,791
2006	1,340,172	761,845	57%	578,327
2007	1,357,561	771,009	57%	586,552
2008	1,376,310	755,555	55%	620,755
2009	1,355,375	735,807	54%	619,568
2010	1,384,227	742,329	54%	641,898
2011	1,386,916	748,754	54%	638,162
2012	1,435,199	755,765	53%	679,434
2013	1,481,340	774,752	52%	706,588
2014	1,524,294	801,609	53%	722,685
2015	1,632,107	829,760	51%	802,347

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-16: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	3	\$ 109,101	\$ 3,714	0.67%
2006	3	111,793	\$ 4,181	0.67%
2007	3	114,315	\$ 4,491	0.67%
2008	3	115,116	\$ 5,095	0.67%
2009	3	114,927	\$ 5,469	0.67%
2010	3	119,413	\$ 5,168	0.67%
2011	3	114,418	\$ 5,095	0.67%
2012	3	123,280	\$ 5,693	0.67%
2013	3	124,884	\$ 6,094	0.67%
2014	3	125,763	\$ 6,444	0.67%
2015	3	126,371	\$ 7,705	0.67%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 17 - Cirt Crt Spvs

Table 8-17: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 948,764	\$ 330,319	35%	\$ 618,445
2006	1,064,823	396,165	37%	668,658
2007	1,084,737	420,151	39%	664,586
2008	1,157,970	417,108	36%	740,862
2009	1,122,402	404,473	36%	717,929
2010	1,144,315	392,431	34%	751,884
2011	1,210,823	383,712	32%	827,111
2012	1,227,042	372,388	30%	854,654
2013	1,292,392	374,062	29%	918,330
2014	1,353,047	402,061	30%	950,986
2015	1,480,074	430,894	29%	1,049,180

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-17: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	1	\$ 71,374	58.38%	0.00%
2006	2	122,301	41.45%	0.00%
2007	2	123,366	42.53%	0.00%
2008	2	143,931	40.37%	0.00%
2009	2	138,804	40.50%	0.00%
2010	2	141,259	41.42%	0.00%
2011	2	150,819	42.43%	0.00%
2012	2	150,258	46.52%	0.00%
2013	2	153,755	48.56%	0.00%
2014	2	156,144	49.39%	0.00%
2015	2	154,620	\$ 7,786	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 18 - Exempt

Table 8-18: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 13,972,684	\$ 5,273,116	38%	\$ 8,699,568
2006	13,526,358	5,226,473	39%	8,299,885
2007	13,891,203	5,511,952	40%	8,379,251
2008	14,556,448	5,726,358	39%	8,830,090
2009	14,671,925	5,798,178	40%	8,873,747
2010	14,518,888	6,087,943	42%	8,430,945
2011	14,915,469	6,363,824	43%	8,551,645
2012	15,545,517	6,460,995	42%	9,084,522
2013	16,316,956	6,935,825	43%	9,381,131
2014	16,727,760	7,071,840	42%	9,655,920
2015	17,749,384	7,109,819	40%	10,639,565

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-18: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	12	\$ 756,768	\$ 57,438	0.00%
2006	11	681,419	\$ 56,016	0.00%
2007	11	705,350	\$ 60,054	0.00%
2008	11	713,776	\$ 68,134	0.00%
2009	11	728,561	\$ 74,212	0.00%
2010	11	744,729	\$ 63,760	0.00%
2011	10	684,084	\$ 64,433	0.00%
2012	10	638,225	\$ 71,024	0.00%
2013	10	606,125	\$ 75,876	0.00%
2014	9	559,302	\$ 81,750	0.00%
2015	6	377,885	\$ 95,708	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 20 - Sheriff POLC

Table 8-20: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 6,740,488	\$ 2,327,127	35%	\$ 4,413,361
2006	6,882,278	2,416,517	35%	4,465,761
2007	7,104,058	2,514,066	35%	4,589,992
2008	7,267,593	2,548,858	35%	4,718,735
2009	7,284,269	2,587,174	36%	4,697,095
2010	7,569,203	2,693,042	36%	4,876,161
2011	8,083,133	2,839,694	35%	5,243,439
2012	8,157,784	2,850,447	35%	5,307,337
2013	8,417,028	2,932,435	35%	5,484,593
2014	9,021,193	3,061,484	34%	5,959,709
2015	9,591,454	3,051,129	32%	6,540,325

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-20: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	3	\$ 207,337	\$ 26,755	0.00%
2006	3	209,128	\$ 28,740	0.00%
2007	3	212,697	\$ 30,911	0.00%
2008	3	213,221	\$ 34,625	0.00%
2009	3	227,017	\$ 37,988	0.00%
2010	2	148,104	\$ 34,478	0.00%
2011	3	231,913	\$ 38,302	0.00%
2012	3	232,699	\$ 40,241	0.00%
2013	2	152,793	\$ 42,841	0.00%
2014	2	150,444	\$ 49,611	0.00%
2015	2	153,234	\$ 58,839	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 21 - Dispatch Unit

Table 8-21: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 702,369	\$ 436,073	62%	\$ 266,296
2006	604,758	440,185	73%	164,573
2007	622,337	455,035	73%	167,302
2008	640,145	445,711	70%	194,434
2009	631,722	429,357	68%	202,365
2010	630,291	421,358	67%	208,933
2011	638,318	413,117	65%	225,201
2012	650,554	403,880	62%	246,674
2013	442,488	402,032	91%	40,456
2014	432,045	403,429	93%	28,616
2015	398,071	374,066	94%	24,005

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-21: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	1	\$ 46,388	\$ 1,833	0.00%
2006	1	46,918	\$ 1,295	0.00%
2007	1	51,067	\$ 1,467	0.00%
2008	1	53,406	\$ 1,763	0.00%
2009	1	54,185	\$ 1,941	0.00%
2010	1	52,561	\$ 1,806	0.00%
2011	1	52,940	\$ 1,919	0.00%
2012	1	55,422	\$ 2,175	0.00%
2013	0	0	\$ 126	0.00%
2014	0	0	\$ 236	0.00%
2015	0	0	\$ 202	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

Division 23 - Srgts Tmstrs

Table 8-23: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	\$ 4,221,204	\$ 1,862,710	44%	\$ 2,358,494
2006	4,058,118	1,884,637	46%	2,173,481
2007	4,219,516	2,015,097	48%	2,204,419
2008	4,458,589	2,070,890	46%	2,387,699
2009	4,435,397	2,136,197	48%	2,299,200
2010	4,619,601	2,267,080	49%	2,352,521
2011	4,892,010	2,360,995	48%	2,531,015
2012	5,067,040	2,482,386	49%	2,584,654
2013	5,334,567	2,649,191	50%	2,685,376
2014	5,314,156	2,708,970	51%	2,605,186
2015	5,897,954	2,895,189	49%	3,002,765

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

Table 9-23: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution ¹	Employee Contribution Rate ²
	Number	Annual Payroll		
2005	8	\$ 439,443	\$ 16,934	0.00%
2006	7	385,332	\$ 15,941	0.00%
2007	7	392,485	\$ 17,057	0.00%
2008	7	407,318	\$ 20,338	0.00%
2009	7	428,381	\$ 20,598	0.00%
2010	7	443,320	\$ 21,101	0.00%
2011	7	450,709	\$ 22,051	0.00%
2012	7	454,547	\$ 23,311	0.00%
2013	7	463,887	\$ 25,197	0.00%
2014	6	404,907	\$ 24,938	0.00%
2015	6	413,351	\$ 30,835	0.00%

¹ For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

² For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

Note: The contributions shown in Table 9 for the 12/31/2015 valuation do **not** reflect phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 8.

See the Benefit Provision History on page 46 for past benefit provision changes.

GASB 68 Information

The following information has been prepared to provide some of the information necessary to complete GASB Statement No. 68 disclosures. Statement 68 is effective for fiscal years beginning after June 15, 2014. Additional resources, including an Implementation Guide, are available at www.mersofmich.com.

Actuarial Valuation Date:	12/31/2015
Measurement Date of Total Pension Liability (TPL):	12/31/2015

At 12/31/2015, the following employees were covered by the benefit terms:

Inactive employees or beneficiaries currently receiving benefits:	276
Inactive employees entitled to but not yet receiving benefits:	47
Active employees:	<u>80</u>
	403

Total Pension Liability as of 12/31/2014 measurement date:	\$ 86,777,380
Total Pension Liability as of 12/31/2015 measurement date:	\$ 93,601,117
Service Cost for the year ending on the 12/31/2015 measurement date:	\$ 515,251

Change in the Total Pension Liability due to:

- Benefit changes ¹ :	\$ 0
- Differences between expected and actual experience ² :	\$ 902,764
- Changes in assumptions ² :	\$ 4,754,079

¹ A change in liability due to benefit changes is immediately recognized when calculating pension expense for the year.

² Changes in liability due to differences between actual and expected experience, and changes in assumptions, are recognized in pension expense over the average remaining service lives of all employees.

Average expected remaining service lives of all employees (active and inactive):	1
Covered employee payroll: (Needed for Required Supplementary Information)	\$ 4,213,993

Sensitivity of the Net Pension Liability to changes in the discount rate:

	1% Decrease <u>(7.00%)</u>	Current Discount Rate <u>(8.00%)</u>	1% Increase <u>(9.00%)</u>
Change in Net Pension Liability as of 12/31/2015:	\$ 9,805,653	-	\$ (8,336,457)

Note: The current discount rate shown for GASB 68 purposes is higher than the MERS assumed rate of return. This is because for GASB 68 purposes, the discount rate must be gross of administrative expenses, whereas for funding purposes it is net of administrative expenses.

GASB 68 Information

This page is for those municipalities who need to “roll-forward” their total pension liability due to the timing of completion of the actuarial valuation in relation to their fiscal year-end.

The following information has been prepared to provide some of the information necessary to complete GASB Statement No. 68 disclosures. Statement 68 is effective for fiscal years beginning after June 15, 2014. Additional resources, including an Implementation Guide, are available at www.mersofmich.com.

Actuarial Valuation Date:	12/31/2015
Measurement Date of Total Pension Liability (TPL):	12/31/2016

At 12/31/2015, the following employees were covered by the benefit terms:

Inactive employees or beneficiaries currently receiving benefits:	276
Inactive employees entitled to but not yet receiving benefits:	47
Active employees:	<u>80</u>
	403

Total Pension Liability as of 12/31/2015 measurement date:	\$ 87,971,749
Total Pension Liability as of 12/31/2016 measurement date:	\$ 94,773,899
Service Cost for the year ending on the 12/31/2016 measurement date:	\$ 505,704
Change in the Total Pension Liability due to:	
- Benefit changes ¹ :	\$ 0
- Differences between expected and actual experience ² :	\$ 947,500
- Changes in assumptions ² :	\$ 4,941,688

¹ A change in liability due to benefit changes is immediately recognized when calculating pension expense for the year.

² Changes in liability due to differences between actual and expected experience, and changes in assumptions, are recognized in pension expense over the average remaining service lives of all employees.

Average expected remaining service lives of all employees (active and inactive):	1
Covered employee payroll: (Needed for Required Supplementary Information)	\$ 4,213,993

Sensitivity of the Net Pension Liability to changes in the discount rate:			
	1% Decrease	Current Discount	1% Increase
	<u>(7.00%)</u>	<u>Rate (8.00%)</u>	<u>(9.00%)</u>
Change in Net Pension Liability as of 12/31/2016:	\$ 9,741,925	-	\$ (8,299,758)

Note: The current discount rate shown for GASB 68 purposes is higher than the MERS assumed rate of return. This is because for GASB 68 purposes, the discount rate must be gross of administrative expenses, whereas for funding purposes it is net of administrative expenses.

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 MERS. All provisions are listed by date of adoption.

01 - Gnrl Tmstr

10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
2/1/2004	Temporary 20 Years & Out (02/01/2004 - 08/03/2004)
2/1/2004	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (02/01/2004 - 08/03/2004)
1/1/2001	E 2% COLA Adopted (01/01/2001)
6/1/2000	DC Adoption Date 06-01-2000
6/1/2000	Temporary 18 Years & Out (06/01/2000 - 10/03/2000)
6/1/2000	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (06/01/2000 - 10/03/2000)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1994	Benefit B-4 (80% max)
3/31/1993	Blanket Resolution (All Service)
1/1/1993	Temporary Benefit B-4 (80% max) (01/01/1993 - 03/02/1993)
1/1/1993	E2 2.5% COLA for future retirees (01/01/1993)
12/1/1992	6 Year Vesting
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	Flexible E 2% COLA Adopted (01/01/1991)
12/1/1990	Benefit B-2
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	Benefit C-2/Base B-1
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1985	Member Contribution Rate 0.00%
1/1/1982	Benefit C-1 (Old)
1/1/1982	Benefit F55 (With 25 Years of Service)
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
1/1/1966	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1966	10 Year Vesting
1/1/1966	Benefit C (Old)
1/1/1966	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
	Fiscal Month - January

02 - Deputies POAM

10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
11/1/2005	Temporary 18 Years & Out (11/01/2005 - 05/01/2006)
11/1/2005	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (11/01/2005 - 05/01/2006)
5/1/2002	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (05/01/2002 - 11/03/2002)

02 - Deputies POAM

5/1/2002	Temporary 18 Years & Out (05/01/2002 - 11/03/2002)
1/1/2001	E 2% COLA Adopted (01/01/2001)
9/1/2000	Temporary 18 Years & Out (09/01/2000 - 11/03/2000)
9/1/2000	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (09/01/2000 - 11/03/2000)
7/1/2000	DC Adoption Date 07-01-2000
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/2000	E2 2.5% COLA for future retirees (01/01/1996)
1/1/1999	2.8% Multiplier to Age 65 / B-4 at Age 65 (80% max)
1/1/1999	Member Contribution Rate 2.00%
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1999	E2 2.3% COLA for future retirees (01/01/1996)
1/1/1996	Benefit B-4 (80% max)
1/1/1996	E2 2.5% COLA for future retirees (01/01/1996)
9/1/1994	Benefit F50 (With 25 Years of Service)
3/31/1993	Blanket Resolution (All Service)
1/1/1993	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	Benefit B-3 (80% max)
1/1/1991	Flexible E 2% COLA Adopted (01/01/1991)
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	Benefit C-2/Base B-1
1/1/1988	E 2% COLA Adopted (01/01/1988)
9/1/1984	Member Contribution Rate 0.00%
1/1/1982	Benefit C-1 (Old)
1/1/1982	Benefit F55 (With 25 Years of Service)
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
1/1/1966	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1966	10 Year Vesting
1/1/1966	Benefit C (Old)
1/1/1966	Member Contribution Rate 3.00% Under \$4,200.00 - Then 5.00%
	Fiscal Month - January

10 - Elctd Empl

10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
1/1/2001	Benefit F50 (With 25 Years of Service)
1/1/2001	E 2% COLA Adopted (01/01/2001)
6/1/2000	DC Adoption Date 06-01-2000
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/2000	E2 2.5% COLA for future retirees (01/01/1996)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1999	E2 2.3% COLA for future retirees (01/01/1996)
12/1/1998	6 Year Vesting
1/1/1996	E2 2.5% COLA for future retirees (01/01/1996)

10 - Elctd Empl

12/1/1995	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/1994	Benefit B-4 (80% max)
3/31/1993	Blanket Resolution (All Service)
12/1/1992	Benefit B-3 (80% max)
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	Flexible E 2% COLA Adopted (01/01/1991)
1/1/1990	8 Year Vesting
1/1/1990	Benefit F55 (With 25 Years of Service)
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	10 Year Vesting
1/1/1988	Benefit C-2/Base B-1
1/1/1988	E 2% COLA Adopted (01/01/1988)
1/1/1985	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1985	Member Contribution Rate 0.00%
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
	Fiscal Month - January

11 - Gnrl NonCntrect

10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
11/1/2001	Temporary 22 Years & Out (11/01/2001 - 01/03/2002)
11/1/2001	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (11/01/2001 - 01/03/2002)
1/1/2001	E 2% COLA Adopted (01/01/2001)
5/1/2000	Temporary 18 Years & Out (05/01/2000 - 10/03/2000)
5/1/2000	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (05/01/2000 - 10/03/2000)
5/1/2000	DC Adoption Date 05-01-2000
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1999	E2 2.5% COLA for future retirees (01/01/1999)
12/1/1993	Benefit B-4 (80% max)
3/31/1993	Blanket Resolution (All Service)
1/5/1993	Temporary Benefit B-4 (80% max) (01/05/1993 - 07/01/1993)
12/1/1992	Benefit B-3 (80% max)
1/1/1992	E 2% COLA Adopted (01/01/1992)
1/1/1991	Flexible E 2% COLA Adopted (01/01/1991)
1/1/1990	8 Year Vesting
1/1/1990	Benefit F55 (With 25 Years of Service)
1/1/1990	E 2% COLA Adopted (01/01/1990)
1/1/1989	E 2% COLA Adopted (01/01/1989)
1/1/1988	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1988	Member Contribution Rate 0.00%
1/1/1988	E 2% COLA Adopted (01/01/1988)
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88

11 - Gnrl NonCtrct

Fiscal Month - January

12 - AFSCME

10/1/2008 Day of work defined as 75 Hours a Month for All employees.
 10/1/2008 Exclude Temporary Employees requiring less than 12 months
 1/1/2003 Temporary 20 Years & Out (01/01/2003 - 07/03/2003)
 1/1/2003 Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (01/01/2003 - 07/03/2003)
 1/1/2001 Benefit FAC-3 (3 Year Final Average Compensation)
 1/1/2001 E 2% COLA Adopted (01/01/2001)
 5/1/2000 Temporary 18 Years & Out (05/01/2000 - 09/03/2000)
 5/1/2000 Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (05/01/2000 - 09/03/2000)
 5/1/2000 DC Adoption Date 05-01-2000
 1/1/2000 Flexible E 2% COLA Adopted (01/01/2000)
 1/1/2000 E2 2.5% COLA for future retirees (01/01/2000)
 1/1/1999 Flexible E 2% COLA Adopted (01/01/1999)
 1/1/1995 8 Year Vesting
 12/1/1994 Benefit B-4 (80% max)
 12/1/1993 2.25% Multiplier (no max)
 3/31/1993 Blanket Resolution (All Service)
 1/1/1992 E 2% COLA Adopted (01/01/1992)
 1/1/1991 Flexible E 2% COLA Adopted (01/01/1991)
 1/1/1990 E 2% COLA Adopted (01/01/1990)
 1/1/1989 E 2% COLA Adopted (01/01/1989)
 1/1/1988 Benefit FAC-5 (5 Year Final Average Compensation)
 1/1/1988 10 Year Vesting
 1/1/1988 Benefit C-1 (Old)
 1/1/1988 Benefit F55 (With 25 Years of Service)
 1/1/1988 E 2% COLA Adopted (01/01/1988)
 1/1/1985 Member Contribution Rate 0.00%
 4/6/1967 Covered by Act 88
 Fiscal Month - January

13 - Circuit Ct

1/1/2016 DC Adoption Date 01-01-2016
 10/1/2008 Day of work defined as 75 Hours a Month for All employees.
 10/1/2008 Exclude Temporary Employees requiring less than 12 months
 1/1/2001 E 2% COLA Adopted (01/01/2001)
 1/1/2000 E 2% COLA Adopted (01/01/2000)
 1/1/1999 Benefit FAC-3 (3 Year Final Average Compensation)
 1/1/1999 Flexible E 2% COLA Adopted (01/01/1999)
 1/1/1999 E2 2.5% COLA for future retirees (01/01/1999)
 1/1/1997 Benefit B-4 (80% max)
 1/1/1994 6 Year Vesting
 1/1/1994 Benefit B-3 (80% max)
 3/31/1993 Blanket Resolution (All Service)

13 - Circuit Ct

1/1/1992 Benefit FAC-5 (5 Year Final Average Compensation)
 1/1/1992 10 Year Vesting
 1/1/1992 Benefit C-1 (Old)
 1/1/1992 Benefit F55 (With 25 Years of Service)
 1/1/1992 Member Contribution Rate 0.00%
 6/27/1978 Exclude Temporary Employees
 4/6/1967 Covered by Act 88
 Fiscal Month - January

14 - Hlth Dept Un

10/1/2008 Day of work defined as 75 Hours a Month for All employees.
 10/1/2008 Exclude Temporary Employees requiring less than 12 months
 1/1/2001 E 2% COLA Adopted (01/01/2001)
 5/1/2000 DC Adoption Date 05-01-2000
 5/1/2000 Temporary 18 Years & Out (05/01/2000 - 10/03/2000)
 5/1/2000 Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (05/01/2000 - 10/03/2000)
 1/1/2000 E 2% COLA Adopted (01/01/2000)
 1/1/2000 E2 2.5% COLA for future retirees (07/01/1997)
 1/1/1999 Flexible E 2% COLA Adopted (01/01/1999)
 1/1/1999 E2 1.9% COLA for future retirees (07/01/1997)
 1/1/1998 E2 2.5% COLA for future retirees (07/01/1997)
 12/1/1993 Benefit B-4 (80% max)
 3/31/1993 Blanket Resolution (All Service)
 6/1/1991 6 Year Vesting
 1/1/1991 Flexible E 2% COLA Adopted (01/01/1991)
 1/1/1991 Benefit FAC-5 (5 Year Final Average Compensation)
 1/1/1991 10 Year Vesting
 1/1/1991 Benefit B-2
 1/1/1991 Benefit F55 (With 25 Years of Service)
 1/1/1984 Member Contribution Rate 0.00%
 6/27/1978 Exclude Temporary Employees
 4/6/1967 Covered by Act 88
 Fiscal Month - January

15 - Dist Crt Tmstr

10/1/2008 Day of work defined as 75 Hours a Month for All employees.
 10/1/2008 Exclude Temporary Employees requiring less than 12 months
 7/1/2004 Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (07/01/2004 - 01/03/2005)
 7/1/2004 Temporary 18 Years & Out (07/01/2004 - 01/03/2005)
 1/1/2001 Benefit FAC-3 (3 Year Final Average Compensation)
 7/1/2000 Temporary 18 Years & Out (07/01/2000 - 11/03/2000)
 7/1/2000 Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (07/01/2000 - 11/03/2000)
 6/1/2000 DC Adoption Date 06-01-2000
 1/1/1999 Flexible E 2% COLA Adopted (01/01/1999)
 1/1/1996 E2 2.5% COLA for future retirees (12/01/1995)

15 - Dist Crt Tmstr

11/1/1995	Benefit B-4 (80% max)
7/1/1993	6 Year Vesting
3/31/1993	Blanket Resolution (All Service)
10/1/1990	Benefit C-1 (Old)
10/1/1990	Benefit F55 (With 25 Years of Service)
10/1/1990	Member Contribution Rate 0.00%
7/1/1990	Benefit FAC-5 (5 Year Final Average Compensation)
6/1/1990	8 Year Vesting
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
	Fiscal Month - January

16 - TPOAM

10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
1/1/2002	Member Contribution Rate 0.67%
1/1/2002	B-4 to Age 65 / B-3 at Age 65 (80% max)
6/1/2000	DC Adoption Date 06-01-2000
6/1/2000	Temporary 18 Years & Out (06/01/2000 - 09/03/2000)
6/1/2000	Temporary 3% Multiplier to Age 65 / B-3 at Age 65 (80% max) (06/01/2000 - 09/03/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
12/1/1993	8 Year Vesting
12/1/1993	Benefit B-3 (80% max)
3/31/1993	Blanket Resolution (All Service)
1/1/1991	Flexible E 2% COLA Adopted (01/01/1991)
1/1/1991	Benefit F55 (With 25 Years of Service)
12/1/1990	Benefit FAC-5 (5 Year Final Average Compensation)
12/1/1990	10 Year Vesting
12/1/1990	Benefit C-2/Base B-1
12/1/1990	Member Contribution Rate 0.00%
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
	Fiscal Month - January

17 - Cirt Crt Spvs

1/1/2016	DC Adoption Date 01-01-2016
10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
1/1/2001	E 2% COLA Adopted (01/01/2001)
1/1/2000	E 2% COLA Adopted (01/01/2000)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
4/1/1998	Temporary Benefit F50 (With 20 Years of Service) (04/01/1998 - 08/02/1998)
1/1/1996	E2 2.5% COLA for future retirees (04/01/1995)
4/1/1995	Benefit B-4 (80% max)
1/1/1994	Benefit FAC-5 (5 Year Final Average Compensation)

17 - Cirtc Crt Spvs

1/1/1994	6 Year Vesting
3/31/1993	Blanket Resolution (All Service)
10/1/1990	Benefit F55 (With 25 Years of Service)
10/1/1990	Member Contribution Rate 0.00%
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
	Fiscal Month - January

18 - Exempt

10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
1/1/2005	Temporary 20 Years & Out (01/01/2005 - 07/03/2005)
1/1/2005	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (01/01/2005 - 07/03/2005)
7/1/2000	Temporary 18 Years & Out (07/01/2000 - 01/03/2001)
7/1/2000	Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (07/01/2000 - 01/03/2001)
5/1/2000	DC Adoption Date 05-01-2000
1/1/2000	E2 2.5% COLA for future retirees (01/01/1996)
1/1/1999	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/1999	E2 2.3% COLA for future retirees (01/01/1996)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1996	E2 2.5% COLA for future retirees (01/01/1996)
12/1/1993	8 Year Vesting
12/1/1993	Benefit B-4 (80% max)
12/1/1993	Benefit F55 (With 25 Years of Service)
12/1/1993	Member Contribution Rate 0.00%
3/31/1993	Blanket Resolution (All Service)
1/1/1993	Benefit FAC-5 (5 Year Final Average Compensation)
1/1/1992	Flexible E 2% COLA Adopted (01/01/1992)
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
	Fiscal Month - January

20 - Sheriff POLC

10/1/2008	Day of work defined as 75 Hours a Month for All employees.
10/1/2008	Exclude Temporary Employees requiring less than 12 months
7/1/2002	Temporary 20 Years & Out (07/01/2002 - 01/03/2003)
7/1/2002	Temporary 3% Multiplier to Age 65 / 2.8% Mult. at Age 65 (80% max) (07/01/2002 - 01/03/2003)
10/1/2000	Temporary 18 Years & Out (10/01/2000 - 12/03/2000)
10/1/2000	Temporary 3% Multiplier to Age 65 / 2.8% Mult. at Age 65 (80% max) (10/01/2000 - 12/03/2000)
6/1/2000	DC Adoption Date 06-01-2000
1/1/2000	25 Years & Out
1/1/2000	E2 2.5% COLA for future retirees (07/01/1996)
1/1/1999	E2 2.3% COLA for future retirees (07/01/1996)
1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1998	2.8% Multiplier (80% max)

20 - Sheriff POLC

1/1/1997 E2 2.5% COLA for future retirees (07/01/1996)
 7/1/1996 Benefit FAC-3 (3 Year Final Average Compensation)
 12/1/1994 Benefit B-4 (80% max)
 3/31/1993 Blanket Resolution (All Service)
 12/1/1992 Benefit B-3 (80% max)
 1/1/1991 Flexible E 2% COLA Adopted (01/01/1991)
 1/1/1987 Benefit FAC-5 (5 Year Final Average Compensation)
 1/1/1987 10 Year Vesting
 1/1/1987 Benefit C-2/Base B-1
 1/1/1987 Benefit F55 (With 25 Years of Service)
 1/1/1987 Member Contribution Rate 0.00%
 6/27/1978 Exclude Temporary Employees
 4/6/1967 Covered by Act 88
 Fiscal Month - January

21 - Dispatch Unit

10/1/2008 Day of work defined as 75 Hours a Month for All employees.
 10/1/2008 Exclude Temporary Employees requiring less than 12 months
 1/1/2005 Temporary 20 Years & Out (01/01/2005 - 07/03/2005)
 1/1/2005 Temporary 3% Multiplier to Age 65 / B-4 at Age 65 (80% max) (01/01/2005 - 07/03/2005)
 6/1/2000 Temporary 18 Years & Out (06/01/2000 - 10/03/2000)
 6/1/2000 Temporary 3% Multiplier to Age 65 / B-3 at Age 65 (80% max) (06/01/2000 - 10/03/2000)
 6/1/2000 DC Adoption Date 06-01-2000
 1/1/1999 Flexible E 2% COLA Adopted (01/01/1999)
 12/1/1993 8 Year Vesting
 3/31/1993 Blanket Resolution (All Service)
 10/1/1992 Benefit B-3 (80% max)
 1/1/1991 Flexible E 2% COLA Adopted (01/01/1991)
 10/1/1990 Benefit FAC-5 (5 Year Final Average Compensation)
 10/1/1990 10 Year Vesting
 10/1/1990 Benefit F55 (With 25 Years of Service)
 10/1/1990 Member Contribution Rate 0.00%
 6/27/1978 Exclude Temporary Employees
 4/6/1967 Covered by Act 88
 Fiscal Month - January

23 - Srgts Tmstrs

10/1/2008 Day of work defined as 75 Hours a Month for All employees.
 10/1/2008 Exclude Temporary Employees requiring less than 12 months
 9/1/2003 Temporary 18 Years & Out (09/01/2003 - 12/03/2003)
 9/1/2003 Temporary 3% Multiplier to Age 65 / 2.8% Mult. at Age 65 (80% max) (09/01/2003 - 12/03/2003)
 6/1/2000 Temporary 3% Multiplier to Age 65 / 2.8% Mult. at Age 65 (80% max) (06/01/2000 - 08/03/2000)
 6/1/2000 DC Adoption Date 06-01-2000
 6/1/2000 Temporary 18 Years & Out (06/01/2000 - 08/03/2000)
 1/1/1999 2.8% Multiplier (80% max)

23 - Srgts Tmstrs

1/1/1999	Flexible E 2% COLA Adopted (01/01/1999)
1/1/1995	Benefit F50 (With 25 Years of Service)
1/1/1994	E2 2.5% COLA for future retirees (12/01/1993)
12/1/1993	Benefit B-4 (80% max)
12/1/1993	Benefit F55 (With 25 Years of Service)
12/1/1993	Member Contribution Rate 0.00%
3/31/1993	Blanket Resolution (All Service)
12/1/1990	Benefit FAC-5 (5 Year Final Average Compensation)
12/1/1990	10 Year Vesting
12/1/1990	Benefit B-3 (80% max)
6/27/1978	Exclude Temporary Employees
4/6/1967	Covered by Act 88
	Fiscal Month - January

Plan Provisions, Actuarial Assumptions, and Actuarial Funding Method

Details on MERS plan provisions, actuarial assumptions, and actuarial methodology can be found in the [Appendix](#). Some actuarial assumptions are specific to this municipality and its divisions. These are listed below.

Increase in Final Average Compensation

Division	FAC Increase Assumption
All Divisions	2.00%

Withdrawal Rate Scaling Factor

Division	Withdrawal Rate Scaling Factor
All Divisions	120%

Miscellaneous and Technical Assumptions

Loads – None.

Amortization Policy for Closed Divisions

Closed Division	Amortization Option
All Closed Divisions	Option B

County	OPEB Annual Contribution (primary government)	OPEB amount funded (primary government)	OPEB AAL (primary government)	OPEB UAAL (primary government)	OPEB Funded Ratio (primary government)
Jackson	\$ 3,134,681.00	\$ -	\$ 117,277,316.00	\$ 117,277,316.00	0.0%
Marquette	\$ 2,133,109.00	\$ -	\$ 56,322,534.00	\$ 56,322,534.00	0.0%
Huron	\$ 1,868,082.00	\$ -	\$ 20,391,576.00	\$ 20,391,576.00	0.0%
Calhoun	\$ 229,068.00	\$ -	\$ 9,234,421.00	\$ 9,234,421.00	0.0%
Grand Traverse	\$ 95,835.00	\$ -	\$ 7,265,462.00	\$ 7,265,462.00	0.0%
Gladwin	\$ 223,526.00	\$ -	\$ 6,644,136.00	\$ 6,644,136.00	0.0%
Lake	\$ 92,062.00	\$ -	\$ 5,662,729.00	\$ 5,662,729.00	0.0%
Montmorency	\$ 121,931.00	\$ -	\$ 4,823,080.00	\$ 4,823,080.00	0.0%
Shiawassee	\$ 245,761.00	\$ -	\$ 4,078,765.00	\$ 4,078,765.00	0.0%
Sanilac	\$ 403,436.00	\$ -	\$ 4,002,484.00	\$ 4,002,484.00	0.0%
Alger	\$ 136,365.00	\$ -	\$ 3,958,469.00	\$ 3,958,469.00	0.0%
Van Buren	\$ 86,141.00	\$ -	\$ 3,532,347.00	\$ 3,532,347.00	0.0%
Grafton	\$ 166,615.00	\$ -	\$ 3,388,578.00	\$ 3,388,578.00	0.0%
Crawford	\$ 154,653.00	\$ -	\$ 3,345,130.00	\$ 3,345,130.00	0.0%
Manistee	\$ 106,423.00	\$ -	\$ 3,041,084.00	\$ 3,041,084.00	0.0%
Otsego	\$ 237,764.00	\$ -	\$ 2,537,155.00	\$ 2,537,155.00	0.0%
Montcalm	\$ 7,480.00	\$ -	\$ 1,719,774.00	\$ 1,719,774.00	0.0%
Ionia	\$ 41,920.00	\$ -	\$ 1,294,753.00	\$ 1,294,753.00	0.0%
Hillsdale	\$ 16,067.00	\$ -	\$ 676,764.00	\$ 676,764.00	0.0%
Ogemaw	\$ 40,492.00	\$ -	\$ 652,502.00	\$ 652,502.00	0.0%
Kalkaska	\$ 62,000.00	\$ -	\$ 533,923.00	\$ 533,923.00	0.0%
Baraga	\$ 35,926.00	\$ -	\$ 456,733.00	\$ 456,733.00	0.0%
Antrim	\$ -	\$ -	\$ 325,198.00	\$ 325,198.00	0.0%
Oscoda	Small plan without requirement for prefunding	\$ -	\$ 303,470.00	\$ 303,470.00	0.0%
Clare	\$ 10,500.00	\$ -	\$ 196,654.00	\$ 196,654.00	0.0%
Wayne	\$ 16,400,000.00	\$ 9,100,000.00	\$ 476,700,000.00	\$ 467,600,000.00	1.9%
Kalamazoo	\$ 2,116,767.00	\$ 6,541,999.00	\$ 78,994,809.00	\$ 72,452,810.00	8.3%
Ingham	\$ 4,984,556.00	\$ 7,729,468.00	\$ 91,119,729.00	\$ 83,390,261.00	8.5%
Saginaw	\$ 7,375,569.00	\$ 12,974,484.00	\$ 148,984,488.00	\$ 136,190,004.00	8.7%
Dickinson	\$ 844,972.00	\$ 2,645,836.00	\$ 23,153,019.00	\$ 20,507,183.00	11.4%
Genesee	\$ 8,212,389.00	\$ 41,485,721.00	\$ 344,160,043.00	\$ 302,674,322.00	12.1%
Eaton	\$ 5,531,138.00	\$ 7,589,895.00	\$ 58,409,824.00	\$ 50,819,929.00	13.0%
Newaygo	\$ 721,715.00	\$ 1,433,150.00	\$ 10,618,602.00	\$ 9,185,452.00	13.5%
Mackinac	\$ 61,544.00	\$ 436,354.00	\$ 2,914,088.00	\$ 2,477,734.00	15.0%
Chippewa	\$ 1,227,886.00	\$ 3,347,187.00	\$ 17,616,773.00	\$ 14,269,586.13	18.4%
Bay	\$ 1,390,211.00	\$ 11,476,000.00	\$ 49,972,000.00	\$ 38,496,000.00	23.0%
Monroe	\$ 7,012,487.00	\$ 40,476,574.00	\$ 138,086,777.00	\$ 97,610,203.00	29.3%
St. Clair	\$ 544,600.00	\$ 37,543,635.00	\$ 125,951,254.00	\$ 88,407,619.00	29.8%
Charlevoix	\$ 527,739.00	\$ 2,500,000.00	\$ 8,024,040.00	\$ 5,524,040.00	31.2%
Gogebic	\$ 151,980.00	\$ 1,019,950.00	\$ 2,993,575.00	\$ 1,973,625.00	34.1%
Macomb	\$ 22,283,395.00	\$ 155,145,734.00	\$ 417,782,617.00	\$ 262,636,883.00	37.1%
Midland	\$ 1,720,286.00	\$ 21,145,002.00	\$ 56,434,810.00	\$ 35,289,808.00	37.5%
Berrien	\$ 2,138,969.00	\$ 28,640,255.00	\$ 66,286,999.00	\$ 37,646,744.00	43.2%
Washtenaw	\$ 13,232,991.00	\$ 96,433,183.00	\$ 206,423,236.00	\$ 109,990,053.00	46.7%
Muskegon	\$ 1,889,505.00	\$ 48,958,231.00	\$ 90,500,533.00	\$ 41,542,302.00	54.1%
Kent	\$ 349,449.00	\$ 2,336,410.00	\$ 4,032,997.00	\$ 1,696,587.00	57.9%
Mason	\$ 335,577.00	\$ 3,313,531.00	\$ 4,475,956.00	\$ 1,162,425.00	74.0%
Oceana	\$ 68,929.00	\$ 287,068.00	\$ 378,469.00	\$ 91,401.00	75.8%
Livingston	\$ 811,422.00	\$ 14,844,469.00	\$ 18,859,726.00	\$ 4,015,257.00	78.7%
Ottawa	\$ 224,871.00	\$ 5,135,652.00	\$ 5,235,560.00	\$ 99,908.00	98.1%
Cass	\$ 10,859.00	\$ 5,500,345.00	\$ 4,997,912.00	\$ (502,433.00)	110.0%
Barry	\$ 141,341.00	\$ 1,180,809.00	\$ 1,046,037.00	\$ 134,774.00	112.9%
Clinton	\$ 276,543.00	\$ 10,081,075.00	\$ 8,718,993.00	\$ 1,362,082.00	115.6%
Oakland	\$ -	\$ 1,076,904,047.00	\$ 885,504,429.00	\$ (191,399,618.00)	121.6%
AVERAGE:	\$ 2,464,419.89	\$ 28,659,271.69	\$ 80,064,565.79	\$ 57,265,604.40	
Allegan	Small plan open to certain retirees, not large enough for GASB statements				
Lapeer	Small plan open to all full-time employees, part of MERS total market fund				
Leelanau	No primary government plan - Terminated in 2015				
Isabella	No primary government plan				
Houghton	No primary government plan				
Westford	No primary government plan				
Alpena	No primary government plan				
Tuscola	No primary government plan				
Delta	No primary government plan				
Iosco	No primary government plan				
Menominee	No primary government plan				
Cheboygan	No primary government plan				
Emmet	No primary government plan				
Alcona	No primary government plan				
Schoolcraft	No primary government plan				
Benzie	No primary government plan				
Branch	No primary government plan				
St. Joseph	No primary government plan				
Presque Isle	No primary government plan				
Mecosta	No primary government plan				
Arenac	No primary government plan				
Osceola	No primary government plan				
Luce	No primary government plan				
Iron	No primary government plan				
Ontonagon	No primary government plan				
Missaukee	No primary government plan				
Keweenaw	No primary government plan				
Lenawee	No primary government plan				
Roscommon					
TOTALS:					
					*Financed on a "pay-as-you-go" basis

County	Pension Annual Contribution (prima Pension Amount Funded (primary government)	Pension AAL (primary government)	Pension UAAL (primary government)	Pension Funded Ratio (primary government)
Grand Traverse	\$ 4,479,187.00	\$ 38,150,118.00	\$ 87,971,749.00	43%
Wayne	\$ 80,180,620.00	\$ 814,619,598.00	\$ 1,660,415,701.00	49%
Montmorency	\$ 478,089.00	\$ 5,809,023.00	\$ 11,333,299.00	51%
Luce	\$ 268,429.00	\$ 3,700,741.00	\$ 6,605,360.00	56%
Alpena	\$ 1,147,267.00	\$ 11,171,240.00	\$ 19,700,801.00	57%
Ionia	\$ 396,687.00	\$ 8,616,264.00	\$ 14,989,123.00	57%
Houghton	\$ 961,919.00	\$ 15,225,951.00	\$ 26,450,836.00	58%
Dickinson	\$ 922,492.00	\$ 17,999,298.00	\$ 30,976,991.00	58%
Montcalm	\$ 554,145.00	\$ 21,792,702.00	\$ 36,580,953.00	60%
Oscoda	\$ 214,465.00	\$ 4,479,257.00	\$ 7,427,320.00	60%
Calhoun	\$ 2,561,325.00	\$ 52,924,661.00	\$ 86,121,540.00	61%
Eaton	\$ 2,295,134.00	\$ 81,813,312.00	\$ 133,008,900.00	62%
Emmet	\$ 925,752.00	\$ 8,410,712.00	\$ 13,649,257.00	62%
Hillsdale	\$ 138,180.00	\$ 4,626,228.00	\$ 7,375,436.00	62%
Alcona	\$ 684,729.00	\$ 8,386,880.00	\$ 13,268,698.00	63%
Wexford	\$ 790,703.00	\$ 16,999,243.00	\$ 26,864,098.00	63%
Barry	\$ 1,873,216.00	\$ 30,142,009.00	\$ 45,727,119.00	66%
Iron	\$ 253,110.00	\$ 5,258,907.00	\$ 7,965,826.00	66%
Marquette	\$ 4,479,579.00	\$ 62,416,376.00	\$ 94,005,662.00	66%
Ingham	\$ 9,150,069.00	\$ 227,196,712.00	\$ 339,170,352.00	67%
Gladwin	\$ 609,169.00	\$ 13,592,987.00	\$ 20,281,846.00	67%
Shiawassee	\$ 2,843,770.00	\$ 69,082,458.00	\$ 101,929,727.00	68%
Crawford	\$ 532,861.00	\$ 12,127,349.00	\$ 17,852,568.00	68%
Chippewa	\$ 1,169,588.00	\$ 26,073,945.00	\$ 38,369,753.00	68%
Roscommon	\$ 654,650.00	\$ 17,686,625.00	\$ 25,900,516.00	68%
Mackinac	\$ 492,566.00	\$ 10,899,179.00	\$ 15,924,775.00	68%
Otsego	\$ 640,433.00	\$ 13,160,140.00	\$ 19,092,334.00	69%
Genesee	\$ 7,679,505.00	\$ 241,903,690.00	\$ 350,565,644.00	69%
Iosco	\$ 983,254.00	\$ 17,028,021.00	\$ 24,611,588.00	69%
Van Buren	\$ 889,310.00	\$ 20,626,972.00	\$ 29,774,756.00	69%
Oscoda	\$ 436,029.00	\$ 6,610,255.00	\$ 9,528,051.00	69%
Menominee	\$ 1,165,771.00	\$ 14,923,118.00	\$ 21,476,852.00	69%
Antrim	\$ 1,083,414.00	\$ 17,157,372.00	\$ 24,452,741.00	70%
Mason	\$ 1,646,746.00	\$ 35,740,087.00	\$ 50,917,673.00	70%
Muskegon	\$ 5,775,708.00	\$ 173,391,073.00	\$ 245,686,093.00	71%
Presque Isle	\$ 314,762.00	\$ 8,218,618.00	\$ 11,637,330.00	71%
Benzie	\$ 670,851.00	\$ 10,586,363.00	\$ 14,957,192.00	71%
Schoolcraft	\$ 478,754.00	\$ 11,442,833.00	\$ 16,101,670.00	71%
Keweenaw	\$ 89,651.00	\$ 2,139,533.00	\$ 3,008,269.00	71%
Arenac	\$ 435,720.00	\$ 8,197,841.00	\$ 11,460,594.00	72%
Gogebic	\$ 1,102,681.00	\$ 24,961,585.00	\$ 34,810,031.00	72%
Baraga	\$ 229,399.00	\$ 4,494,582.00	\$ 6,266,823.00	72%
Kalkaska	\$ 568,543.00	\$ 13,403,662.00	\$ 18,688,335.00	72%
Ontonagon	\$ 268,414.00	\$ 6,621,960.00	\$ 9,188,397.00	72%
Isabella	\$ 1,266,473.00	\$ 29,854,502.00	\$ 41,313,221.00	72%
Manistee	\$ 1,304,362.00	\$ 32,531,823.00	\$ 44,955,921.00	72%
Livingston	\$ 5,349,726.00	\$ 85,374,048.00	\$ 117,893,967.00	72%
Branch	\$ 1,646,528.00	\$ 9,602,583.00	\$ 13,247,910.00	72%
Graiot	\$ 1,091,184.00	\$ 19,239,156.00	\$ 26,397,038.00	73%
Clare	\$ 557,160.00	\$ 14,591,627.00	\$ 19,972,936.00	73%
Charlevoix	\$ 1,803,154.00	\$ 32,589,794.00	\$ 44,570,091.00	73%
Huron	\$ 2,409,417.00	\$ 53,172,343.00	\$ 72,641,921.00	73%
Oceana	\$ 527,348.00	\$ 14,829,305.00	\$ 20,246,547.00	73%
Alger	\$ 536,215.00	\$ 8,139,731.00	\$ 11,112,763.00	73%
Monroe	\$ 7,275,798.00	\$ 191,053,794.00	\$ 259,978,879.00	73%
Washtenaw	\$ 9,083,211.00	\$ 244,659,498.00	\$ 332,446,797.00	74%
Tuscola	\$ 810,207.00	\$ 23,153,412.00	\$ 31,228,282.00	74%
Berrien	\$ 7,172,058.00	\$ 150,797,924.00	\$ 199,695,951.00	76%
Delta	\$ 1,031,587.00	\$ 25,602,525.00	\$ 33,597,299.00	76%
Cheboygan	\$ 768,370.00	\$ 17,928,494.00	\$ 23,497,580.00	76%
Jackson	\$ 5,855,877.00	\$ 149,161,764.00	\$ 195,476,236.00	76%
Cass	\$ 629,127.00	\$ 19,509,882.00	\$ 25,503,674.00	76%
Missaukee	\$ 231,482.00	\$ 4,159,297.00	\$ 5,407,209.00	77%
AVERAGE:	\$ 4,226,365.05	\$ 88,196,911.00	\$ 114,341,366.01	77%
Leelanau	\$ 1,767,785.00	\$ 19,263,410.00	\$ 24,895,647.00	77%
Lake	\$ 774,969.00	\$ 11,289,563.00	\$ 14,567,061.00	78%
Midland	\$ 946,928.00	\$ 22,870,249.00	\$ 29,163,963.00	78%
Ogemaw	\$ 536,464.00	\$ 20,147,962.00	\$ 25,688,508.00	78%
Sanilac	\$ 2,713,414.00	\$ 51,874,257.00	\$ 65,570,816.00	79%
Lapeer	\$ 3,567,407.00	\$ 82,609,968.00	\$ 104,387,147.00	79%
Newaygo	\$ 1,135,610.00	\$ 19,939,302.00	\$ 24,670,973.00	81%
St. Clair	\$ 7,179,980.00	\$ 211,588,333.00	\$ 243,930,941.00	87%
Clinton	\$ 3,022,230.00	\$ 44,391,325.00	\$ 50,866,945.00	87%
Ottawa	\$ 35,349,429.00	\$ 202,963,806.00	\$ 232,308,891.00	87%
Mecosta	\$ 1,334,865.00	\$ 29,100,552.00	\$ 32,445,793.00	90%
St. Joseph	\$ 3,327,340.00	\$ 36,197,293.00	\$ 39,639,114.00	91%
Saginaw	\$ 52,025,528.00	\$ 131,204,567.00	\$ 139,309,355.00	94%
Allegan	\$ 3,486,236.00	\$ 53,004,750.00	\$ 55,773,114.00	95%
Macomb	\$ 21,281,612.00	\$ 885,452,503.00	\$ 922,699,789.00	96%
Kent	\$ 8,858,387.00	\$ 771,969,061.00	\$ 803,932,291.00	96.02%
Oakland	\$ 4,554,832.00	\$ 745,659,828.00	\$ 758,378,456.00	98%
Lenawee	\$ 71,347.00	\$ 1,891,232.00	\$ 1,823,612.00	104%
Bay	\$ 2,574,104.00	\$ 252,893,180.00	\$ 225,074,684.00	112%
Kalamazoo	\$ 1,320,723.00	\$ 192,901,018.00	\$ 166,754,193.00	116%
TOTALS:				#DIV/0!



Presentation for Grand Traverse County
– Pension Advisory Board
November 10, 2016

Municipal Employees' Retirement System

1134 Municipal Way, Lansing, MI 48917
800.767.MERS (6377)

About MERS of Michigan

- The Municipal Employees Retirement System of Michigan (MERS) is an independent, professional retirement services company that was **created to administer** the retirement plans for Michigan municipalities on a not-for-profit basis
- In 1945 we began with four municipalities in the defined benefit program, and today, our customers are more diverse than ever

BY THE NUMBERS



of Michigan municipalities participate in MERS programs



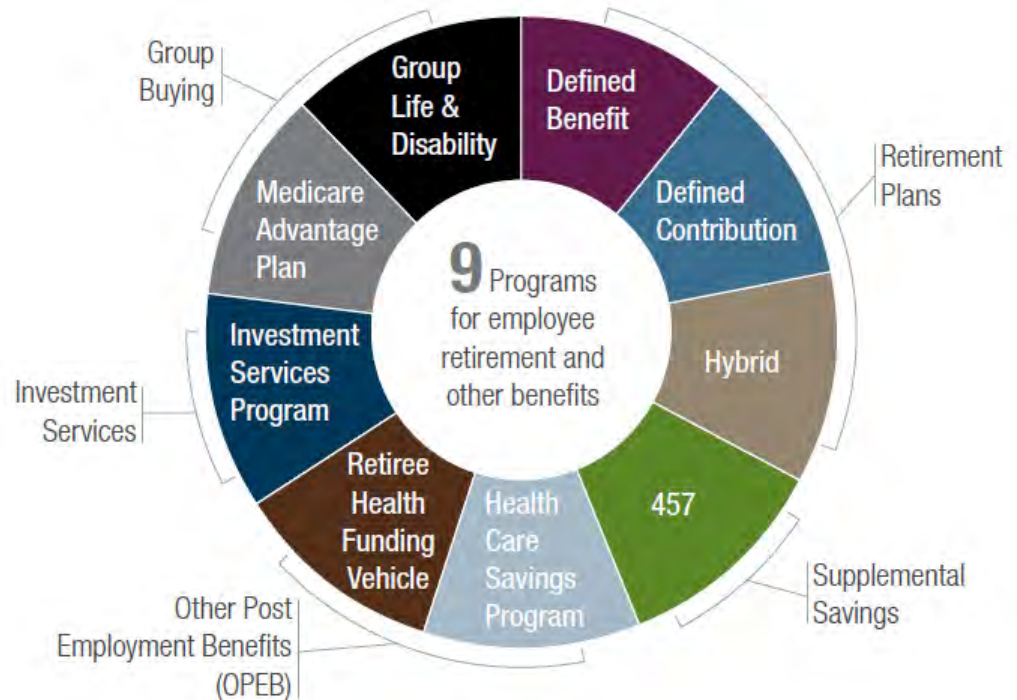
participants



in combined total assets

A Program for Every Need

- We recognize that every member has unique needs and we offer a broad range of customizable plans to fit our members' budgets, needs and goals
- We listen to our members to develop new, updated products and online tools that help our members administer their programs



An Independent Elected Board

- The MERS Retirement Board has the fiduciary responsibility for the investment of assets and oversees the retirement system
- Elected board operates without compensation
- As the fiduciary, ensures MERS operates in the best interest of our members and uses fiscal best practices to hold the line on expenses

Three Officer Members:

Officers of a participating municipality, elected by membership



MERS Retirement Board

is responsible for administration of the system with fiduciary responsibility for the investment of assets and oversight.

Two Expert Members:

With experience in retirement systems or investment management, appointed by the Board

One Retiree Member:

Retiree of the System, appointed by the Board

Fiduciary Responsibility

- With recent high-profile class action suits alleging violation of fiduciary duty, employers need to manage fiduciary risks
- When fiduciary breaches occur there can be:
 - Personal liability
 - Fines and penalties
 - Legal action
 - Plan disqualification
 - Higher operating expenses



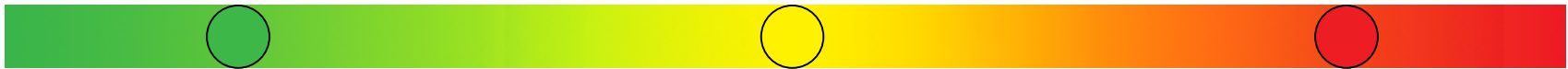
Fiduciary Oversight

- A fiduciary is anyone who has discretionary authority over:
 - Plan assets
 - The administration of the plan
 - The management of the plan
- Fiduciaries are subject to standards of conduct and must act on behalf of participants
- Responsibilities:
 - Adherence to Plan Document
 - Investment oversight
 - Ensure reasonable expenses



Degrees of Fiduciary Responsibility

When it comes to the fiduciary responsibility for your retirement plan, not all plan providers assume the role of sole fiduciary.



Plan Provider

In some instances, the plan provider takes fiduciary responsibility, establishes the plan document, determines the investment options available and monitors performance.

MERS provides employers with this level of confidence.

Co-Fiduciary Responsibility

Many plan providers act as co-fiduciaries. The provider offers investment information and makes recommendations. The employer is responsible for selecting and monitoring the performance of the funds.

The plan provider and employer share fiduciary responsibility for the plan.

Employer

Most plan providers act only as a record keeper and leave decisions regarding the plan document, investment options and performance monitoring to the employer.

The employer has unlimited choices under this scenario, but risks being held liable for fiduciary violations.

Partnering with MERS

- Grand Traverse County began partnering with MERS to offer a Defined Benefit Plan to employees in 1966
- In 2000, the County began offering a Defined Contribution Plan to new hires
- Partnering with MERS provides administration and investments at a high quality and low cost

Retirement Plan Administration

- Benefit Administration
 - Life Changes (Qualified Domestic Relationship Orders and Eligible Domestic Relations Orders)
 - Disability and Death Benefits
 - Retirement and Distribution Processing
 - Retiree Payments
 - Tax Administration (1099-R processing)
 - Annual Member Statements
 - Fully staffed Service Center team available 8:00am-5:00pm weekly to answer questions and provide education to County employees
 - Dedicated regional education specialist that provides quarterly onsite education and planning with employees
 - Statewide educational events, webinars and online resources

Retirement Plan Administration

- Plan Administration
 - Legal Oversight, including an IRS qualified Plan Document
 - Actuarial Services
 - Financial Reporting
 - Comprehensive Annual Financial Report (CAFR), which are independently audited each year
 - Governmental Accounting Standards Board (GASB) 67 and 68 adherence and assistance
 - Dedicated regional contacts available to assist you with strategic planning surrounding retirement plans

Plan Costs

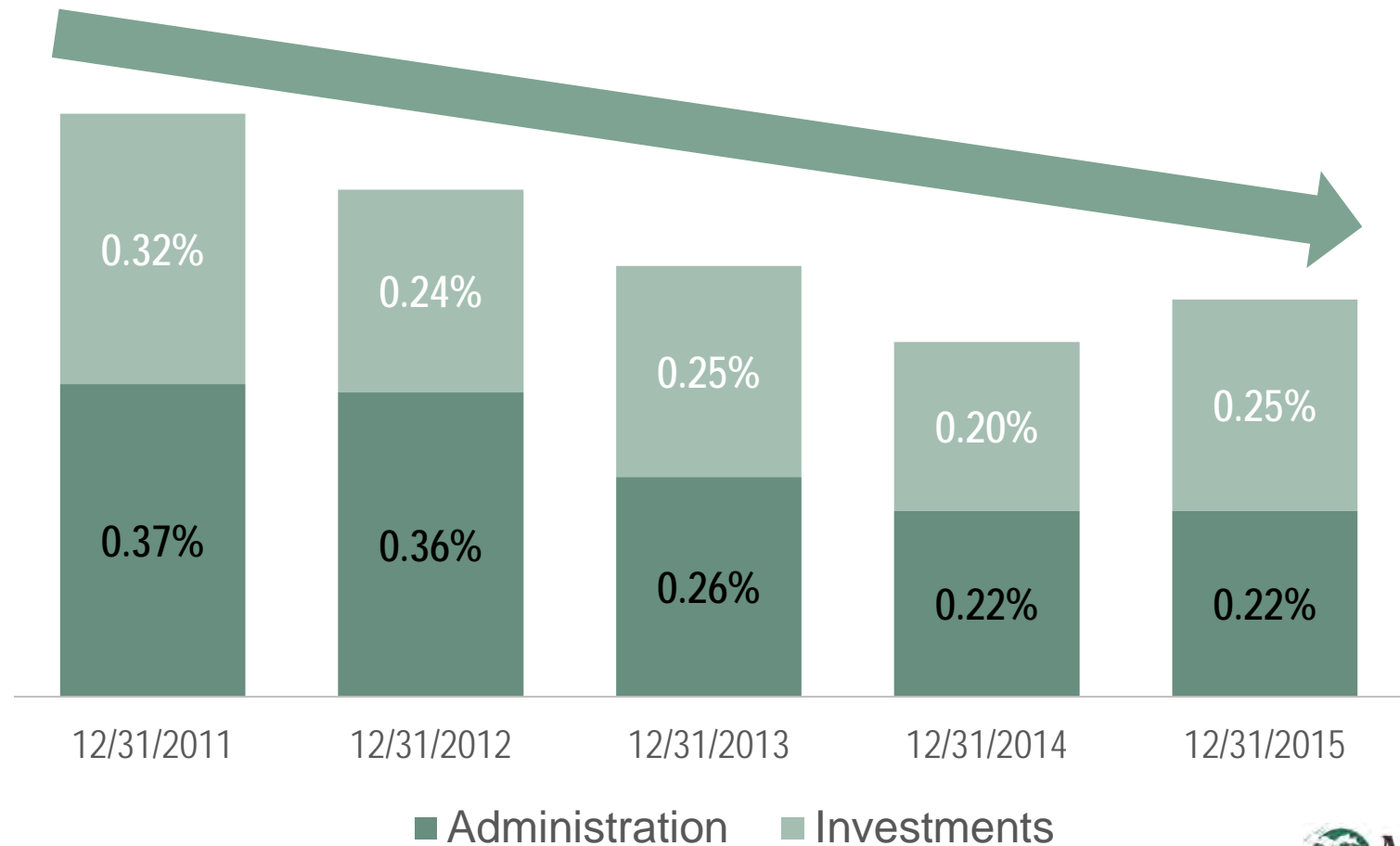
- Defined Benefit Plan costs vary by each municipality depending on the benefit plan design determined at the local level, and the ultimate cost of the plan will not be known until the last retiree/beneficiary stops drawing a benefit
- Defined Contribution Plan costs are the contribution levels that are determined at the local level
- There are associated administrative and investment costs, which are found on quarterly statements

Administrative Costs Include:

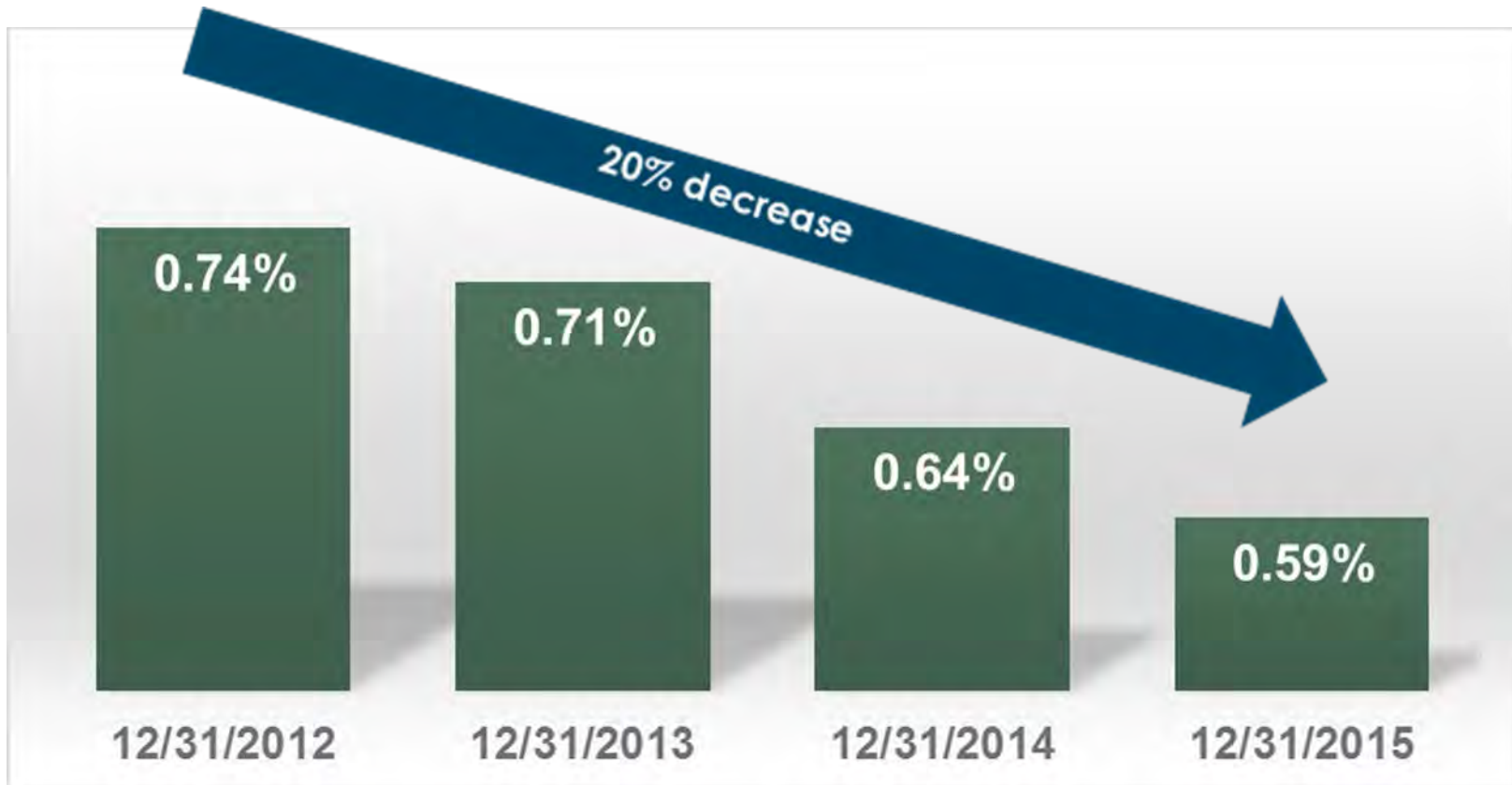
- Plan governance
- On-staff auditor and legal counsel
- State and Federal legislative advocacy
- Financial reporting
- Administration of benefits (life changes, member statements, retirement processing, tax administration, death & disability, etc.)
- Actuarial services
- Participant education and resources

MERS Defined Benefit Costs

5-Year History



MERS Defined Contribution Costs





Defined Benefit Plan

Defined Benefit Formula

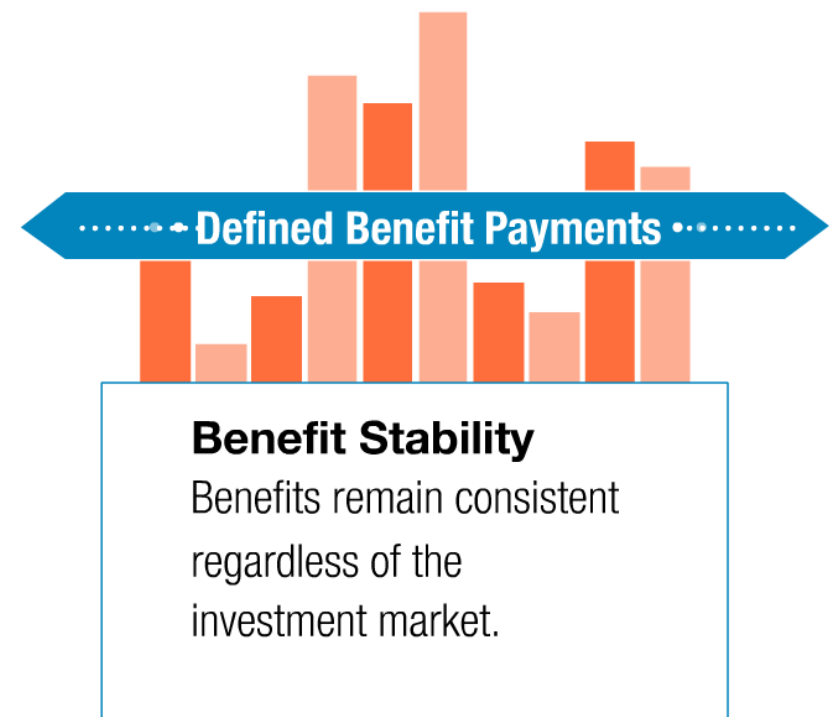


The benefit formula is comprised of three components:

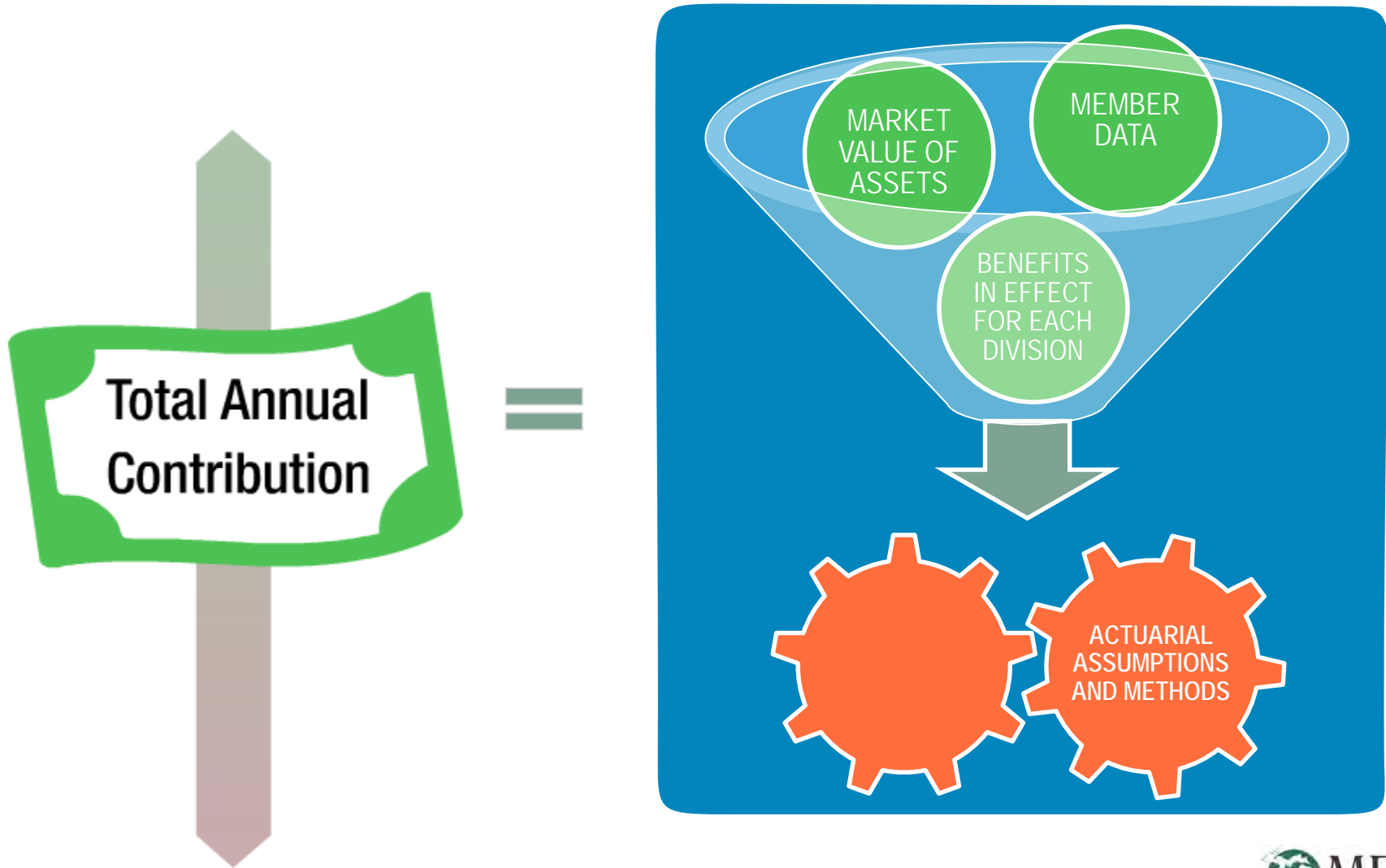
- ***Final Average Compensation*** is an average of the employee's highest consecutive wages over a period of time, usually three years
- ***Service Credit*** is earned for each month of work that meets the employer's requirements
- The ***Benefit Multiplier*** is a specific percentage adopted by the employer ranging from 1.0% to 2.5%

Lifetime Benefit Stability

- The calculated benefit will not change with investment market fluctuations
- Retirement benefits of municipal employees are constitutionally protected
- Defined benefit plans are required to be pre-funded
- Each municipality's retirement plan is maintained in a separate trust, which gives our members the benefits of pooling resources for investments while maintaining the integrity and individuality of each plan



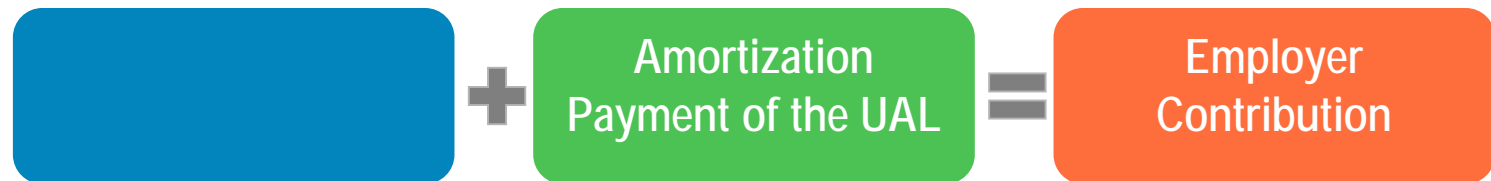
Calculating the Total Annual Contribution



Total Annual Contribution

The contribution is made up of two parts:

1. **Normal Cost**– Present value of benefits allocated to the current plan year less any employee contribution
2. **Amortization Payment of Unfunded Accrued Liability (UAL)**– Payment to reduce any shortfall between liability for past service and assets



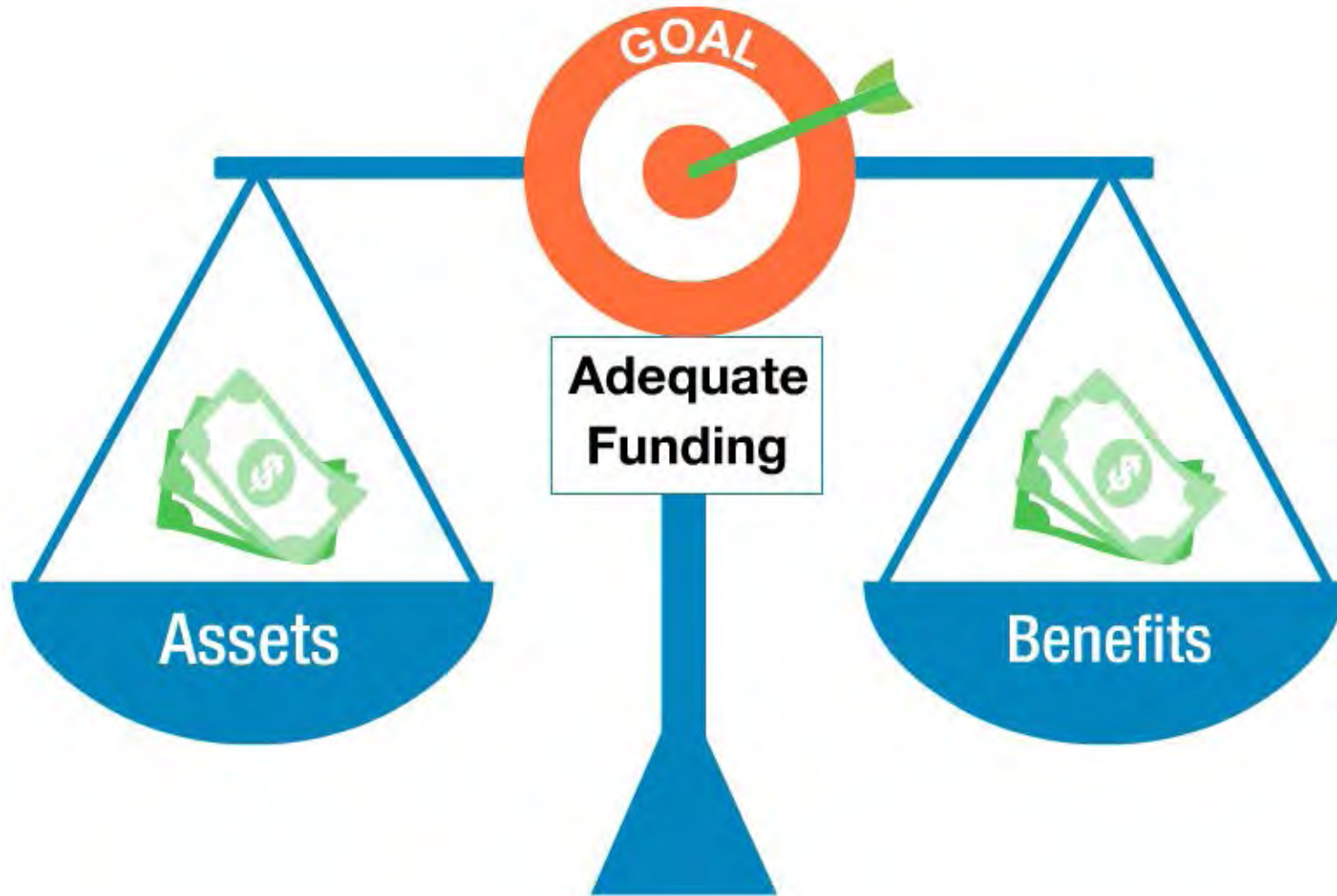
Key Actuarial Assumptions and Methods

- Investment Assumption
 - MERS assumes a 7.75% long term rate of return
- Life Expectancy Assumption
- Amortization Policy
 - MERS uses a fixed amortization period

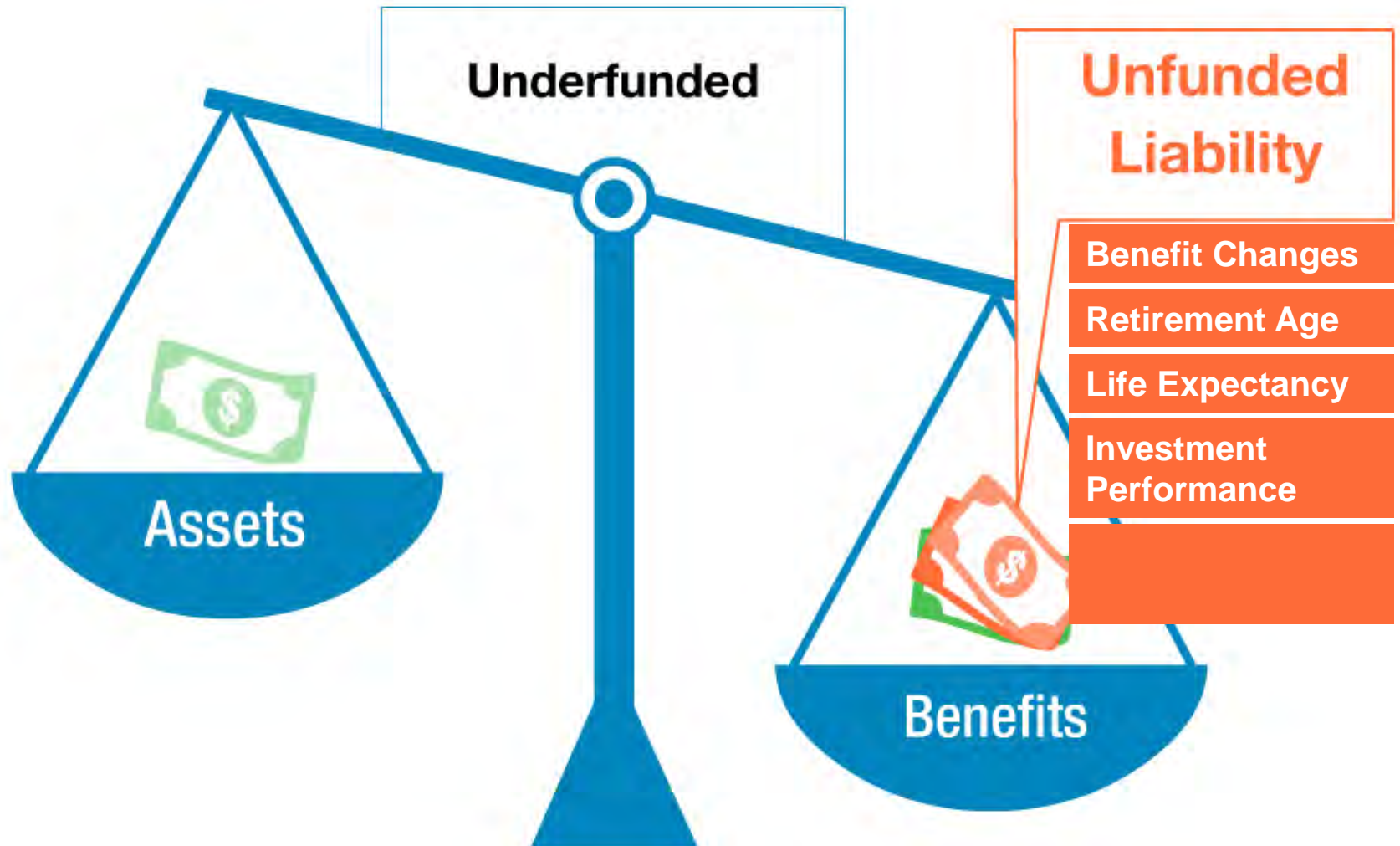
Investment Assumption

- The investment return assumption determines the portion of benefits that is assumed to be provided by investment income
 - MERS investment earnings fund more than half of the benefits
- When developing economic assumptions such as this we consider:
 - A long-term historical perspective
 - Whether recent history fundamentally changed the future economic outlook
 - Analysis and forecasts from experts and governmental sources
 - Evaluation of economic assumptions against comparably sized public retirement systems

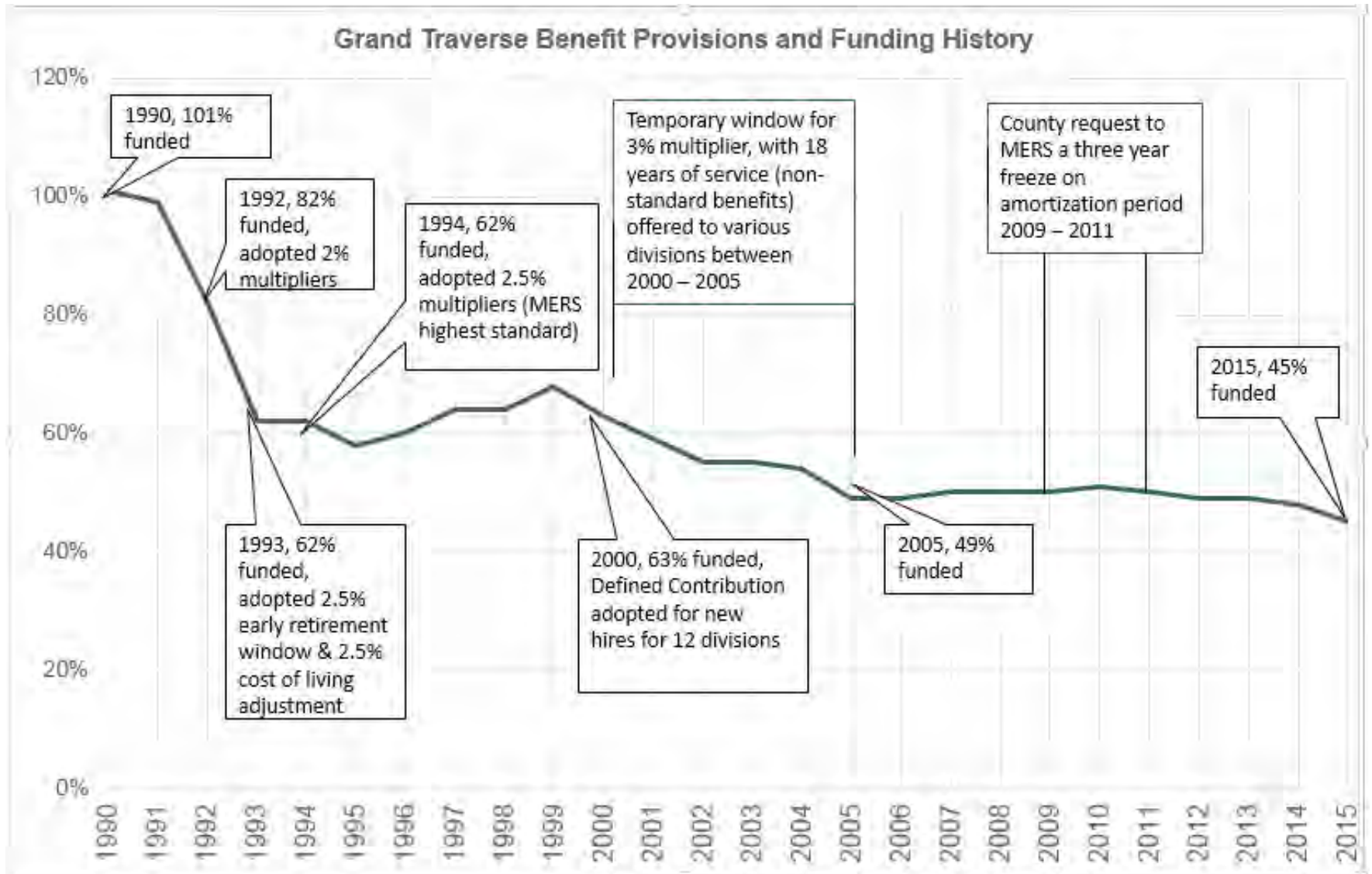
A Fully Funded Plan



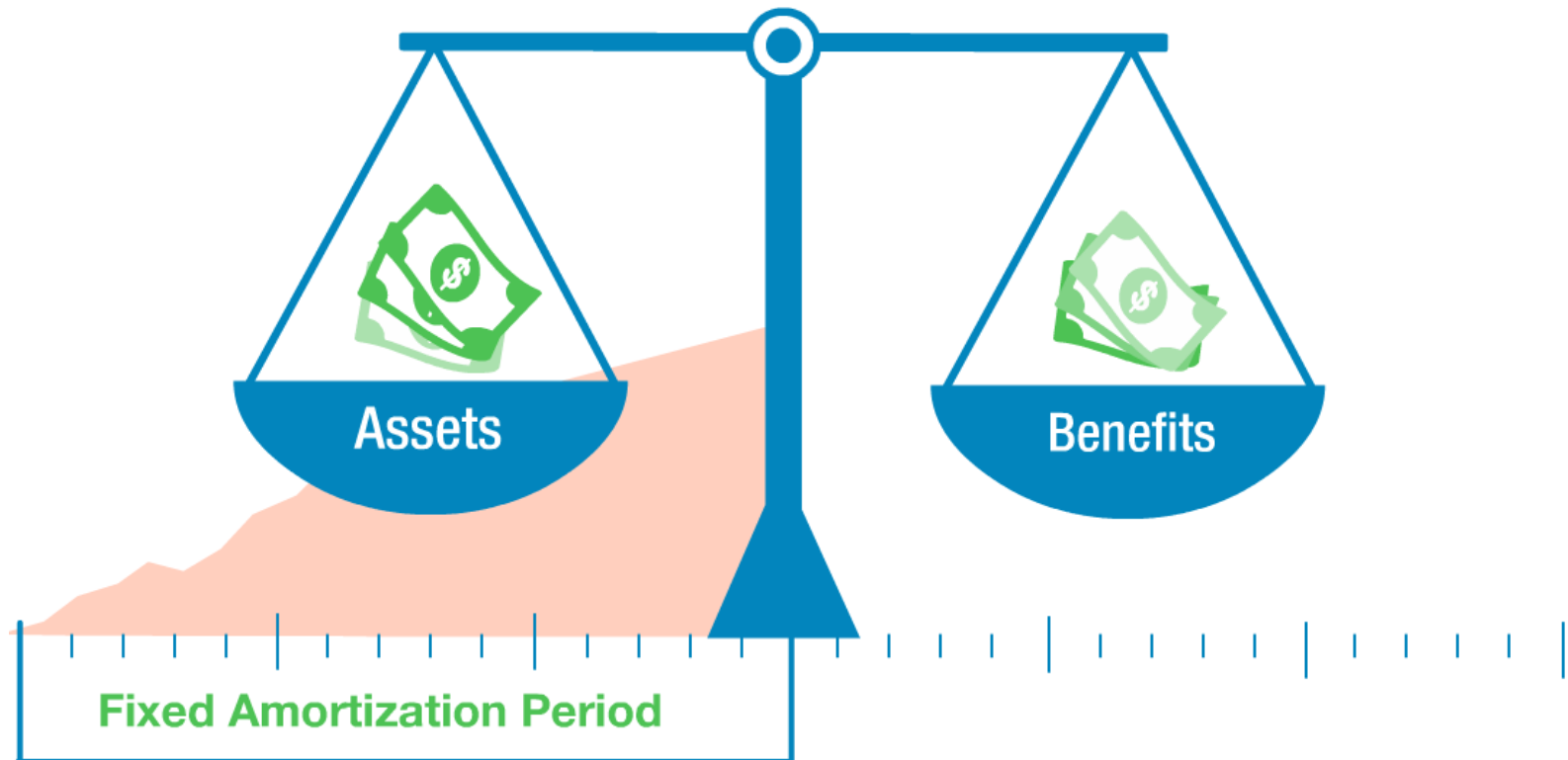
Unfunded Accrued Liability



Grand Traverse County History



Paying Down the UAL



MERS uses a fixed amortization period, as recommended by actuarial firms and the Government Finance Officers Association.

The amortization policy doesn't make the benefits cheaper or more expensive; it simply impacts the pattern of contributions

Annual Actuarial Valuation

- The annual actuarial valuation (AAV) is an important tool to help you budget for your municipality's retirement benefits
- This report is prepared by CBIZ Retirement Plan Services, in conformity with:
 - Generally recognized actuarial principles and practices
 - The Actuarial Standards of Practice issued by the Actuarial Standards Board
 - Compliance with Act No. 220 of the Public Acts of 1996
 - MERS Plan Document

Other Plan Information

- Quarterly Statement of Fiduciary Net Position
- Recent Experience Study, including projected impacts
- Investment Policy Statement
- Investment Performance and Cost
- Plan Handbooks
- Comprehensive Annual Financial Report (CAFR)

Alternative Scenarios and Tools

Market Value vs. Actuarial Value

- Each Annual Actuarial Valuation explains the difference between market and actuarial value of assets, and provides detailed information on both values, as well as projections which enables the County to make budget decisions based on your goals and priorities
- Actuarial value of assets, used to determine both your funded ratio and your required employer contribution, is based on a smoothed value of assets (10-year smoothing prior to 2016; 5-year smoothing beginning in 2016)
 - The smoothed rate of return as of 12/31/2015 was 5.21%
- Asset smoothing is a tool to reduce contribution volatility; however, when the smoothed actuarial rate is less than the assumed actuarial rate, gradual increases in contributions will occur



Defined Contribution Plan

How Defined Contribution Plans Evolved

- ERISA enacted in 1974, which provided tax-deferred savings for retirement
- Started as supplemental plans to traditional pension plans
- First 401(k) established by Johnson & Johnson in 1979, and others followed, including governmental plans
- Tax law changes in 1986 no longer allowed Governmental plans established after 1986 to be a 401(k) plan
- While many municipalities still provide Defined Benefit plans, many are moving towards Defined Contribution Plans as the sole retirement plan offering

Exploring Plan Types

Types of Governmental Defined Contribution Plans			
	401(a)	457(b)	Section 115 Trust
Primary Purpose	Pension Plan	Supplement Pension	Health Care Costs
Employee Participation	Mandatory	Voluntary	Mandatory
Employee Contribution Structure	Fixed	Flexible	Fixed
Vesting on Employer Contributions	Allowed	Immediate	Allowed

Defined Contribution Plans: Comparison

Plan Feature Comparison			
Plan Type	401(k)	401(a)	457(b)
Available for Governmental Entities	No (post-1986)	Yes	Yes
Enrollment	Voluntary	Mandatory	Voluntary
Employee Contribution Flexibility	Complete Flexibility	Limited (Choice only at Enrollment)	Complete Flexibility
Required Contributions	No	Yes	No
Automatic Enrollment Feature	Yes	100% (participation already required)	Yes
Automatic Contribution Escalation	Yes	No	Yes
Roth Option Available	Yes	No	Yes
Allows Employer Contribution	Yes	Yes	Yes (but included as employee earnings)
Vesting Requirements Possible	Yes	Yes	No

Advantages of Plan Type

Plan Comparison			
Plan Type	401(k)	401(a)	457(b)
Advantages	<ul style="list-style-type: none"> • Voluntary participation • Flexible employee contributions • Vesting on employer contributions • Roth option 	<ul style="list-style-type: none"> • 100% participation • Employer can determine what employees contribute • Vesting on employer contributions 	<ul style="list-style-type: none"> • Voluntary participation • Flexible employee contributions • Roth option
Disadvantages	<ul style="list-style-type: none"> • Employees might not participate • Employees might not contribute enough 	<ul style="list-style-type: none"> • Employees can not voluntarily change contributions after initial enrollment • Roth option not available 	<ul style="list-style-type: none"> • Employees might not participate • Employees might not contribute enough • Immediate Vesting • Employer contributions included in employee earnings

MERS Defined Contribution Plan

- A qualified retirement plan under Section 401(a) of the Internal Revenue Code (also known as a governmental money purchase plan)
- As a qualified plan, participants are not taxed on employer contributions or earnings until assets are withdrawn
- **MERS is the Sole Fiduciary for Your Plan**
 - Selecting and monitoring investment options used by participants
 - Employing in-house legal staff to monitor state and federal laws, and ensuring our programs are in compliance
 - Actively maintaining our tax exempt status with the IRS

Straightforward Costs

Our members benefit from the economies of scale and low administrative costs that come with being part of a large pool of assets.

As of 09/30/2016 our average fund cost was just 0.58%.

1

MERS clearly discloses the fees charged for custodial, recordkeeping, operating and investment management costs, following the Department of Labor guidelines.

2

MERS charges the same administrative fees and recordkeeping costs on each of our professionally managed portfolios.

3

MERS reimburses all revenue sharing received from outside mutual funds directly to participants.

1	2	MERS Operating Costs: Costs to run the day-to-day operations of the plan, which include legal, accounting, auditing, compliance, printing, and overhead costs.	0.20%
		Custody and Recordkeeping Costs: Costs related to bookkeeping, settling trade activity, and holding assets in custody at a bank.	0.15%
	Investment Management Expense: All costs incurred in the overall management of the fund. The Investment Management Expense varies based on the level of assets. As assets increase, the Investment Management Expense is expected to decline.	0.97%	
	3	Fund Company Rebate The Fund Company Rebate is a reimbursement from the fund company for services provided by our recordkeeper.	-0.38%
	Total Annual Operating Expense: The Total Annual Operating Expense reduces the rate of return of the investment option Total Annual Operating Expense of 0.94% means that for every \$1,000 invested in the Real Estate Stock fund, a participant is charged \$9.40 in fees a year.	0.94%	

MERS Investment Menu Resources

Using research and best practices, MERS developed our investment information to assist investors of every experience level:

2Q 2017 Investment Menu Summary
 Page 1 of 17
 MERS Municipal Employees' Retirement System

Performance & Fees
 Defined Contribution Plan, Hybrid Plan, Zero-Beta, Variable Plan, Savings Program, and 401(k) Program

Fund Name	Proportion of Assets	Average Annual Total Return					Total Annual Operating Expense Ratio
		1Yr	3Yr	5Yr	10Yr		
Domestic Equities							
MERS 2025 Retirement Strategy	1.7%	4.0%	-	-	-	0.52%	
MERS 2015 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2020 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2025 Retirement Strategy	1.7%	4.0%	-	-	-	0.52%	
MERS 2015 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2020 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2025 Retirement Strategy	1.7%	4.0%	-	-	-	0.52%	
MERS 2015 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2020 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2025 Retirement Strategy	1.7%	4.0%	-	-	-	0.52%	
MERS 2015 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2020 Retirement	11.9%	14.1%	-	-	-	0.23%	
MERS 2025 Retirement Strategy	1.7%	4.0%	-	-	-	0.52%	
International							
MERS 2025 Retirement Strategy	0.1%	1.1%	-	-	-	0.18%	
MERS 2015 Retirement	0.1%	1.1%	-	-	-	0.18%	
MERS 2020 Retirement	0.1%	1.1%	-	-	-	0.18%	
MERS 2025 Retirement Strategy	0.1%	1.1%	-	-	-	0.18%	
MERS 2015 Retirement	0.1%	1.1%	-	-	-	0.18%	
MERS 2020 Retirement	0.1%	1.1%	-	-	-	0.18%	
MERS 2025 Retirement Strategy	0.1%	1.1%	-	-	-	0.18%	
Fixed Income							
MERS 2025 Retirement Strategy	17.0%	1.3%	-	-	-	0.11%	
MERS 2015 Retirement	17.0%	1.3%	-	-	-	0.11%	
MERS 2020 Retirement	17.0%	1.3%	-	-	-	0.11%	
MERS 2025 Retirement Strategy	17.0%	1.3%	-	-	-	0.11%	
MERS 2015 Retirement	17.0%	1.3%	-	-	-	0.11%	
MERS 2020 Retirement	17.0%	1.3%	-	-	-	0.11%	
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MERS 2025 Retirement Strategy	17.0%	1.3%	-	-	-	0.11%	
MERS 2015 Retirement	17.0%	1.3%	-	-	-	0.11%	
MERS 2020 Retirement	17.0%	1.3%	-	-	-	0.11%	
MERS 2025 Retirement Strategy	17.0%	1.3%	-	-	-	0.11%	

Performance and Fee Summary with Categories



Overview Booklet with Glossary of Terms

This grid displays detailed fund sheets for various MERS investment funds, including performance metrics, asset allocation, and risk factors. The funds shown include:

- MERS 2015 Retirement
- MERS 2020 Retirement
- MERS 2025 Retirement Strategy
- MERS 2015 Retirement Strategy
- MERS 2020 Retirement Strategy
- MERS 2025 Retirement Strategy
- MERS 2015 Retirement Strategy
- MERS 2020 Retirement Strategy
- MERS 2025 Retirement Strategy

Detailed Fund Sheets



MERS Investments

Fiduciary Responsibility

MERS BOARD

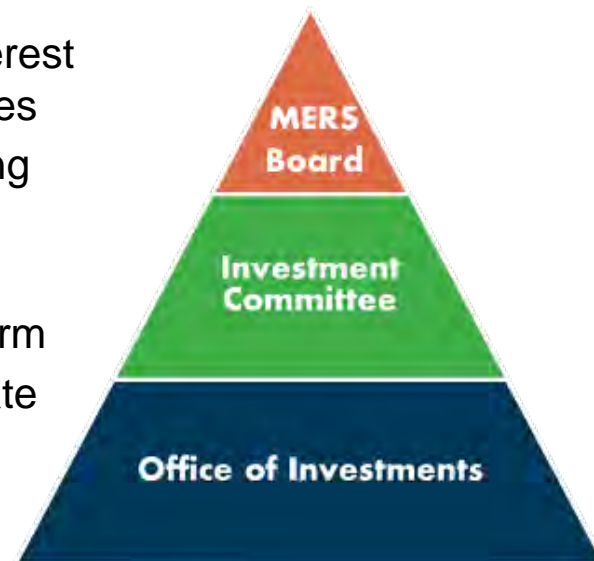
- Functions as sole fiduciary, acting exclusively in the interest of providing benefits to participants and their beneficiaries
- Sets general investment policy, responsible for managing costs, and diversifying the investments

INVESTMENT COMMITTEE

- Serves as the Board's investment policy development arm
- Approves recommendations to hire and fire core mandate managers

OFFICE OF INVESTMENTS

- Internal decision making group
- Makes recommendations to Investment Committee
- Responsible for day-to-day investment management activities



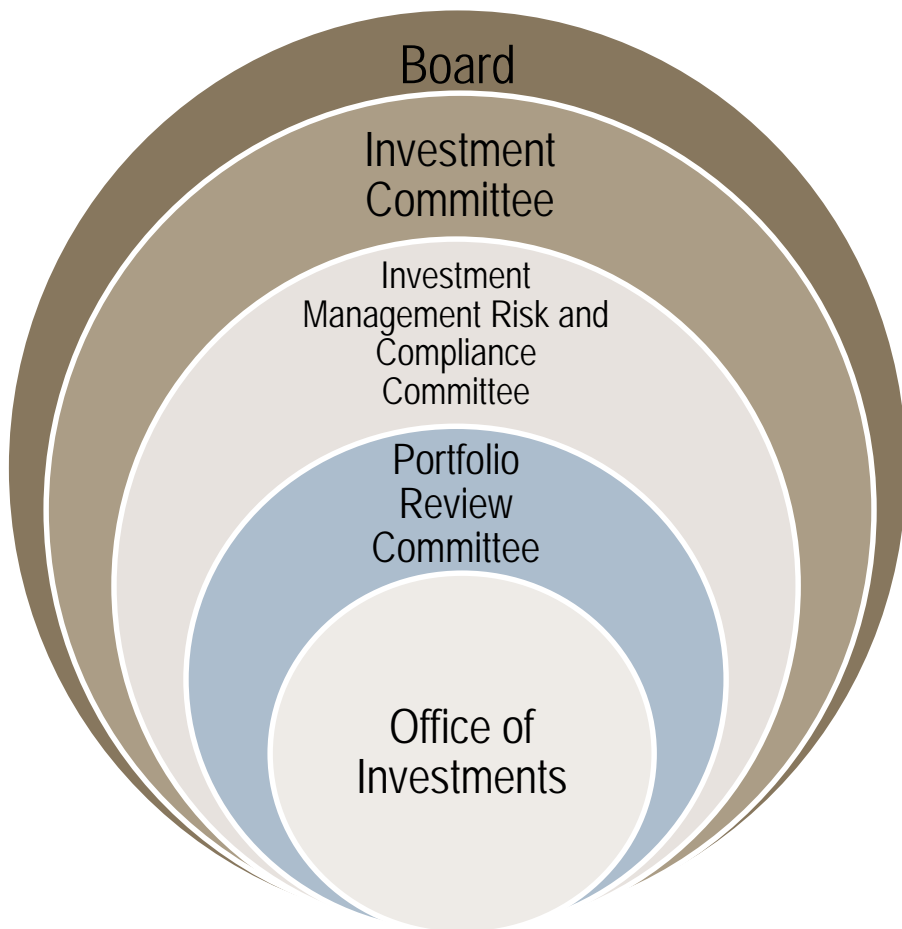
LAW AND REGULATION

- MERS follows Michigan state law and prudent person standards of diligence
- We maintain strict oversight and management with quarterly compliance reviews
- Our assets are invested in accordance with the Public Employee Retirement System Investment Act (PERSIA)

MERS Office of Investments Team

- Collectively, over 200 years of experience
 - Pension administration
 - Investment management
 - Business administration
 - Pension and investment law
 - Public policy
 - Commercial banking
 - Legislative affairs
 - Commercial real estate
- Advanced Degrees and Certifications:
 - Multiple MBAs
 - Juris Doctor
 - Multiple CFA Charterholders
 - Finance
 - Actuarial Science
 - Economics
 - International Business
 - Political History

Operations and Governance



- Monthly Investment Committee meetings
- Bi-monthly reporting to full MERS Board
- Quarterly MERS Investment Management Risk and Compliance Committee meetings
- Annual external audit
- Continuous monitoring of staff and portfolio performance by:
 - Internal Auditor
 - Chief Executive Officer
 - Internal Operations and Compliance

Investment Policy

MERS INVESTMENT POLICY STATEMENT

- Outlines the investment goals, objectives, and policies of the plan
- Assists the MERS Retirement Board, MERS Investment Committee and MERS staff in effectively monitoring the MERS Investments and offers a map to assist in making prudent and informed investment decisions


PRIMARY INVESTMENT OBJECTIVES

- Exceed the actuarial investment assumption on a long-term basis (7.75% currently)
- Earn a minimum real rate of return of at least 3.5% per year above inflation
- Maintain adequate liquidity to pay benefits
- Adopt a strategic asset allocation plan that reflects current and future liabilities, minimizes volatility and maximizes the long-term total rate of return
- Minimize costs associated through efficient use of internal and external resources

Investment Philosophy

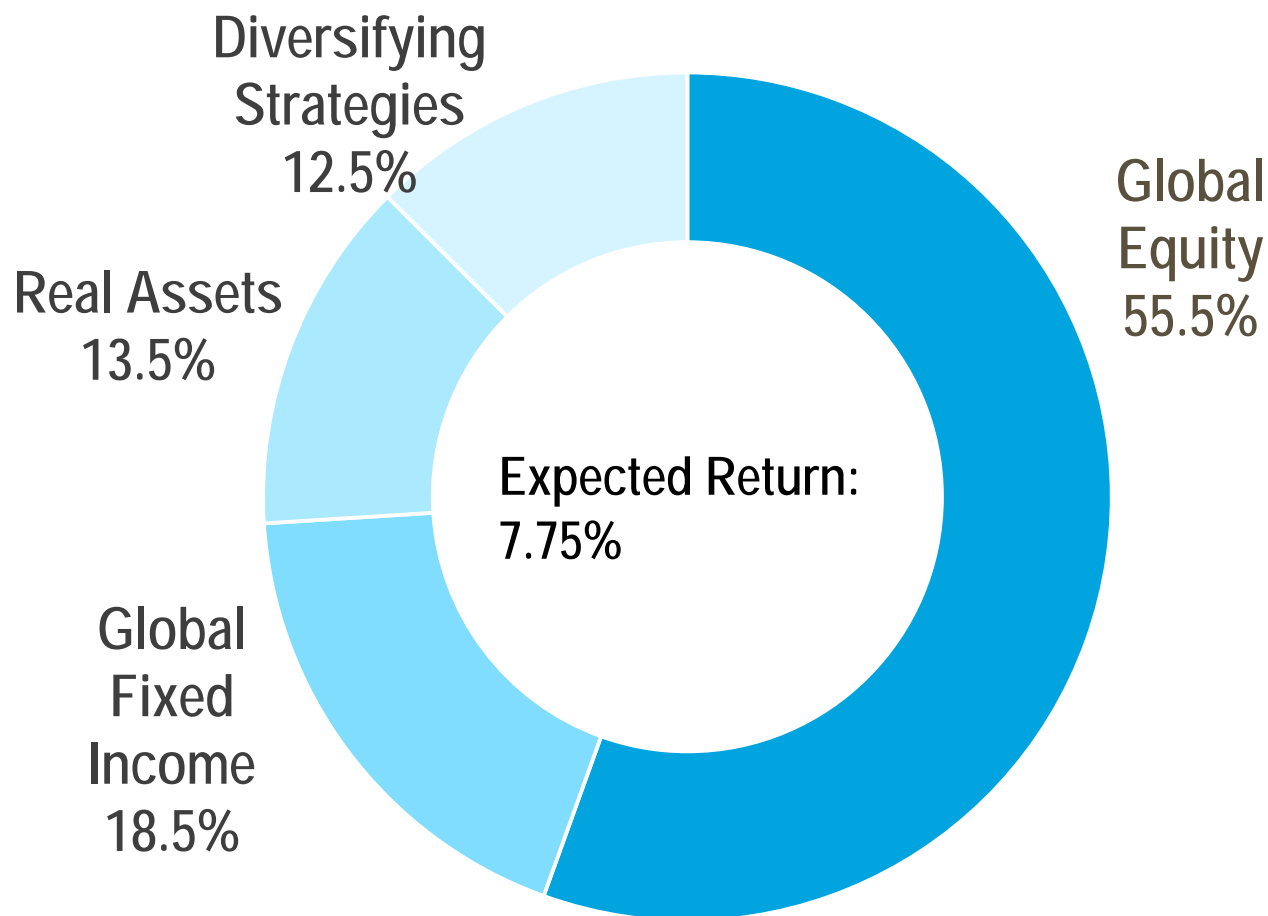
OUR PHILOSOPHY

- Capital preservation is paramount—avoiding losses is more important than achieving gains
- Markets are inefficient—they are driven by human emotion which can often be exploited by taking a contrarian, long-term perspective
- Keep it simple—if it cannot be understood, do not invest in it
- Volatility is not a true measure of risk—permanent impairment of capital or shortfall is risk
- Diversification is critical to reduce risk
- Mean reversion drives markets—it is helpful to remember that most investments go through cycles, and cycles imply reversion
- Focus should be on risk-adjusted returns—returns cannot be evaluated without considering the risk taken to achieve those returns



Performance
MERS consistently **outperforms its benchmarks** and market averages, with a prudent, long-term approach designed to provide downside protection and upside market participation.

2016 Asset Allocation Management



External Investment Managers

DUE DILIGENCE & SELECTION

- The goal is to provide a consistent, systematic framework for investment manager due diligence and selection
- Results in hiring best-in-class investment teams
- Seeks to identify what will likely contribute to poor performance before it happens
- Identifies managers that have a great likelihood of repeating success
- Results in true partnership which provides invaluable market insight
- Qualitative assessment focuses on organizational and staff stability, adherence to investment philosophy and process
- Quantitative assessment focuses on performance versus benchmark, peer comparison, and risk analysis

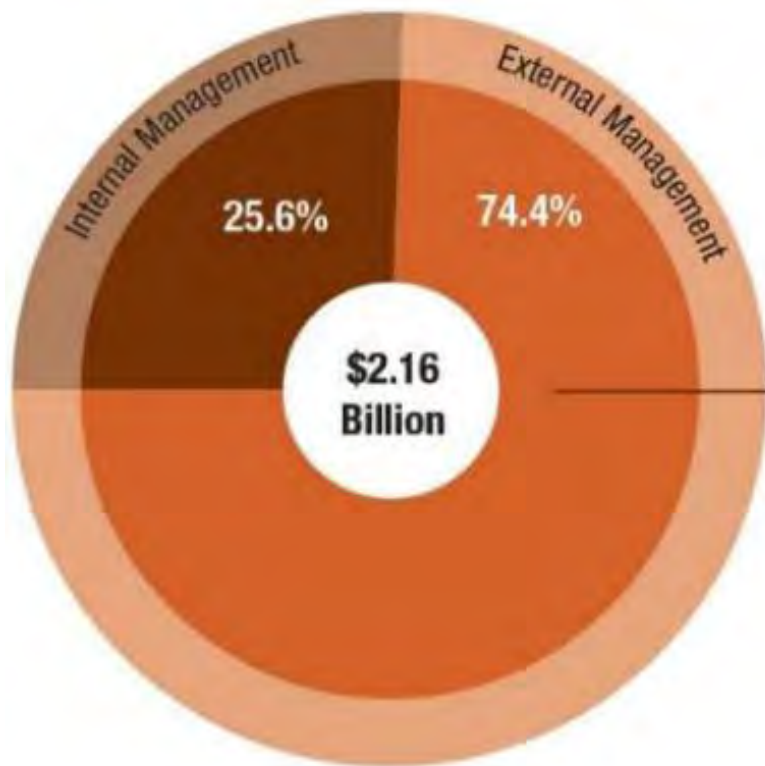
CRITERIA FOR MANAGER SELECTION

Criteria for Manager Selection	Importance
Organization <i>Structure, size, financial condition, client base</i>	Moderate
People <i>Investment professionals, experience, compensation</i>	Highest
Process <i>Investment philosophy, style, portfolio construction, sell discipline</i>	Highest
Procedures <i>Trading, risk management, compliance, reporting</i>	High
Performance <i>Results relative to an appropriate benchmark and peers</i>	High
Price <i>Investment management fees</i>	Moderate - High

Management

MANAGEMENT STRATEGIES

In 2015, 25.6% in internally managed strategies saves MERS about \$4.7 million in management fees.

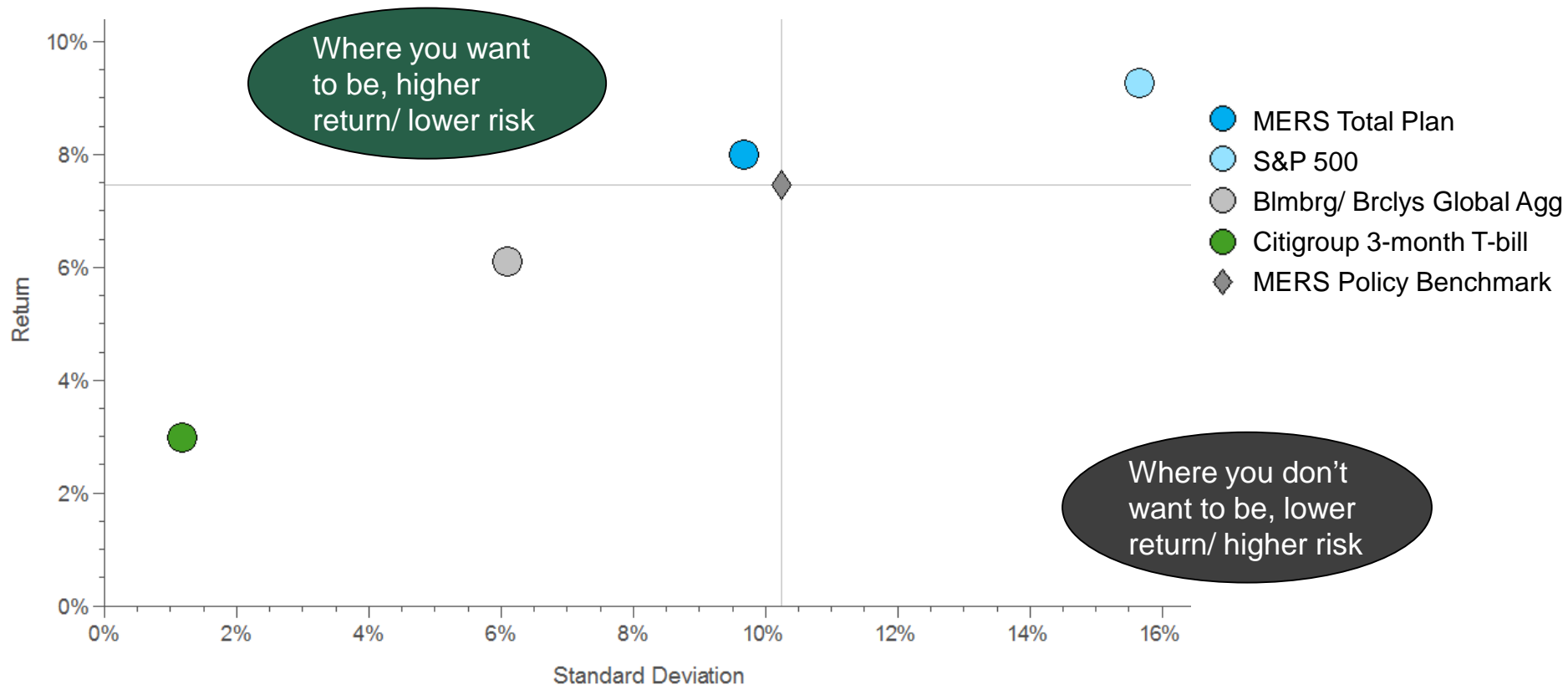


INSTITUTIONAL INVESTMENT MANAGERS

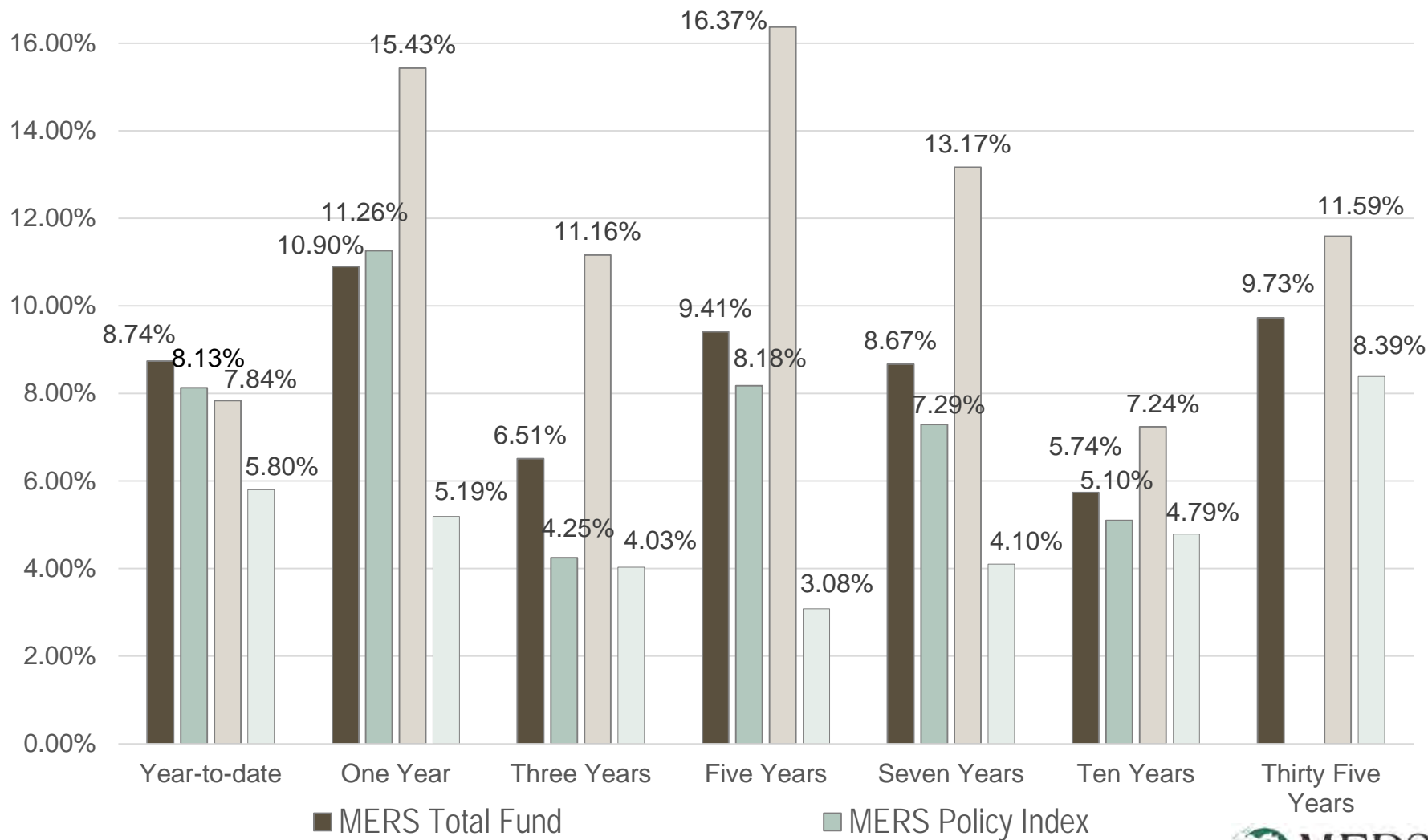


Risk/ Return

January 1990 - September 2016



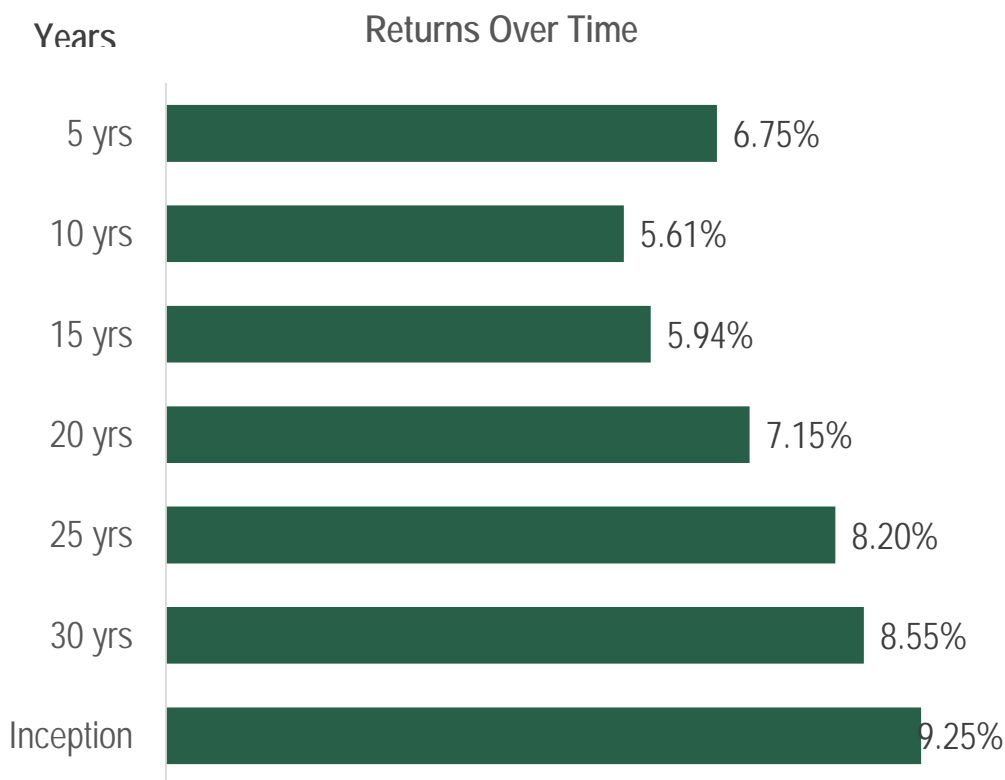
Total Market Fund Performance September 30, 2016



Investment History

MERS Long-Term Investment Returns

October 1975 – December 2015

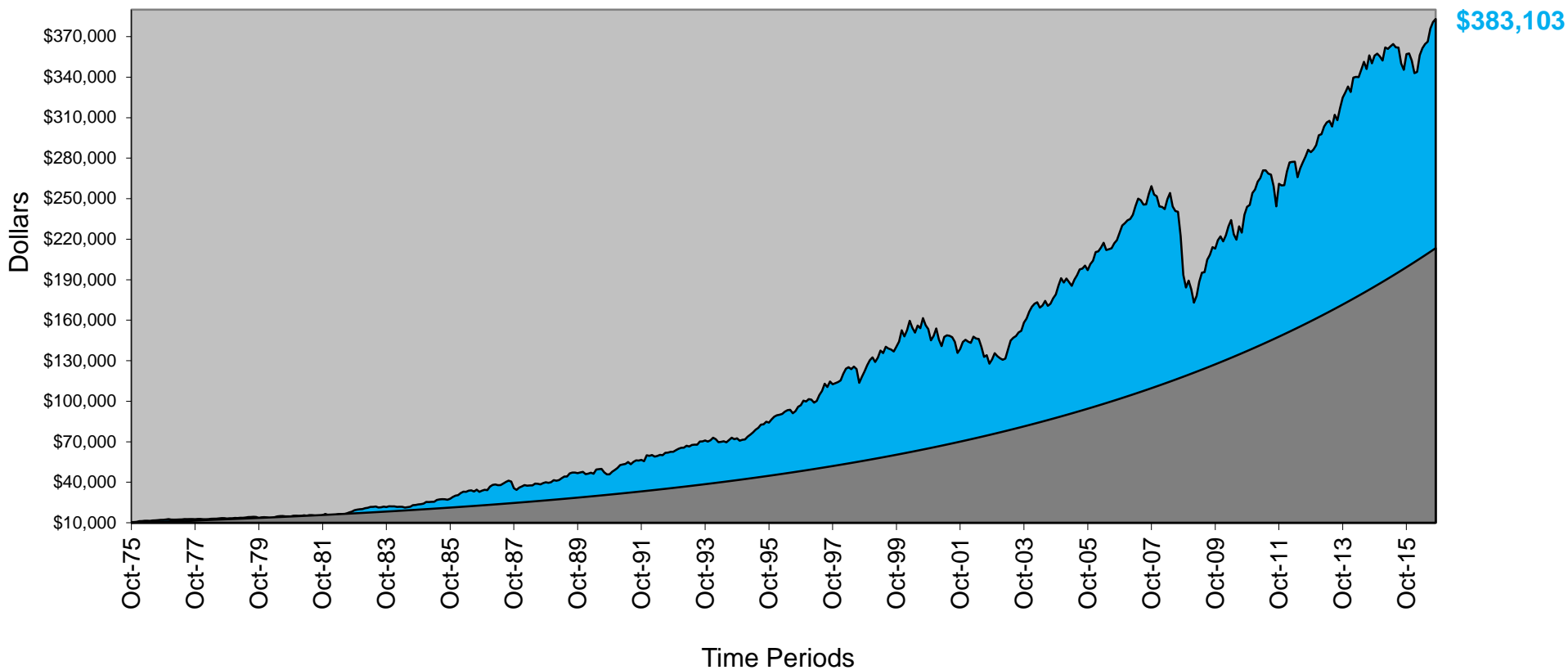


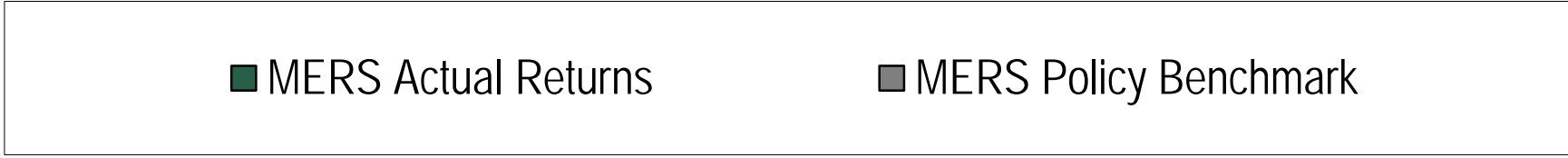
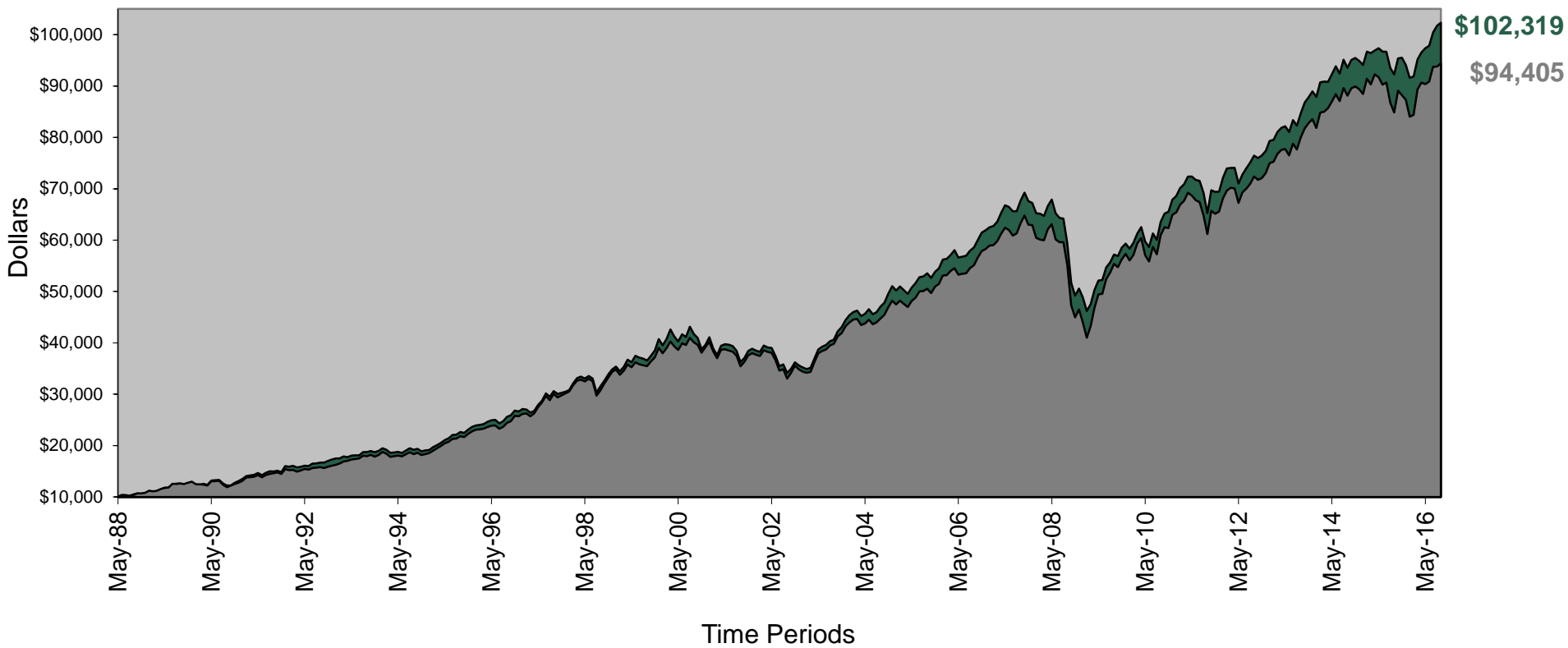
All rates are shown as gross of fees

Year	Rate of Return
2015	-0.85%
2014	6.68
2013	15.00
2012	11.39
2011	2.30
2010	14.43
2009	17.31
2008	-24.79
2007	8.58
2006	13.61
2005	6.78
2004	14.90
2003	24.72
2002	-8.34
2001	-1.91
2000	-2.76
1999	17.01
1998	14.20
1997	14.43
1996	12.68
1995	23.95

Growth of \$10,000

October 31, 1975 – September 30, 2016

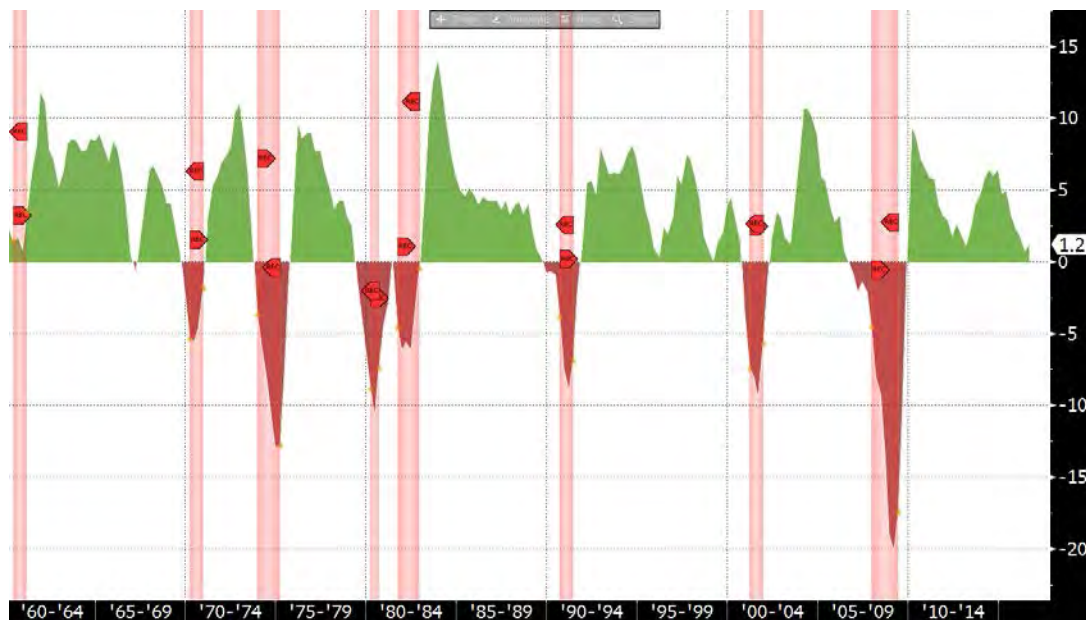




U.S. Economy

- U.S. economic growth is slowing
 - No recession yet
 - Growth is vulnerable to shocks from abroad
 - Financial markets expected to remain volatile
 - Q2 GDP (YoY) 1.2%

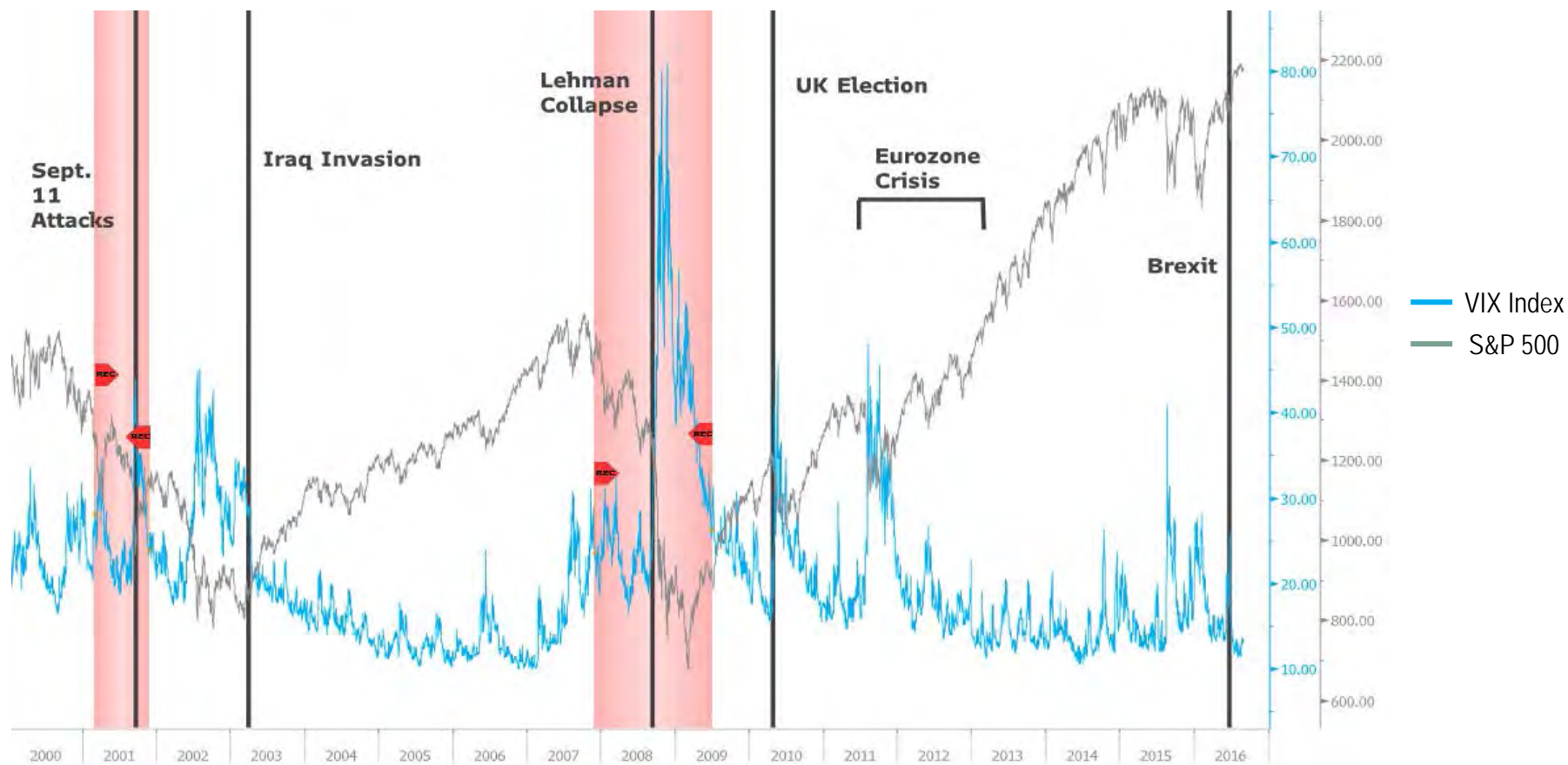
Conference Board Index of Leading Economic Indicators



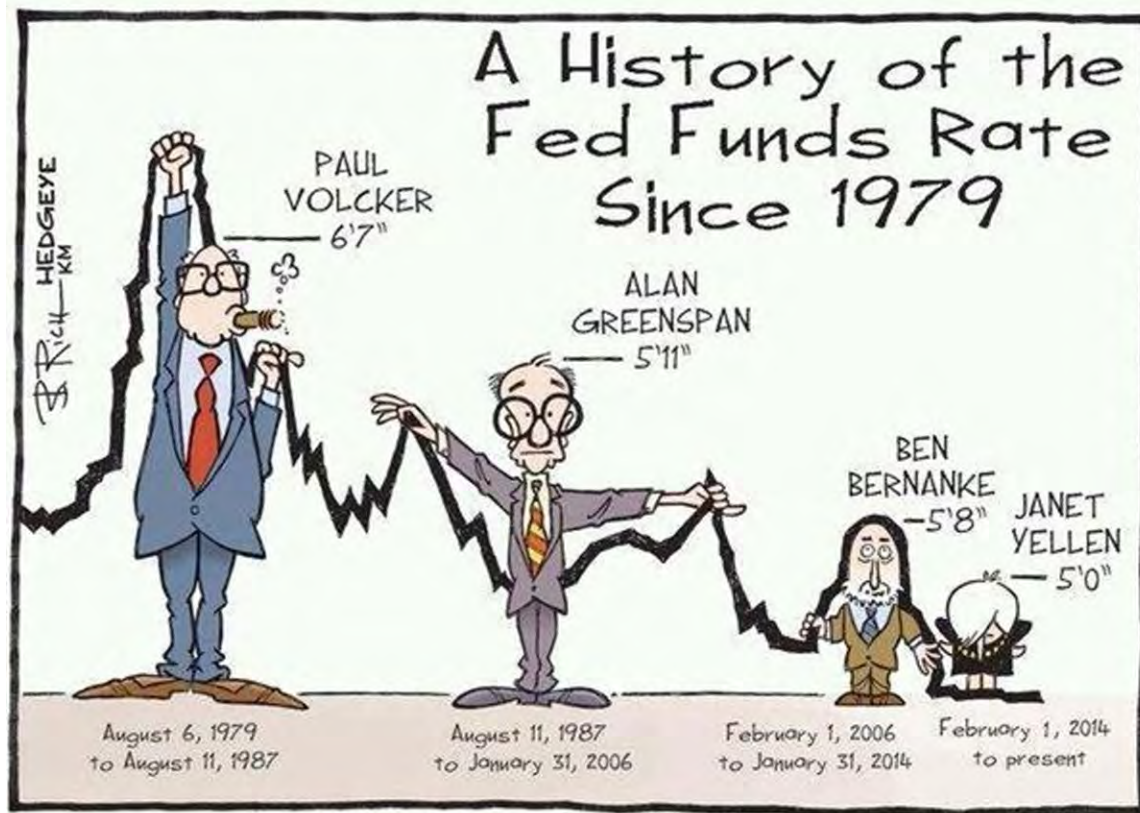
Geopolitical Risks

- Tensions between U.S., China, and Russia
 - South China Sea
 - Syria
 - Ukraine
- Emerging Market domestic politics
 - Political risks in Brazil, Turkey, and South Africa rising
- Developed Market
 - Watching for fiscal policy to turn positive in light of voter revolts
- Eurozone stability
 - Brexit
 - Immigration
 - Banking crisis

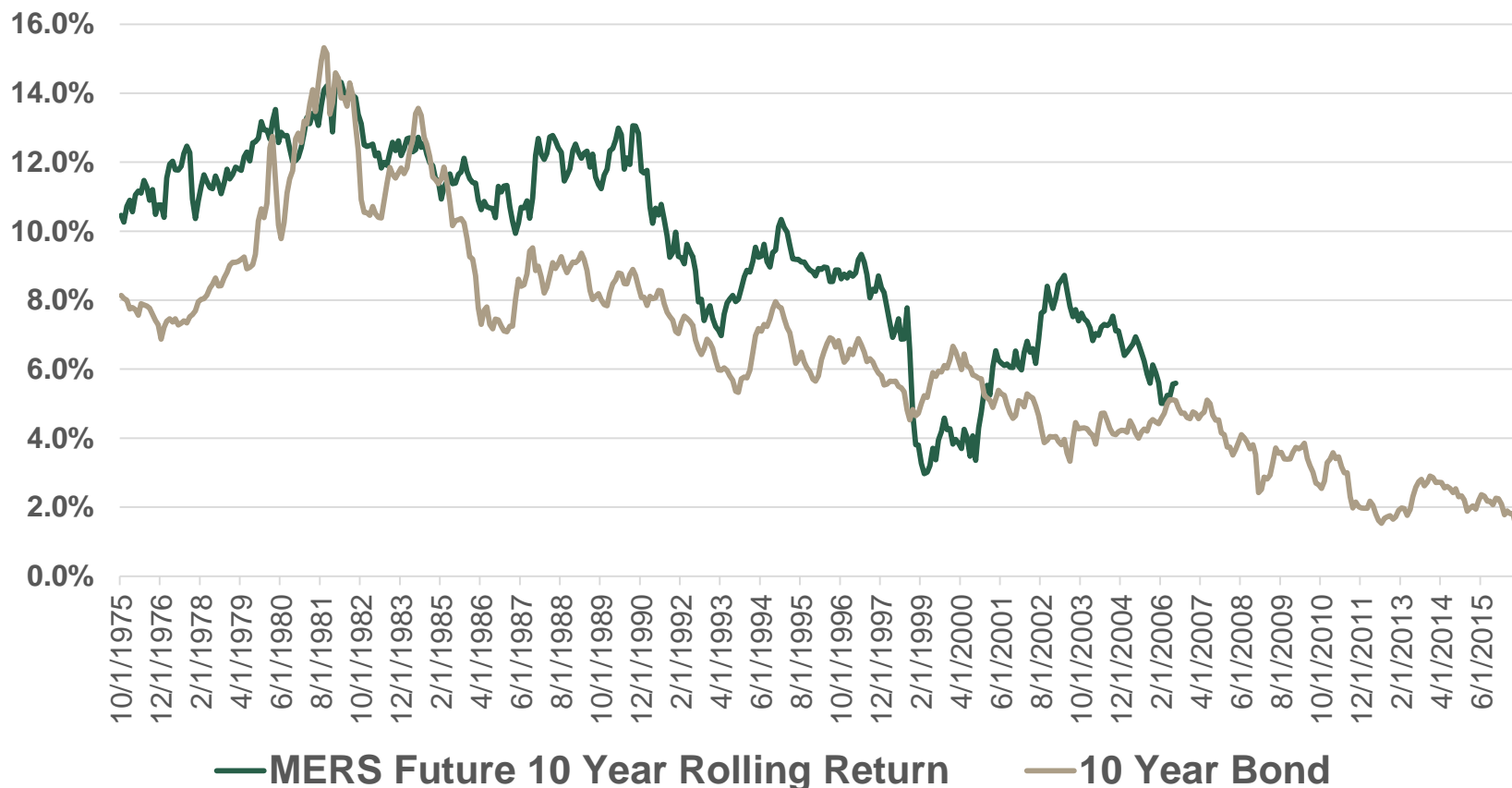
Market Volatility



Interest Rates Making History

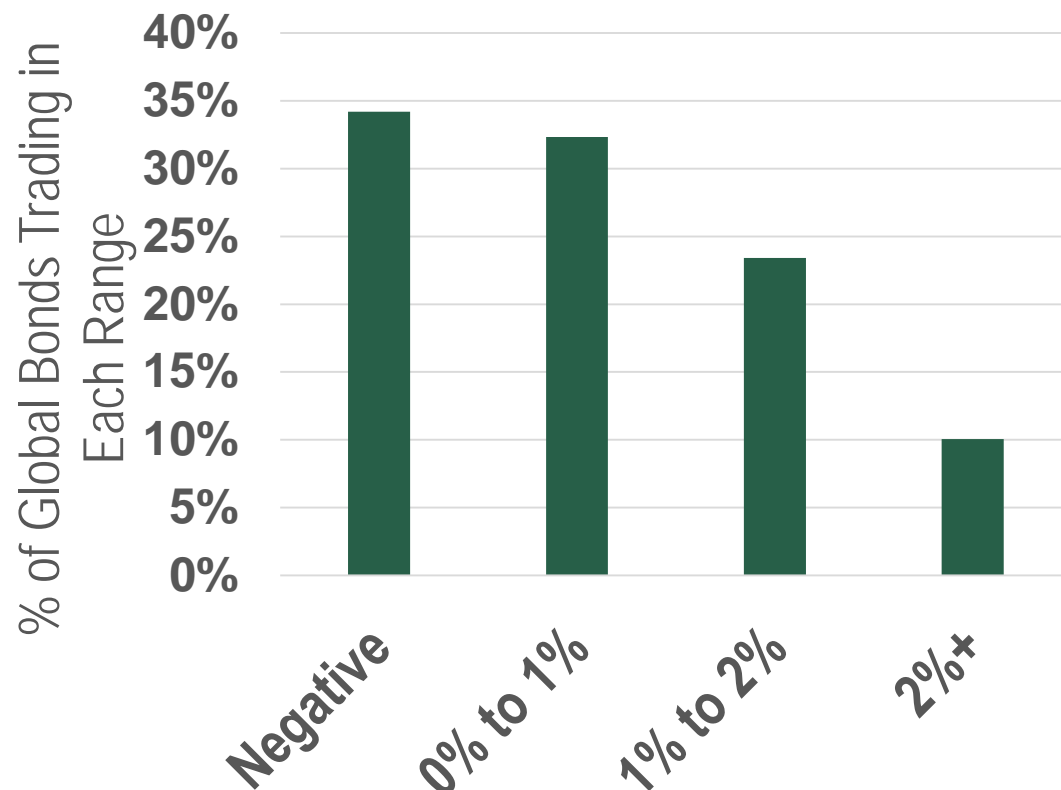


MERS 10 Year Returns vs. 10 Year Treasury



Global Government Bond Yield Ranges

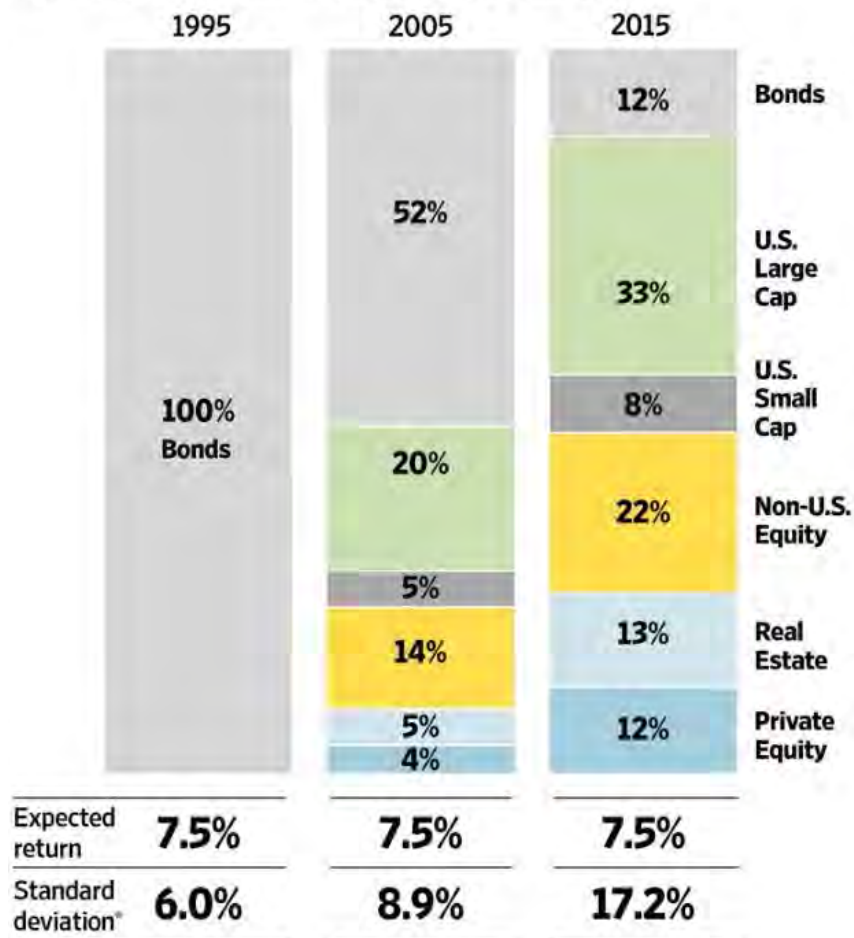
- Over a third of world's bonds trade with a negative yield
- Less than 10% of bonds yield over 2%
- Interest rates are at historical lows



As of September 22, 2016

Risk/ Return

Estimates of what investors needed to earn 7.5%



*Likely amount by which returns could vary

Source: Callan Associates

THE WALL STREET JOURNAL.

Summary

- Challenging investment environment
 - Elevated geopolitical and market risk
 - Lower interest rates
- Strong long term performance and risk controls
- Experienced and effective investment management
- Portfolio Trends
 - Internal management
 - Lower costs
- Strong governance and oversight



Participant Directed Accounts Investment Oversight

Criteria Used to Evaluate Investment Options

- The MERS Retirement Board and Office of Investments actively review our Investment Menu on a regular basis and make appropriate changes
- They establish and implement the investment performance objectives and research, perform due diligence and monitor the different managers and funds
- There is an experienced team overseeing the investment choices for MERS participants with a focus on driving successful outcomes



- Comparative risk ratio
- Comparative expense ratio
- Consistent investment style
- Stable investment management team
- Legal, regulatory or reputation changes

Is a Bigger Investment Menu Better?

Psychologists have concluded that an overload of options can paralyze people or push them into decisions that are against their own best interest.



When Less is Actually More

A study on shopping behavior experimented with jam displays. One table held 24 varieties of gourmet jam; the other held only 6 varieties. The large display attracted more interest, but people were 1/10th as likely to buy from the large display as from the small display.

The same principle of “less is more” was found to apply to participation rates in retirement programs. A large number of fund choices actually *discourages participation* amongst even well informed participants.^{1, 2}

¹ Mottola, Gary and Utkus, Stephen. “Can There Be Too Much Choice In a Retirement Savings Plan?” *The Vanguard Center for Retirement Research*, June 2003

² Schwartz, Barry. “More Isn’t Always Better.” *Harvard Business Review*, 01 June 2006. Web. 24 Feb. 2016

Simplified Investment Options

- Our streamlined investment menu is a sophisticated set of selections by our experienced investment professionals
- MERS performs the necessary research, due diligence and monitoring to ensure high-quality options
- MERS offers several fully diversified, professionally managed portfolios that provide access to funds not otherwise available with other providers
- Our pre-built portfolio funds use outside institutional investment managers that are selected and monitored by the MERS Office of Investments and Retirement Board

Investment Categories



"Do it for me"

Fully diversified target date funds that automatically adjust over time



"Help me do it"

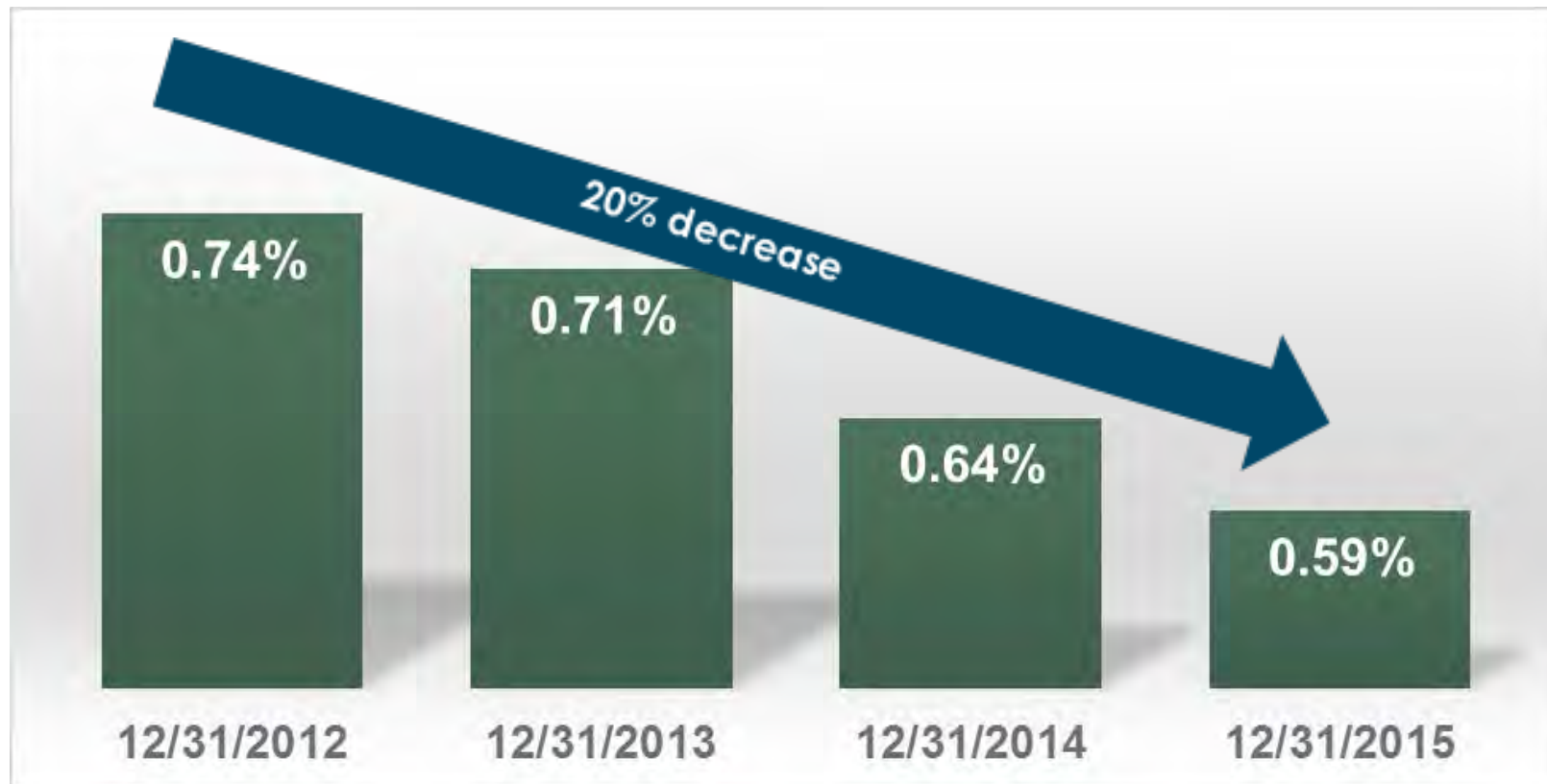
Prebuilt portfolios that are monitored and rebalanced quarterly



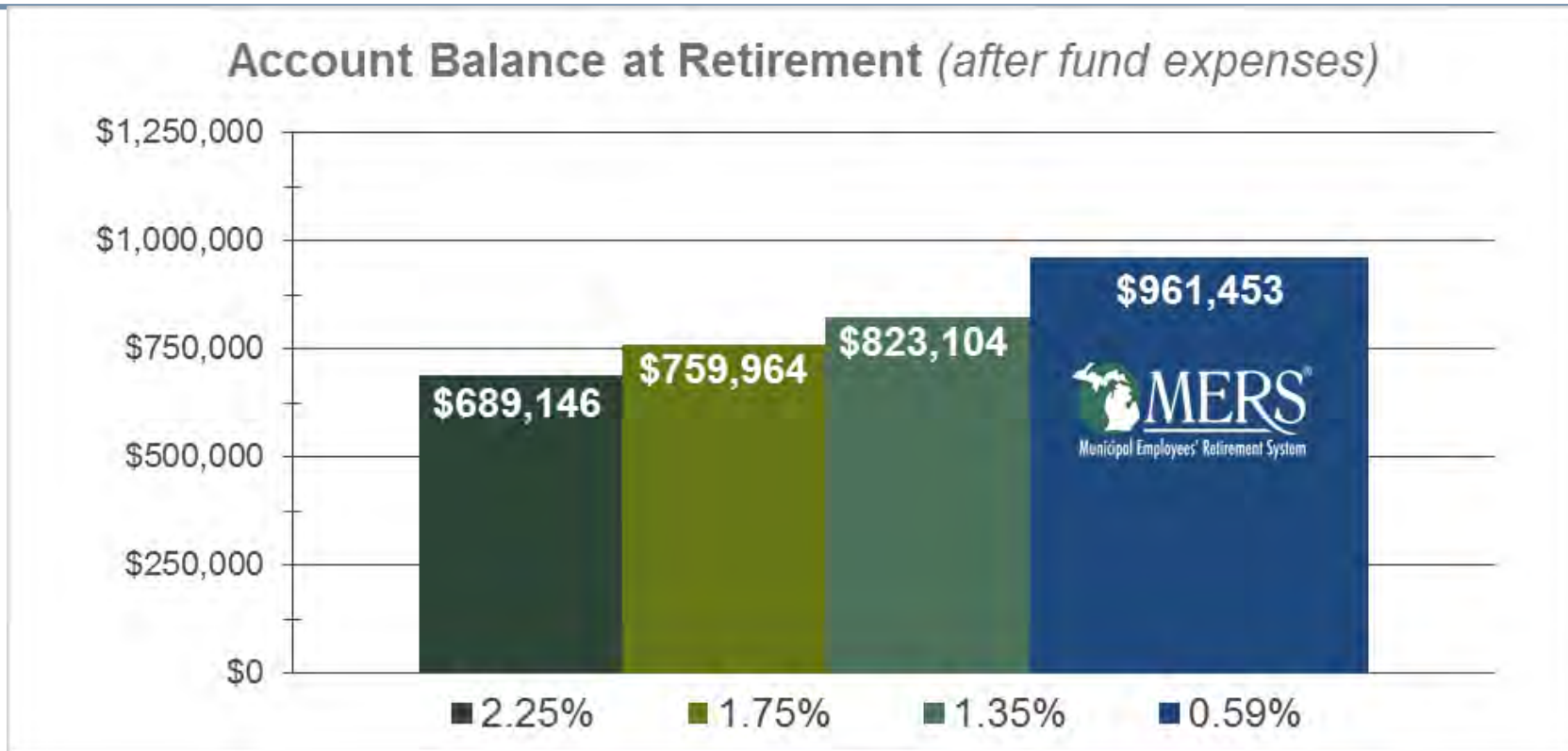
"I'll do it myself"

Self-Directed Brokerage Account to access funds outside of MERS

Weighted Average Cost



Why Cost Matters



Value Added Partnership

SUMMARY

- Investing assets for public retirement plans is what MERS was created to do and our focus and expertise is in public sector
- MERS functions as sole fiduciary of the plan, acting exclusively in the interest of providing benefits to participants and their beneficiaries
- The investment team actively manages the Defined Benefit Total Market Portfolio, with capital preservation being paramount
- MERS' cumulative investment returns outperform our policy benchmark, the actuarial assumptions and the Consumer Price Index (CPI) plus 3.5%

TOP INVESTMENT PROFESSIONALS HELPING YOU SUCCEED

- Superior risk-adjusted returns
- Positioned to outperform in down markets
- Hedge against inflation
- Maintain adequate liquidity
- Minimize costs
- Exceed actuarial assumption on a long-term basis



Employee Engagement and Education

Participant Education is Key

Preparing Participants for a Successful Retirement

- Regardless of the plan design, ensuring that participants understand how their benefit works is a crucial component for building an effective retirement plan
- Higher financial literacy among employees is associated with higher voluntary participation rates or lower quit-rates in automatic enrollment plans
- Financial literacy has a larger effect on saving than does a sizable increase income
- Knowledge of a plan's specific features—such as the employer matching threshold—is also associated with increased saving

Source: Center for Retirement Research at Boston College

Preparing Your Employees for the Future

- Plan providers often offer financial planning for a fee
- Given the extremely low utilization rates, MERS provides a solution that reaches a broader percentage of participants
- Retirement Readiness reports provide individual guidance at no additional cost to the participant or the employer

Retirement Readiness Snapshot Reports







Retirement Readiness

- MERS Retirement Readiness reports provide individual guidance at no cost to the participant or the employer
- Includes both passive and interactive tools for assessing their financial preparedness
 - **Snapshot:** These reports are mailed to participants annually and provide an overview of how their MERS accounts will provide for them in retirement
 - **Full Picture:** The online Full Picture report builder is an interactive tool that allows participants to include outside information to develop a comprehensive picture of their retirement readiness. The report identifies their risk tolerance and provides customized suggestions to improving their preparedness

Develop the Full Retirement Picture

The “Full Picture” report allows participants to:

- ⊕ Add spouse and outside investment information online to build their “Full Picture” report
- ⊕ Identify their risk tolerance and receive customized suggestions for improving their retirement readiness
-  Increase retirement savings
-  Review investment selections
-  Consider delaying retirement
-  Adjust retirement income replacement rate



Employee Education



Pizza & Planning

- Free, localized education for employees after traditional work hours
- Held at various locations throughout the state
- Group presentations on variety of topics



On-site education

- Group presentations can be held at your location whenever it is convenient for you
- Attend benefit fairs
- One-on-one meetings for all MERS programs



Online videos and webinars

“The Big Picture” Annual Retirement Report

- Our employer report will help you monitor how effectively your employees are using their retirement benefit
- This annual employer report includes insight on:
 - An overview of the plan from a retirement readiness perspective
 - A demographic breakdown of participants by age group and salary range in key areas



Additional Resources

MERS Regional Teams and Service Center

- The MERS Regional Teams provide personal and localized service to municipalities throughout the state of Michigan
- Your team consists of a Regional Manager, a Benefit Plan Advisor, a Benefit Plan Coordinator, and a Benefit Education Specialist
- Your Regional Manager, Tony Radjenovich, is your primary consultant relating to all MERS products and services and will coordinate with the rest of your team
- The MERS Service Center offers knowledgeable, over-the-phone assistance for a wide variety of questions about your program.

Key Benefits of Partnering with MERS

- ✓ Fiduciary Responsibility and Plan Compliance
- ✓ Investment Oversight and Governance
- ✓ Streamlined Investment Menu
- ✓ Customer Service Excellence
 - Established relationship with MERS Regional Team
 - Participant education
 - Employer resources
- ✓ Cost Effective Benefits
 - No cost to the employer
 - Low participant fees
 - Oversight and administration

Contacting MERS

MERS of Michigan
1134 Municipal Way
Lansing, MI 48917

Phone: 800.767.6377
www.mersofmich.com





Memorandum

Grand Traverse County
Administration
400 Boardman Avenue
Traverse City, Michigan 49684
(231) 922-4780 Fax (231) 922-4636

TO: Board of Commissioners
All County Staff & Elected Officials
MERS Retirement Board & Chris DeRose, Chief Executive Officer

FROM: Tom Menzel, County Administrator
Jennifer DeHaan, Deputy Administrator
Jody Lundquist, Finance Director

DATE: July 13, 2016

SUBJECT: Pension Stabilization Plan

Over the past several months, members of the Board and County staff have been working to explore the options to stabilize the County's Pension Debt.

If the following proposal is adopted in its entirety and current assumptions stay the same, the County will achieve 82% funding in 15 years and save \$13.5 million during those years.

As a recap, the County's unfunded liability, based upon the 2015 Actuarial Valuation is \$52.6 million which amounts to being only 45% funded. In addition, based upon MERS policy, the County's amortization table will be reduced each year and the County's annual required contribution will increase substantially. For example, the recent changes by MERS in the annual rate of return, longer life-spans and other actuarial assumptions will increase the County's payment from \$4.8 million in 2016 to \$5.2 million in 2017; increases will continue to occur as MERS changes assumptions. These continued increases in the County's annual required contribution cannot be sustained at the current rate of revenue growth without substantial changes to the plan benefits or reductions to County services. The table below demonstrates the current MERS payment requirements.

Fiscal Year Beginning 1/1	Actuarial Accrued Liability	Funded Percentage	Required Annual Employer Contribution
2017	\$95,953,788	45%	\$5,238,504
2018	\$97,049,968	45%	\$5,782,044
2019	\$97,873,181	45%	\$6,351,144
2020	\$98,442,222	45%	\$6,932,820
2021	\$98,776,535	45%	\$7,495,200
2022	\$98,914,314	48%	\$7,762,176

It is important to note that in 2015, the County paid out \$6,270,104 in defined benefit pension payments while only paying in \$4,479,187; resulting in a deficit of \$1,790,917. Under our current plan design, this deficit can only be off-set by significantly high rates of return, which require a high-risk investment strategy and expose the County to market volatility.

To address the growing unfunded pension liability, over the past six months, the County has been taking calculated and strategic steps to reduce the unfunded liability. These changes have included structural and organizational changes that set-the-stage for the County to work towards fiscal sustainability.

To continue the efforts already implemented, members of the Board and staff of County Administration and Finance will present a proposal to MERS that outlines our commitment and recommendations on July 21. ***If accepted by MERS, the proposal will require agreement and participation from the County Board, Elected Officials, and from the County's 13-Bargaining Units. If there cannot be agreement between all of these entities, the County will resort to the current amortization schedule and payment plan which may require significant reductions to the County's services.***

The proposal which will be presented to MERS includes the following:

1. Fund at least 80% of the Pension Liability by 2031

RATIONALE: Currently, MERS has established an amortization schedule which requires the County to fully fund the defined benefit pension for currently closed plans by 2028 (based upon the 2015 Actuarial Valuation). The County finds this to be an unreasonable assumption that all benefits would have to be paid out by 2028 as the last County employee, eligible for a Defined Benefit Pension, will be eligible for retirement in 2027 and will receive benefits long-after retirement. Therefore, it is not realistic to expect or require the County to pay-out 100% of its pension debt by 2028. The County is proposing to meet the funding level of 80% within a reasonable amount of time, therefore reducing the County's annual required contribution.

2. Establish an amortization schedule over a period of 16 years

RATIONALE: Based upon the last employee eligible for retirement, establishing a 16-year amortization schedule provides an adequate payment schedule to fund employee pension benefits as adjusted through this agreement.

3. Develop a customized investment plan that reduces the County's risk

RATIONALE: Currently, the County's pension assets are "lumped" together and invested with all other municipal entities (approximately 880). Because of this, the investment strategy utilized by MERS is higher-risk than Grand Traverse County is willing to accept. The County cannot afford substantial losses due to high-risk investments and desires to work with MERS to create a more reasonable investment strategy that is customized to the County's individual portfolio and risk tolerance. This would be consistent with the variety of investment strategies which are offered to individual members of the Defined Contribution plan who choose the level of risk they are willing to accept.

4. Make a one-time \$5.1 million payment to reduce the unfunded pension liability

RATIONALE: In June 2016, the County Board designated \$5.1 million to increase the County's

funding status from 45% to 51%. This additional payment shows the County's commitment to ensuring that we meet our financial obligations. This will erase a negative perception by MERS that the County will not follow through on our commitment, which has resulted from prior administrations failing to meet commitments made with MERS.

5. Make changes to the Defined Benefit plan with existing Defined Benefit Employees

RATIONALE: This will impact less than 11% of the current employees. There are 49 current active employees in 2016 eligible to receive a Defined Benefit Pension Plan. By making adjustments to these future plan benefits we can reduce the County's pension debt. Defined Benefit Employees are employees of the following departments/agencies.

Department	Bargaining Unit(s)	# Active Employees on DB Plan
Circuit Court	Circuit Court	21
Sheriff's Dept.	Teamsters – Sergeants; Teamsters – Command; TPOAM-Central Records; POAM - Deputies	15
Health Dept.	Teamsters - Health	5
County Clerk's Office	Teamsters – General; AFSCME	2
Dept. of Public Works	Teamsters - General	2
Facilities	Teamsters - General	2
Human Resources	Teamsters - General	1
District Court	Teamsters - District Court	1
	Total	49

Across the MERS system, the average employee contribution is between 5.5-6.5%; however, the majority of Grand Traverse County Employees have never contributed to their pension funds. These employees will continue to accrue benefits until they retire and will grow the County's pension liability.

Without changes to these pension benefits, the County will not be able to fund compensation and wage increases for current and future employees that are necessary to support a competitive and knowledgeable work force.

6. Eliminate COLA from Pension benefit calculations

RATIONALE: Cost of Living Increases that are included in the Defined Benefit Plan calculations grow the County's pension debt on an annual basis. Over the past five years, the cost of these benefits has been \$536,438. Without changes to the COLA, the annual cost will continue to increase due to new retirees.

7. Pay-down unfunded liability where resources are available

RATIONALE: Several County departments have fund balances available which could be utilized to pay-down the unfunded debt that is attributable to those departments. It will be necessary for County staff to review these funds to determine if they can be utilized for this purpose. Any additional dollars which can reduce the liability will reduce the amount of funding required for future year financial contributions.

8. Reduce Retiree Healthcare Benefits (OPEB)

RATIONALE: Currently, the County's debt related to retiree healthcare exceeds \$7.7 million and is unfunded because the County never established a trust-fund to designate payment of these obligations. By reducing this obligation, the County can designate the savings from the annual payments to OPEB and make additional payments on the County's unfunded liability, lowering the payment obligations.

9. Beginning in 2018, make an additional annual payment equivalent to the Normal Cost calculated by MERS in 2017.

RATIONALE: On an annual basis the County pays-out more benefits than it contributes to the pension. The additional payment can be made by eliminating the annual required funding contributions for OPEB and utilizing those funds to pay the equivalent of the Normal Cost (\$521,388 in 2017). The Normal Costs are calculated as the cost of the current benefits which are accrued in the current year for active Defined Benefit Employees. By making this additional payment, we are substantially reducing the annual required contribution in future years similar to making an additional principal payment on a home mortgage.

If the proposal is adopted in its entirety and current assumptions stay the same, the County will achieve 82% funding in 15-years and save \$13.5 million during those years. The financial impact of implementing these changes is shown in the table below.

Fiscal Year Beginning 1/1	Actuarial Accrued Liability	Current Plan		Additional \$5M Lump Sum & Contribs., 16 Yr. Amort, & DB Changes		Change from Current Required Annual Employer Contribution
		Funded Percentage	Required Annual Employer Contribution	Funded Percentage	Required Annual Employer Contribution	
2017	\$94,678,846	45%	\$5,238,504	51%	\$5,000,000	(\$238,504)
2018	\$95,364,021	45%	\$5,782,044	52%	\$5,500,000	(\$282,044)
2019	\$95,550,301	45%	\$6,351,144	52%	\$5,500,000	(\$851,144)
2020	\$95,413,025	45%	\$6,932,820	52%	\$5,500,000	(\$1,432,820)
2021	\$95,023,973	45%	\$7,495,200	53%	\$5,500,012	(\$1,995,188)
2022	\$94,443,909	48%	\$7,762,176	54%	\$5,500,072	(\$2,262,104)
2023	\$93,611,032	51%	\$8,053,380	56%	\$5,500,072	(\$2,553,308)
2024	\$92,508,611	55%	\$8,319,252	58%	\$5,500,132	(\$2,819,120)
2025	\$91,189,495	60%	\$8,596,368	61%	\$5,500,228	(\$3,096,140)
2026	\$89,675,185	65%	\$8,881,932	63%	\$5,500,336	(\$3,381,596)
2027	\$87,991,878	71%	\$9,180,444	66%	\$5,500,504	(\$3,679,940)
2028	\$86,061,841	77%	\$9,493,272	69%	\$5,492,164	(\$4,001,108)
2029	\$83,910,319	85%	\$1,491,924	73%	\$5,408,016	\$3,916,092
2030	\$81,589,000	94%	\$1,245,540	77%	\$5,611,776	\$4,366,236
2031	\$79,107,948	95%	\$1,009,068	82%	\$5,823,396	\$4,814,328
Total Annual Contribution			\$95,833,068	-	\$82,336,708	(\$13,496,360)

In order to complete these changes, the County Board, MERS, Elected Officials, and the 13-Collective Bargaining Units will need to enter into an Agreement; should one entity decide not to participate, the County will be forced to make budget cuts that will impact programs and services in order to make the annual required contributions imposed by MERS.

Upon agreement from MERS that the proposed actions are acceptable, primarily the 16-year amortization schedule and the proposed increased payment plan, with consideration of the \$5.1 million one-time payment, the County will contact the Bargaining Unit Representatives to request that contract negotiations be opened to resolve this issue.

As a matter of best practice, the Government Finance Officers Association does not recommend issuing Pension Obligation Bonds. While the topic of issuing pension obligation bonds has been reviewed and discussed, we also do not see it as a viable solution for the following reasons:

1. There is no reason to fund the County's pension at a level of 100% immediately.
2. The estimated amount of interest paid by taxpayers for the bonds would be upwards of \$20 million over the course of the bond.
3. The administrative cost of issuing a bond is estimated to be \$350,000 which would have to be paid by taxpayers.
4. Bond Counsel has advised that when pension bonds have been issued, the amortization schedule for these bonds has been equivalent to the amortization table by MERS; therefore, we could not pay back the bonds over 30-years but would have to do so over the shortened period established by MERS, lessening any advantage of lower annual payments.
5. Issuance of a bond could allow the County to invest those funds and earn interest; however, if the market goes down, the County would owe the bond interest as well as any additional losses in the investment. This is essentially gambling with public funds and could result in being in a worse financial situation.
6. The County's Bond rating may be negatively impacted resulting in increased costs for any future debt issuance and placing additional costs on other local units of government.

Overall, the organizational structure and poor decision making in the past has been compounded by economic instability and has gotten the County where it is today. As a result, the entire organization and the new decision makers must work together collaboratively to deal with these difficult economic realities.

Simply put, the future of the County moving toward financial stability rests in the hands of all the elected and appointed officials and employees of the County. This proposal is intended to be a vehicle to manage this debt, pay the debt, reduce future liabilities, and preserve County services as much as possible. If the proposal is adopted in its entirety and current assumptions stay the same, the County will achieve 82% funding in 15-years and save \$13.5 million during those years. Without cooperation from all entities, the County will experience significant reductions in programs and services.

West Michigan Policy Forum

The Retirement Plans Challenge in Michigan

Presented by
The Honorable David M. Walker,
Senior Strategic Advisor for PwC &
Former U.S. Comptroller General

September 26, 2016

Agenda

- Introduction
- Comparative Financial Status
- Summary of Reforms to Date
- Illustrative Reforms
- Appendices

Introduction

Introduction

Relative Financial Position and Competitiveness by State

1. Alaska (5)	77.3%	18. Nevada (3)	5.4%	35. Vermont (5)	23.6%
2. North Dakota (1)	46.8%	18. Colorado (1)	5.4%	36. Mississippi (5)	25.9%
3. Wyoming (2)	40.6%	20. Missouri (3)	6.0%	37. Pennsylvania (4)	28.3%
4. South Dakota (2)	7.5%	21. New Hampshire (3)	6.4%	38. Delaware (3)	30.2%
5. Utah (1)	6.6%	22. Arizona (3)	6.7%	39. Alabama (4)	31.7%
6. Nebraska (1)	4.9%	23. Wisconsin (2)	7.1%	40. West Virginia (3)	32.9%
7. Idaho (2)	4.5%	23. Ohio (2)	7.1%	41. California (4)	34.6%
8. Oregon (3)	3.6%	25. Georgia (1)	9.1%	42. Michigan (4)	34.8%
9. Tennessee (2)	3.0%	26. Kansas (3)	12.5%	43. Louisiana (4)	35.8%
10. Montana (3)	1.8%	27. Washington (2)	14.4%	44. Hawaii (5)	37.2%
11. Iowa (1)	1.6%	28. Texas (1)	15.4%	45. New York (5)	38.1%
12. Indiana (1)	1.5%	29. Maine (5)	17.0%	46. Massachusetts (3)	43.4%
13. Virginia (1)	2.3%	30. Maryland (4)	17.3%	47. Connecticut (5)	69.3%
14. Florida (2)	2.1%	31. North Carolina (1)	18.0%	48. Kentucky (4)	76.2%
15. Arkansas (4)	3.3%	32. South Carolina (3)	21.6%	49. New Jersey (5)	80.2%
15. Minnesota (2)	3.3%	32. New Mexico (4)	21.8%	50. Illinois (4)	81.9%
17. Oklahoma (2)	4.7%	34. Rhode Island (5)	23.0%		

- Source: 2015, PwC State Financial Position Index (SFPI) and Competitiveness Posture Report. (Percentages shown are net financial assets, excluding capital assets and related debt and adjusted for unfunded retirement liabilities not reflected on the balance sheet, divided by median household income.)
- Numbers in black denote a net financial surplus per taxpayer. Numbers in red denote a net financial burden.
- Relative Competitive Posture By Quintile – (1), (2), (3), (4) and (5)
- The full PwC State Financial Position Index (SFPI) and Competitiveness Report can be found at

Introduction

- Over the life of a retirement benefit plan, the following equation must hold:

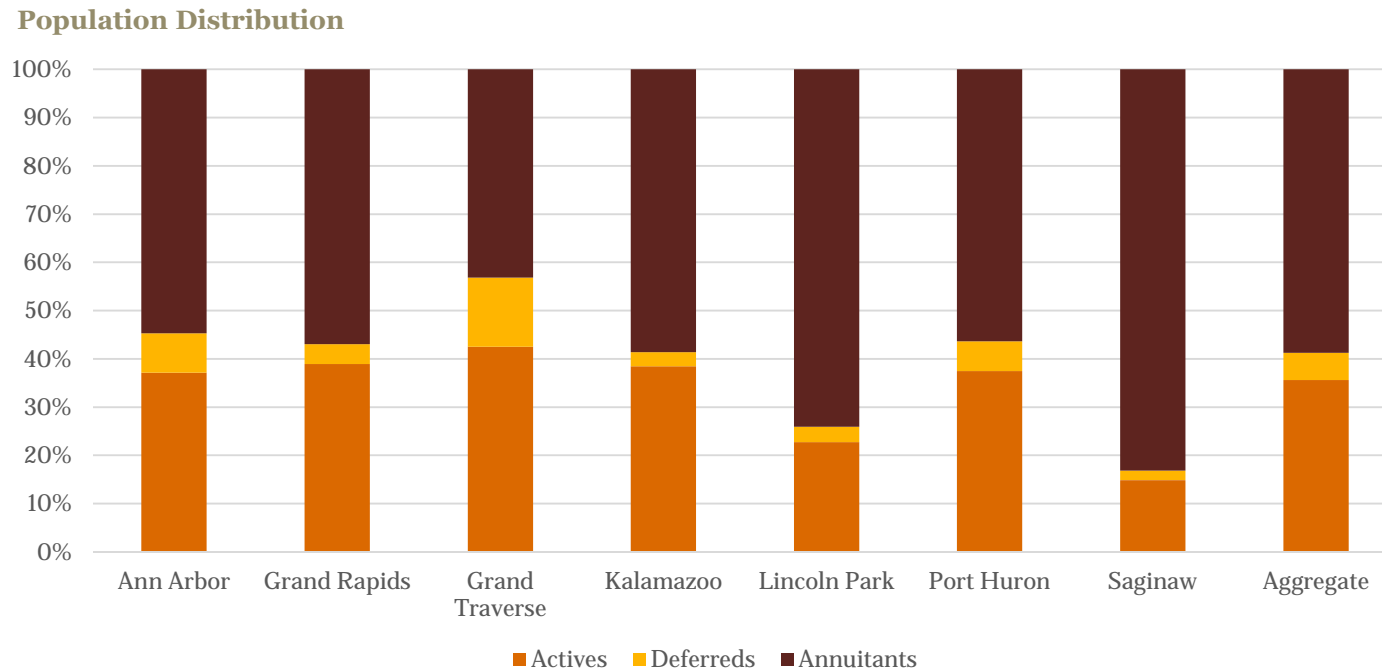
$$\text{Contributions} + \text{Investment Returns} = \text{Benefits Paid} + \text{Expenses}$$

- Contributions required to sustain defined benefit retirement plans have increased rapidly in recent years for many state and local municipalities.
 - Investment returns on plan assets have been less than assumed.
 - Benefits have been higher than assumed due to increased longevity and the rising cost of health care.
 - Contributions being less than the actuarially determined amount.
- Compared to the federal government, states and local municipalities have a greater need to reform retirement benefits when they face financial challenges.
 - Cannot print money.
 - Greater interest rate risk.
 - Greater competitiveness challenges – residents are mobile.
 - In Michigan, the cap on growth in taxable property values limits growth in tax revenue.
- Failure to engage in restructuring of existing retirement programs will ultimately result in:
 - Less resources for other priority services – education, public safety, infrastructure.
 - Higher taxes – mill rates, income tax, other fees / taxes.
 - Diminished competitiveness to other jurisdictions.
- Restructuring of benefits for future new hires only is typically not sufficient to prevent these outcomes.

Introduction

- PwC was engaged by Grand Rapids Area Chamber of Commerce to conduct a study of the defined benefit retirement benefits (pension and OPEB) provided to employees of the following municipalities:
 - City of Ann Arbor
 - City of Grand Rapids
 - Grand Traverse County
 - City of Kalamazoo
 - City of Lincoln Park
 - City of Port Huron
 - City of Saginaw
- The City of Detroit is also presented for comparative purposes in certain circumstances.
- PwC compiled financial information disclosed in the 2015 comprehensive annual financial reports (CAFRs) of each municipality and population data from the U.S. Census Bureau.
 - Retirement benefit liabilities and assets.
 - Revenue and tax rates.
- To illustrate the potential magnitude of retirement benefit liabilities not reflected in the financial statements, we then estimated the liabilities using alternative, normalized assumptions for discount rate and mortality.
- Finally, we summarized retirement benefit restructuring efforts taken by the municipalities in our study and present additional illustrative actions / reforms other municipalities are making to control the burden. Our work is intended to help city leaders understand the potential options for reform.

Introduction

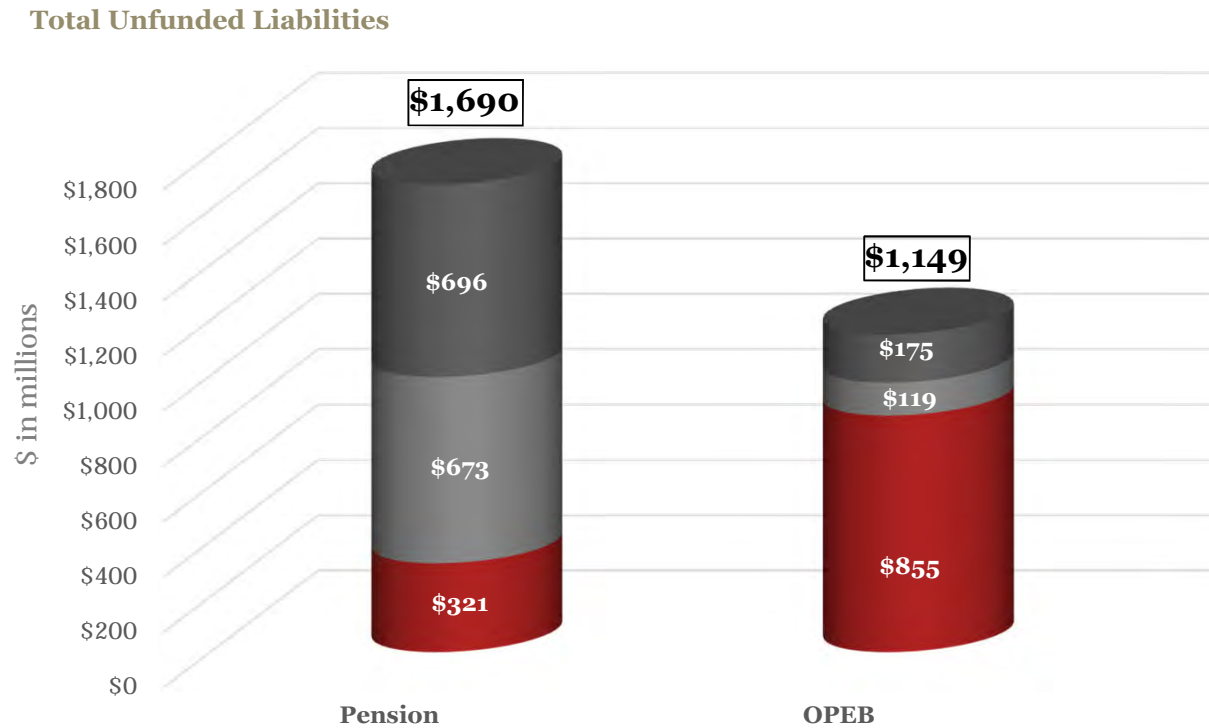


- The chart above includes 2015 pension plan headcounts from each municipality in the study, as reported in the respective 2015 CAFRs.
- The following municipalities have taken measures to close or modify legacy defined benefit plans to some or all employees: Grand Rapids, Grand Traverse County, Lincoln Park, Port Huron, Saginaw.
- A higher concentration of retired members tends to result in negative plan cash flow, which typically has ramifications on cost and ability to achieve desired investment returns.

Comparative Financial Status

Comparative Financial Status

Summary of Findings



- Unfunded liability shown includes the liabilities and assets of all seven municipalities in the study.
- The maroon portion of each bar represents the unfunded liabilities disclosed in the CAFRs.
- The light gray portion represents the increase in liability due to the normalized assumptions. The dark gray portion represents the increase in liability due to the corporate bond discount (i.e. settlement) rate.

Comparative Financial Status

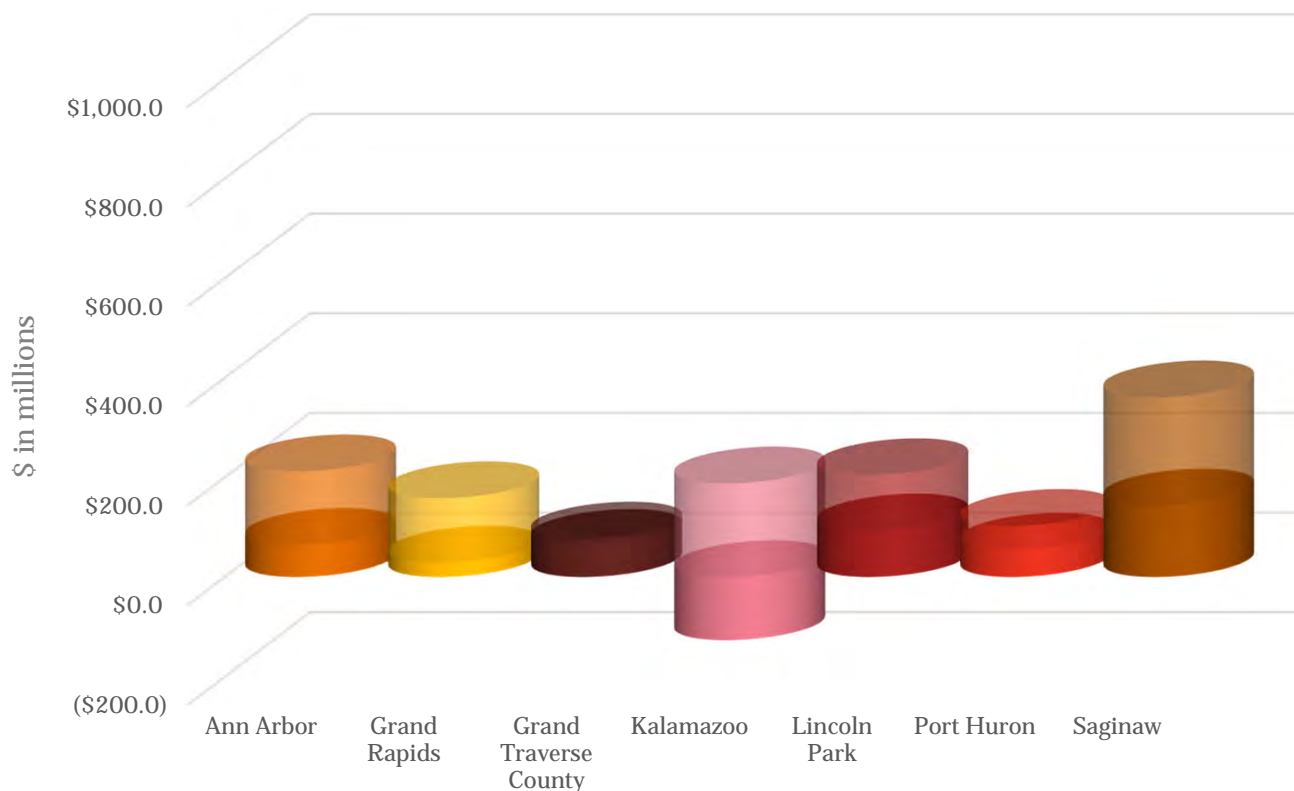
Summary of Findings

- Total unfunded pension liability for municipalities in study
 - Disclosed: \$321M
 - Normalized: \$994M
 - Settlement Rate: **\$1.690B**
- Total unfunded OPEB liability for municipalities in study
 - Disclosed: \$855M
 - Normalized: \$974M
 - Settlement Rate: **\$1.149B**
- Total unfunded liability (pension + OPEB) per household
 - Disclosed: \$2,179 to \$18,620
 - Normalized: \$3,632 to \$25,318
 - Settlement Rate: **\$4,684 to \$30,282**
- Total unfunded liability (pension + OPEB) as a percentage of General Government Revenue
 - Disclosed: 101% to 1,279%
 - Normalized: 243% to 1,739%
 - Settlement Rate: **423% to 2,080%**
- Proposal A limits growth in the taxable value of property to the lesser of the annual increase in the CPI index or 5%.

Comparative Financial Status

Total Retirement Burden – Disclosed

Total Retirement Burden (Surplus)

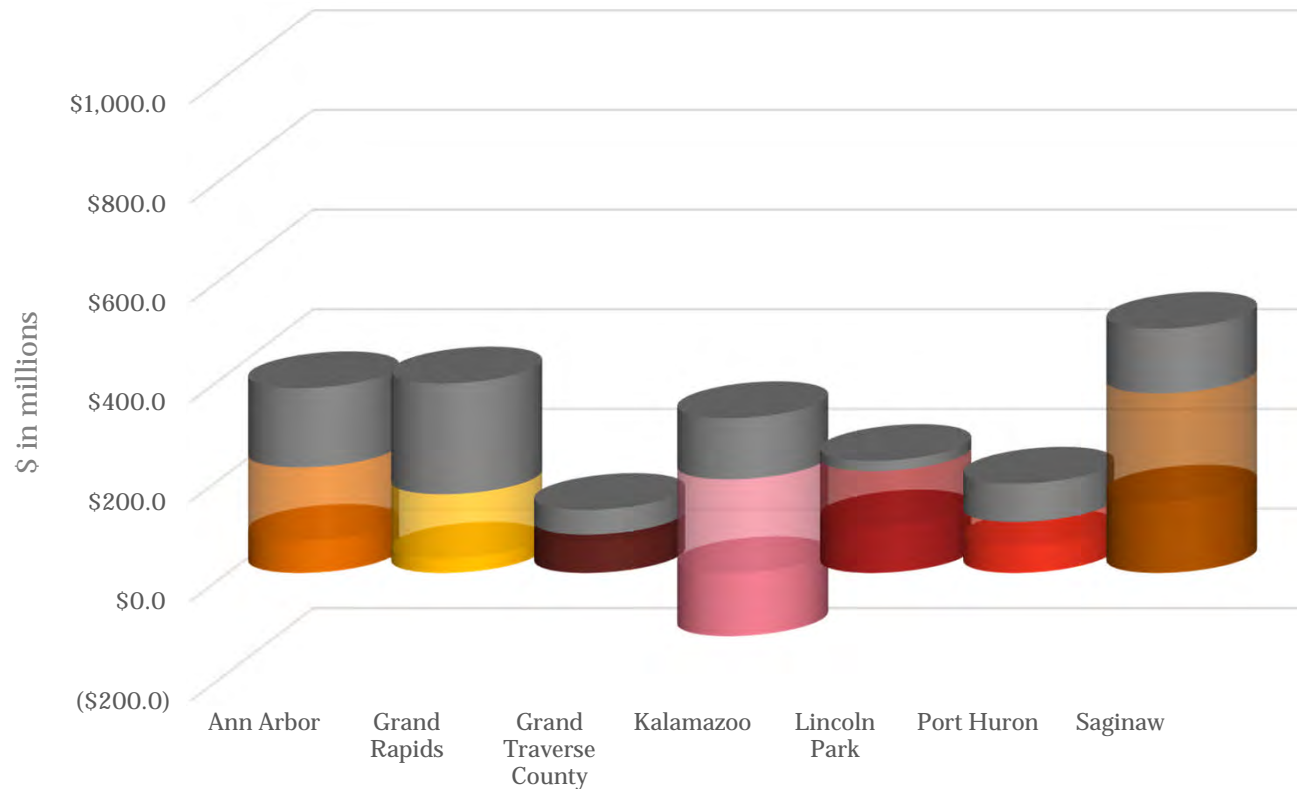


- Unfunded pension liability shown in solid colors, unfunded OPEB liability shown is opaque colors.
- In 2015, Kalamazoo issued \$67.4 million of OPEB obligation bonds and made a total of \$91.3 million in contributions to the OPEB plan, which is not reflected in figures above.
- OPEB liability shown for Lincoln Park is prior to the elimination of OPEB benefits at the direction of the City's Emergency Manager.

Comparative Financial Status

Total Retirement Burden – Normalized

Total Retirement Burden (Surplus)

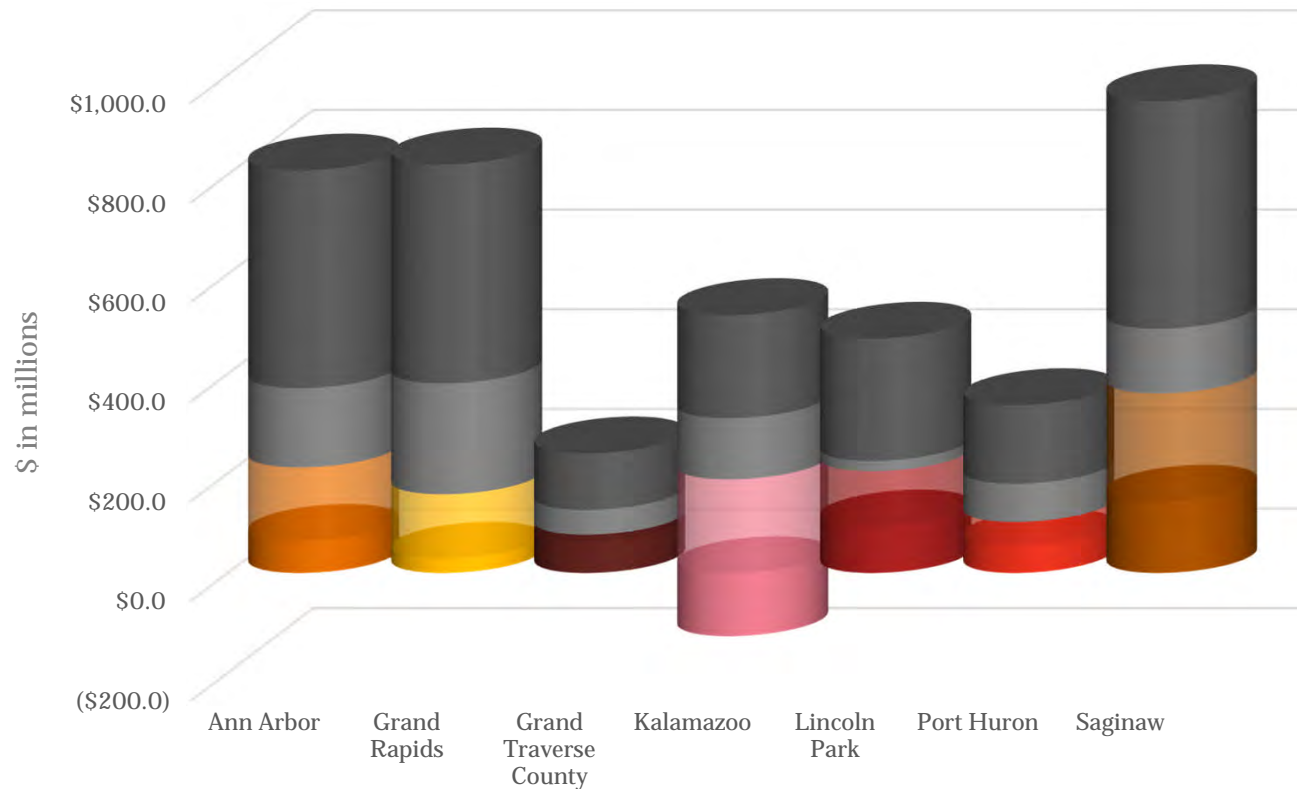


- Reflects 5.75% discount rate / expected rate of return, based on the average asset allocation of state-wide pension funds from the Public Fund Survey with average capital market expectations from JP Morgan, Horizon, and Callan, and mortality based on the RP-2014 tables and MP-2015 improvement scale recently released by the Society of Actuaries.
 - Unfunded OPEB liabilities currently valued at a rate below 5.75% were unchanged.
 - Blue collar mortality adjustments and 90% male population are reflected for police and fire plans.

Comparative Financial Status

Total Retirement Burden – Settlement Rate

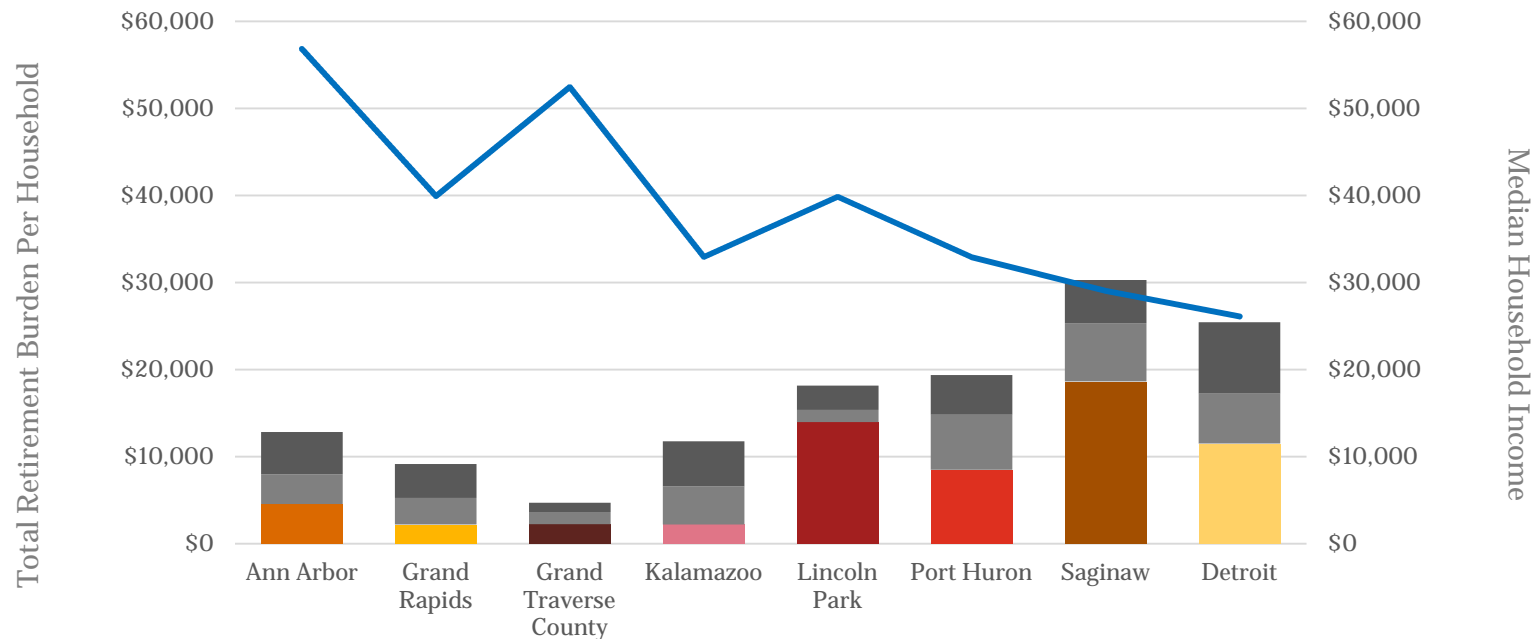
Total Retirement Burden (Surplus)



- Reflects a 3.46% discount rate, based on the Citigroup Pension Liability Index on August 31, 2016.
 - Commonly used discount rate in the private sector, where discount rates are required to reflect the rate at which the liability could effectively be settled.
 - Interest rate basis used by Moody's to adjust reported liabilities for municipal bond rating.
- Annuity purchase rates as of August 2016 generally range from 2.10% for retirees to 2.95% for actives.

Comparative Financial Status

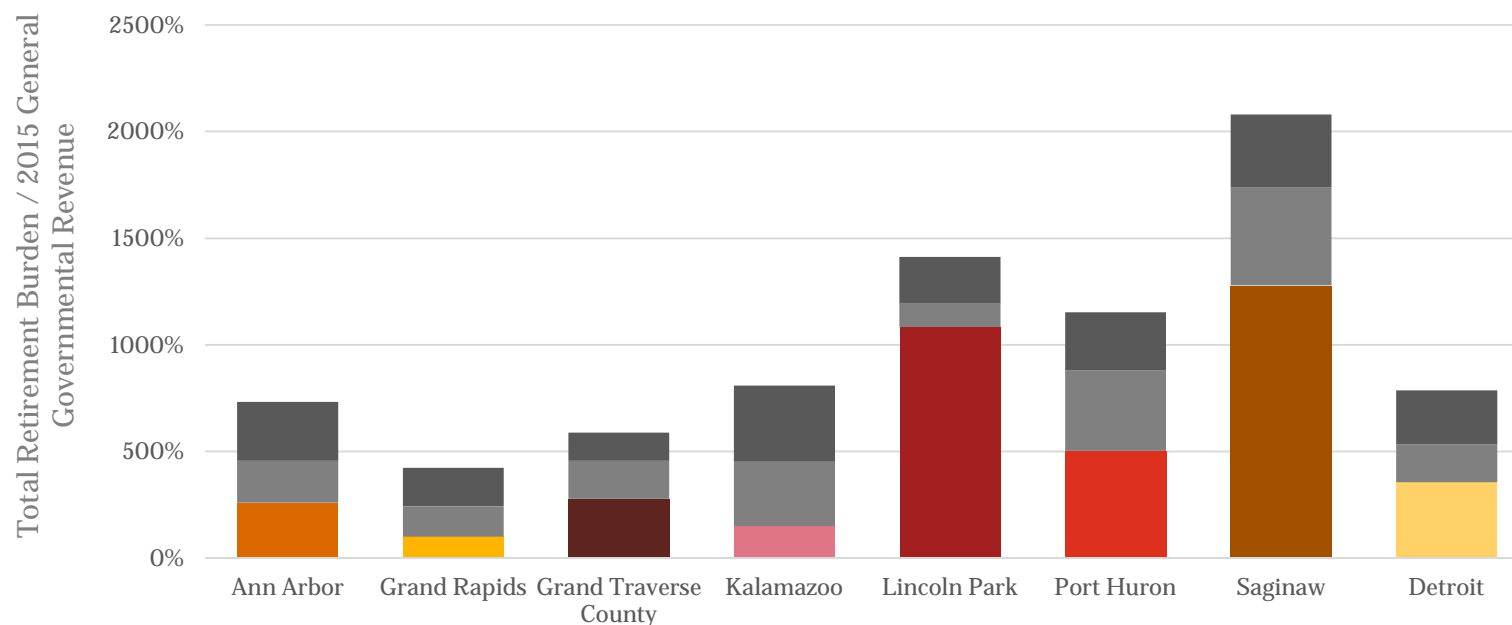
Total Retirement Burden Per Household



- The Median Household Income is shown by the blue line, on the secondary axis.
- Number of Households (Households, 2010-2014) was found using the QuickFacts search on the US Census Bureau website (<https://www.census.gov/quickfacts/table>).
- The Median Household Income for the State of Michigan is \$49k. The total retirement burden per household is \$13k under the disclosed assumptions, \$25k under the normalized assumptions and \$33k using the settlement discount rate.

Comparative Financial Status

Total Retirement Burden as a Percent of General Governmental Revenue

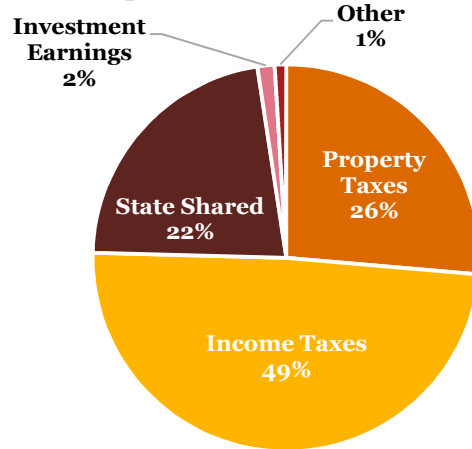


- 2015 General Governmental Revenue is equal to all taxes (property, income, other) State shared revenue, unrestricted grants, investment earnings, and other miscellaneous income for government activities.
 - Excludes program revenue (e.g. charges for services, operating grants) for government activities and all revenue for business-type activities.
- The total retirement burden as a percent of General Governmental Revenue for the State of Michigan is 185% under the disclosed assumptions, 341% under the normalized assumptions and 452% using the settlement discount rate.

Comparative Financial Status

Weighted Average Source of General Governmental Revenue

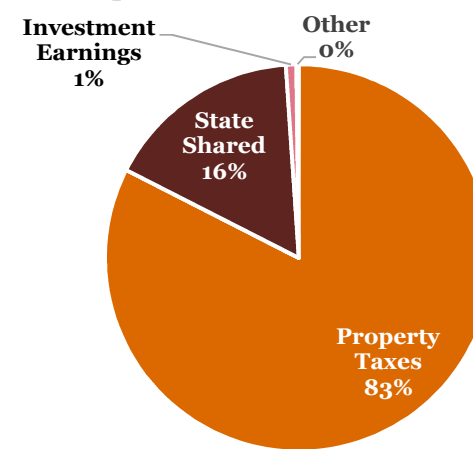
Municipalities with Income Taxes



Municipalities Included:

Grand Rapids
Port Huron
Saginaw

Municipalities with no Income Taxes



Municipalities Included:

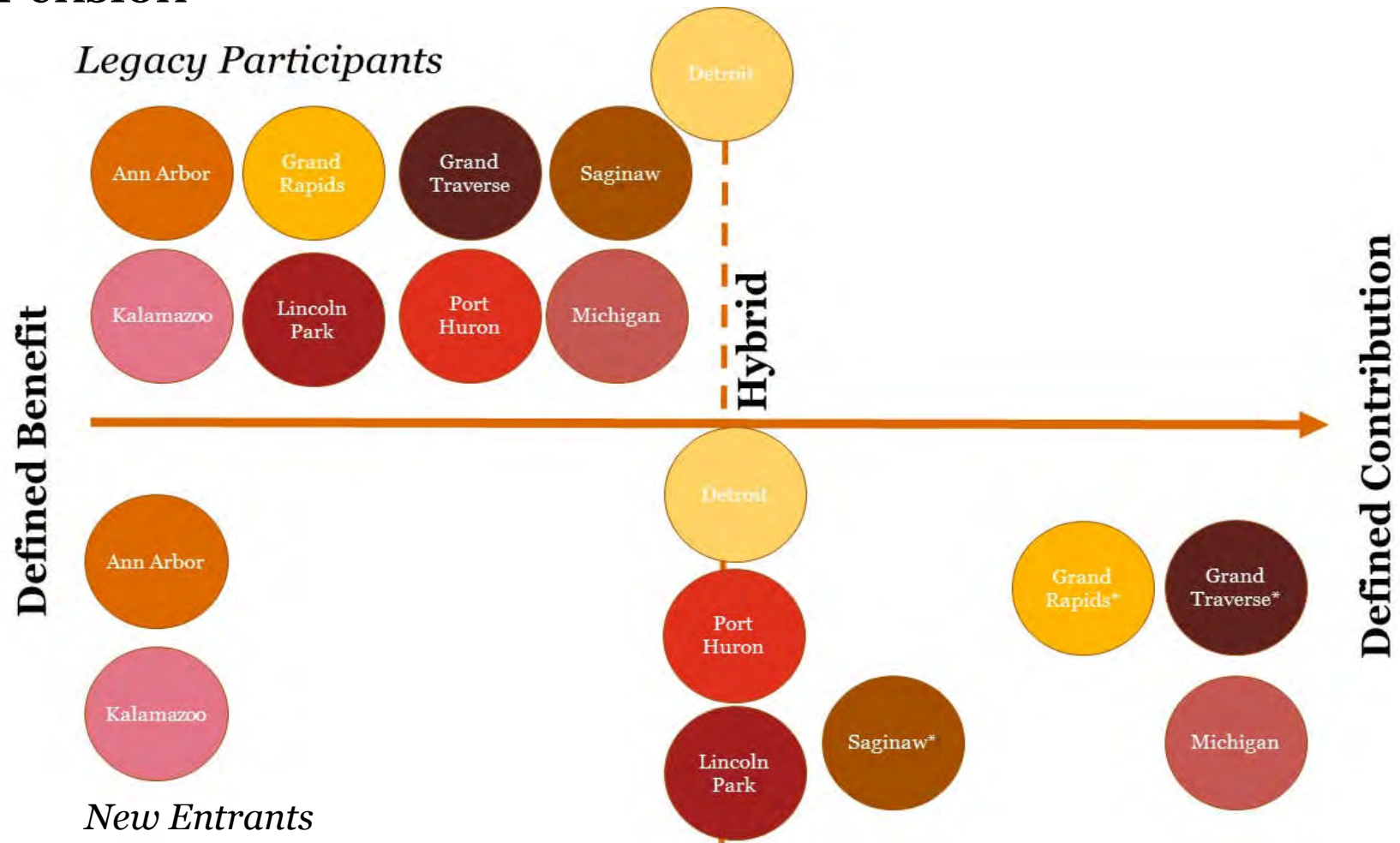
Ann Arbor
Grand Traverse County
Kalamazoo
Lincoln Park

- Pension and OPEB liabilities are typically funded from General Government Revenue.
- Proposal A limits growth in the taxable value of property to the lesser of the annual increase in the CPI index or 5%.

Summary of Reforms to Date

Summary of Reforms to Date

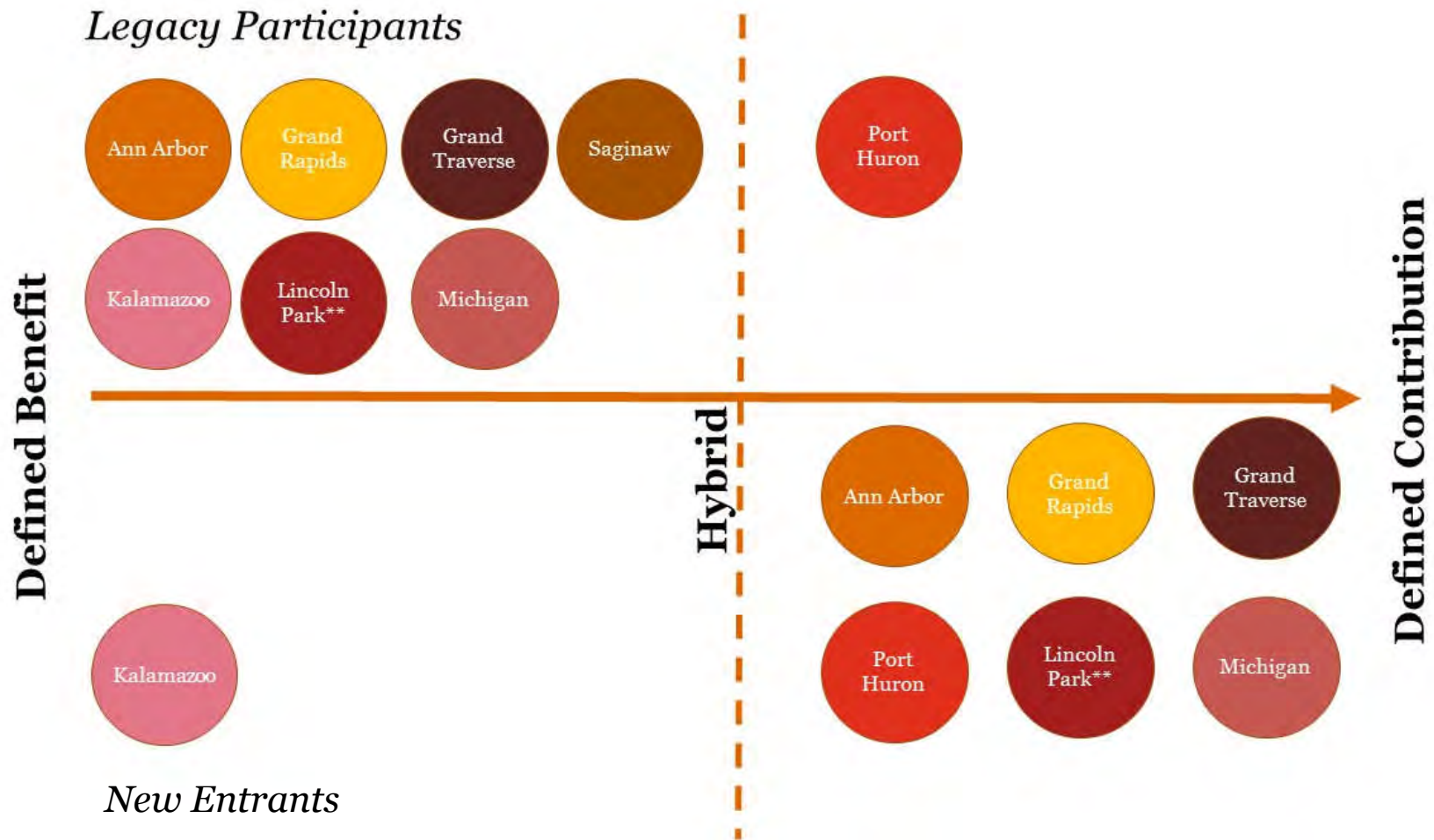
Pension



* Municipality has more than one plan, at least one of which continues to be open to new entrants under a traditional defined benefit formula.

Summary of Reforms to Date

OPEB



** Assumes the OPEB Plan is not terminated

*** Detroit terminated all OPEB Plans and, as such, is absent from the graphic.

Summary of Reforms to Date

Summary of Findings

- Legacy employees are generally accruing benefits under defined benefit pension and OPEB plans for the majority of municipalities.
 - Contribution levels may continue to increase significantly if investment return goals are not met and longevity continues to improve.
 - Considerable uncertainty exists regarding future health care costs.
- Significant migration to defined contribution and hybrid designs for new hires in recent years.
 - Kalamazoo and Ann Arbor are the exceptions.
 - The level of benefits provided to new hires is generally lower.

Illustrative Reforms

Illustrative Reforms

Retiree Health Care

- Managed care and other options that reduce cost without modifying the benefit.
- Require individuals to be “retired” (i.e., not eligible for coverage under employer plans) to receive benefits.
- Drop or reduce benefits once a retiree is eligible for Medicare.
- Voluntary conversion options, pending more comprehensive solutions.
- Revised eligibility, cost-sharing, and other plan features.
- Convert to a premium support defined contribution plan.
- Formulate retiree coverage under ACA exchanges with subsidies, as applicable.
- Consider the investment capabilities and savings vehicles offered by MERS to achieve economies scale.

Illustrative Reforms

Pension

- Voluntary early retirement options and other settlement offers (e.g. lump sum offers) to reduce workforce covered under legacy defined benefit plans.
- Create a lower cost plan (defined benefit, defined contribution, or hybrid) for new employees.
 - This has already been done by many of the municipalities in the study.
- Pursue pension reforms consistent with ERISA's accrued benefit and anti-cutback rules for legacy employees.
 - Freeze legacy defined benefit plans and provide future accruals under a lower cost plan, consistent with benefits provided to new hires.
- Voluntary conversion options, pending more comprehensive solutions.
- Eliminate abuses for current employees (e.g., double dipping) and consideration of amounts in excess of base compensation.
- Eliminate / Reduce / Cap COLAs based on years of service and current compensation for persons in the type position the person retired from,
- Revise eligibility, cost-sharing, and other plan features.
- Consider the investment capabilities and administrative expertise offered by MERS to achieve economies scale.

Illustrative Reforms

Restructuring Process

- Develop the business case for needed changes based on key financial, competitiveness, and compensation data, including benchmarking information.
- Develop illustrative solutions based on a set of key principles and values.
- Conduct a public education and engagement campaign.
- Achieve adoption of needed reforms.
- Implement agreed upon reforms.

Q&A

Thank you!

APPENDICES

APPENDIX I – Disclosed Financial Status Detail

Disclosed Financial Status Detail

Entity	Unfunded Pension Obligations (\$ millions)	Unfunded OPEB Obligations (\$ millions)	Total Retirement Burden (\$ millions)	Total Retirement Burden Per Household	Total Retirement Burden Per Household/ Median Household Income	Total Retirement Burden /2015 General Governmental Revenue
City of Ann Arbor	\$64.4	\$147.6	\$212.0	\$4,560	8.0%	2.6
City of Grand Rapids	\$28.9	\$129.2	\$158.1	\$2,179	5.5%	1.0
Grand Traverse County	\$62.3	\$14.7	\$77.1	\$2,212	4.2%	2.78
City of Kalamazoo	(\$126.2)	\$187.9	\$61.6	\$2,197	6.7%	1.5
City of Lincoln Park	\$93.5	\$110.9	\$204.4	\$13,943	35.0%	10.8
City of Port Huron	\$54.8	\$47.7	\$102.5	\$8,466	25.7%	5.0
City of Saginaw	\$143.5	\$217.3	\$360.8	\$18,620	64.1%	12.8
City of Detroit	\$2,918.0	\$0.0	\$2,918.0	\$11,479	44.0%	3.6
State of Michigan	\$5,853.5	\$9,442.6	\$15,296.1	\$3,996	8.1%	0.6
State of Michigan*	\$30,827.1	\$20,621.6	\$51,448.7	\$13,441	27.4%	1.9

* Includes the Public School Employees' Retirement System

- The unfunded pension and OPEB obligations shown are as disclosed in the 2015 CAFR for each municipality.
- The total retirement burden is equal to the sum of the underfunded/(overfunded) pension and OPEB obligations.
- Number of Households (Households, 2010-2014) and Median Household Income (Median household income in 2014 dollars, 2010-2014) were found using the QuickFacts search on the US Census Bureau website (<https://www.census.gov/quickfacts/table>).
- Note, the 2015 liabilities include the OPEB liability for Lincoln Park prior to the elimination of OPEB benefits at the direction of the City's Emergency Manager. For Kalamazoo, the 2015 asset value does not include the \$91M contribution in 2014.

APPENDIX II – Tax Rate Summary

Tax Rate Summary

Municipality	Property Tax Rate	Income Tax Rate
City of Ann Arbor	1.64501%	0%
City of Grand Rapids	0.91518%	1.50%
Grand Traverse County	0.65838%	0%
City of Kalamazoo	2.41205%	0%
City of Lincoln Park	2.29218%	0%
City of Port Huron	1.60869%	1.00%
City of Saginaw	1.48830%	1.50%

- Property tax rates shown are levied against taxable value. Taxable value cannot exceed 50% of assessed cash value and is limited in annual growth to the lesser of the annual increase in the CPI index or 5%.
- Income tax rates shown are for residents of the municipality.

APPENDIX III – Actuarial Assumption Normalization

Actuarial Assumption Normalization

- Each municipality is unique in terms of the pension and OPEB benefits provided to employees, the demographic characteristics of covered employees, financial condition, pension and OPEB financing strategy, etc.
- As a result, the actuarial assumptions used to value pension and OPEB liabilities can vary greatly, making direct comparisons difficult.
- Two key trends affecting pension and OPEB liabilities and cost are:
 - Investment returns on plan assets are likely to be lower than historical averages over the next several years.
 - Participants are living longer.
- We have estimated the pension and OPEB liability of each municipality using normalized assumptions for investment return and mortality in order to reflect these trends and provide greater comparability.

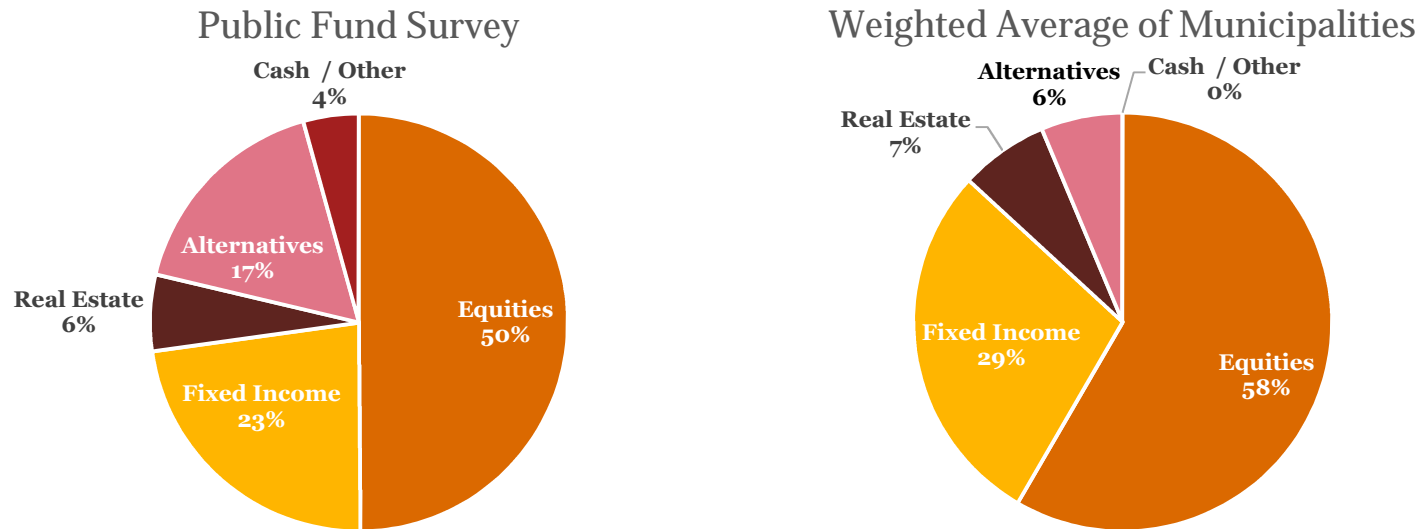
Actuarial Assumption Normalization

Discount Rate

- Under GASB 67 and 68, the discount rate is the single rate that reflects the long-term expected rate of return on pension plan investments that are expected to be used to finance the benefit payments, to the extent that the pension plan's fiduciary net position is projected to be sufficient to make projected benefit payments.
 - The long-term expected rate of return was used as the discount rate for all pre-funded plans in our study, regardless of current funded status.
- Using the Public Fund Survey, the average asset mix among broad investment categories was identified and used in setting a normalized expected return assumption.
 - The survey provided the most recent average asset allocation for 84 state systems.
- Capital market return expectations for each asset category published by JP Morgan, Callan, and Horizon and were averaged and applied to the average asset mix to arrive at a normalized investment return.
- The weighted average return based on the average asset mix and average capital market expectations yielded a normalized rate of 5.75% over a 10 to 20-year horizon.
- Using the normalized rate of 5.75% as the discount rate, the impact on the obligation for the pension plans was determined using the disclosed +/-1% sensitivity in each CAFR.
- For OPEB plans, the impact was determined using a common duration of 13, consistent with the adjustment methodology used by Moody's.

Actuarial Assumption Normalization

Discount Rate – Average Asset Mix



- The municipalities included in the study have a slightly higher allocation to traditional equity and fixed income, though the overall allocation is not significantly different than the average state wide fund.
- The asset allocations for the municipalities are as of the most recent CAFR date. If the municipalities had more than one plan with different asset mixes, the allocations were dollar weighted.

Actuarial Assumption Normalization

Discount Rate – Capital Market Expectations

	Equities	Fixed Income	Real Estate	Alternatives	Cash/Other	Total
Average Portfolio	49.90%	22.90%	5.90%	17.00%	4.30%	100%
Expected Arithmetic Returns						
JP Morgan	8.09%	5.22%	6.12%	6.56%	2.25%	
Horizon	9.25%	5.58%	7.75%	8.67%	2.31%	
Callan	7.40%	3.70%	6.00%	5.43%	2.30%	
<i>Average Return</i>	<i>8.25%</i>	<i>4.83%</i>	<i>6.62%</i>	<i>6.89%</i>	<i>2.29%</i>	
<i>Weighted Average</i>	<i>4.12%</i>	<i>1.11%</i>	<i>0.39%</i>	<i>1.17%</i>	<i>0.10%</i>	6.88%
Standard Deviations						
JP Morgan	15.50%	10.00%	11.50%	15.60%	1.50%	
Horizon	16.92%	10.49%	14.74%	16.67%	1.78%	
Callan	18.70%	11.40%	16.50%	20.20%	0.90%	
<i>Average Return</i>	<i>17.04%</i>	<i>10.63%</i>	<i>14.25%</i>	<i>17.49%</i>	<i>1.39%</i>	
<i>Weighted Average</i>	<i>8.50%</i>	<i>2.43%</i>	<i>0.84%</i>	<i>2.97%</i>	<i>0.06%</i>	14.81%

$$\text{Weighted average expected return} = 6.88\% - (14.81\%)^2 / 2 = 5.78\%$$

- The estimated total return was rounded to the nearest 25 basis points, 5.75%.
- Sources: (1) JP Morgan 2016 Long-Term Capital Market Assumptions, (2) Horizon Survey of Capital Market Assumptions – 2016 Edition, and (3) Callan 2016 Capital Market Projections.

Actuarial Assumption Normalization

Mortality

- Given the headcounts disclosed in the CAFRs, it does not appear that any of the municipalities would have fully credible data in order to determine their own mortality table.
- The RP-2014 mortality tables, projected generationally with improvement scale MP-2015, were chosen as the normalized mortality assumption.
 - The RP-2014 tables and MP-2015 improvement scale are based on a recent large-scale study of mortality across the United States by the Society of Actuaries.
 - The “blue collar” versions of the RP-2014 tables were used for police and fire plans. For all other plans, the standard “total dataset” RP-2014 tables was used.
- Adjustments made to the disclosed liability for plans where other mortality tables are assumed were based on differences in life annuity factors at ages from 35 to 80, with higher weighting given to ages 55-70 where the majority of retirement plan liability is concentrated.
 - For police and fire plans, the adjustments were weighted to assume 90% male participation. For the remaining plans, the adjustments were weighted to assume 50% male participation.
- The mortality impact on the OPEB plan was assumed to be the same as the respective pension plan for each municipality.

Actuarial Assumption Normalization

Total Impact of Normalization on Funded Status

Municipality	Pension Funded Status Impact			OPEB Funded Status Impact		
	Discount Rate Adjustment	Mortality Adjustment	Total Adjustment	Discount Rate Adjustment	Mortality Adjustment	Total Adjustment
City of Ann Arbor	(11%)	(4%)	(14%)	(6%)	(2%)	(8%)
City of Grand Rapids	(16%)	(4%)	(20%)	(0%)	(1%)	(1%)
Grand Traverse County	(11%)	(4%)	(14%)	(0%)	(0%)	(0%)
City of Kalamazoo	(22%)	(4%)	(26%)	(0%)	(0%)	(0%)
Lincoln Park	(3%)	(1%)	(3%)	(0%)	(0%)	(0%)
City of Port Huron	(13%)	(5%)	(17%)	(4%)	(2%)	(5%)
City of Saginaw	(10%)	(5%)	(14%)	(0%)	(0%)	(0%)
City of Detroit	(9%)	(1%)	(10%)	N/A	N/A	N/A

- Discount rates were not adjusted for OPEB plans, unless the discount rate was greater than 5.75% (i.e. the plan is funded, using an expected return for the discount rate).
- The impact shown for each municipality is on the funded status of all pension and OPEB plans combined.
- The OPEB plans for Grand Traverse County, Kalamazoo, Lincoln Park and Saginaw are unfunded (or essentially unfunded). As such, the total impact on the funded status is 0%.

Actuarial Assumption Normalization

Total Impact of Normalization on Funded Status

Municipality	Pension Funded Status Impact			OPEB Funded Status Impact		
	Disclosed Funded Status	Total Adjustment	Adjusted Funded Status	Disclosed Funded Status	Total Adjustment	Adjusted Funded Status
City of Ann Arbor	88%	(14%)	74%	44%	(8%)	36%
City of Grand Rapids	97%	(20%)	77%	21%	(1%)	20%
Grand Traverse County	52%	(14%)	38%	1%	(0%)	1%
City of Kalamazoo	127%	(26%)	101%	4%	(0%)	4%
Lincoln Park	21%	(3%)	18%	0%	(0%)	0%
City of Port Huron	60%	(17%)	43%	18%	(5%)	13%
City of Saginaw	56%	(14%)	42%	0%	(0%)	0%
City of Detroit	64%	(10%)	54%	N/A	N/A	N/A

- Discount rates were not adjusted for OPEB plans, unless the discount rate was greater than 5.75% (i.e. the plan is funded, using an expected return for the discount rate).
- The impact shown for each municipality is on the funded status of all pension and OPEB plans combined.

APPENDIX IV – Settlement Rate Normalization

Settlement Rate Normalization

- Each municipality included in our study employs an investment strategy for pension and OPEB plan assets that includes a significant allocation of assets to risky investments, such as equities.
- Municipalities bear the investment risk for defined benefit plans.
- Municipalities must manage the risk of volatile returns from one year to the next and understand the ramifications of not achieving the returns assumed.
- To quantify the risk / dependency on assumed investment returns, we have also estimated the pension and OPEB liabilities of each municipality using a rate of interest that is representative of the rate at which pension and OPEB liabilities could be effectively be settled.
- Similar to discount rates used in the private sector, a corporate bond discount rate was used to illustrates the level of risk taken in the current financing of the benefits.
- The Citigroup Pension Liability Index as of August 31, 2016 of 3.46% was used as a proxy for the settlement rate. The Citigroup Index is a commonly used index for setting discount rates in the private sector and is used by Moody's when normalizing liabilities.
- Annuity purchase rates as of August 2016 range from 2.10% for retirees to 2.95% for actives.

Settlement Rate Normalization

Total Impact of Assumption Changes on Funded Status

Municipality	Pension Funded Status Impact			OPEB Funded Status Impact		
	Normalized Discount Rate and Mortality	Additional Discount Rate Adjustment (3.46%)	Total Adjustment	Normalized Discount Rate and Mortality	Additional Discount Rate Adjustment (3.46%)	Total Adjustment
City of Ann Arbor	(14%)	(14%)	(28%)	(8%)	(7%)	(15%)
City of Grand Rapids	(20%)	(14%)	(34%)	(1%)	(3%)	(4%)
Grand Traverse County	(14%)	(6%)	(20%)	(0%)	(0%)	(0%)
City of Kalamazoo	(26%)	(19%)	(44%)	(0%)	(0%)	(0%)
Lincoln Park	(3%)	(3%)	(6%)	(0%)	(0%)	(0%)
City of Port Huron	(17%)	(7%)	(24%)	(5%)	(2%)	(8%)
City of Saginaw	(14%)	(6%)	(21%)	(0%)	(0%)	(0%)
City of Detroit	(10%)	(10%)	(19%)	N/A	N/A	N/A

- The impact shown for each municipality is on the funded status of all pension and OPEB plans combined.

Settlement Rate Normalization

Total Impact of Assumption Changes on Funded Status

Municipality	Pension Funded Status Impact			OPEB Funded Status Impact		
	Disclosed Funded Status	Total Adjustment	Adjusted Funded Status	Disclosed Funded Status	Total Adjustment	Adjusted Funded Status
City of Ann Arbor	88%	(28%)	60%	44%	(15%)	29%
City of Grand Rapids	97%	(34%)	63%	21%	(4%)	17%
Grand Traverse County	52%	(20%)	32%	1%	(0%)	1%
City of Kalamazoo	127%	(44%)	83%	4%	(0%)	4%
Lincoln Park	21%	(6%)	15%	0%	(0%)	0%
City of Port Huron	60%	(24%)	36%	18%	(8%)	10%
City of Saginaw	56%	(21%)	35%	0%	(0%)	0%
City of Detroit	64%	(19%)	45%	N/A	N/A	N/A

- The impact shown for each municipality is on the funded status of all pension and OPEB plans combined.

APPENDIX V – Disclosures

Disclosures

The actuaries responsible for the estimates contained in this presentation are members of the Society of Actuaries and the American Academy of Actuaries, are Enrolled Actuaries, and meet the “General Qualification Standards of for Actuaries Issuing Statements of Actuarial Opinion in the United States” relating to pension plans. The analysis presented herein has been conducted in accordance with generally accepted actuarial principles and practices.

The estimates of pension and OPEB liabilities using the “normalized” and “settlement” assumptions disclosed herein were computed using standard actuarial techniques and sensitivities to adjust disclosed liabilities that were computed using assumptions selected by each municipality. The assumptions used in our analysis are intended to be objective and reasonable for the purposes of this analysis, which are to illustrate the potential pension and OPEB liability that exists if the assumptions selected by each municipality are not realized, as well as to illustrate the magnitude of pension and OPEB liabilities on a settlement basis. The assumptions selected for our analysis should not be construed as an opinion that the assumptions selected by each municipality are unreasonable or as advocacy of measuring pension and OPEB liabilities at a market or settlement rate for disclosure purposes.

The actual cost of each benefit plan included in our analysis will depend on the actual investment experience and the actual experience of plan members. Over the life of any benefit plan, the benefit payments and expenses paid by the plan must be supported by contributions to the plan and investment returns on the invested assets of the plan. To the extent that benefit payments and expenses are higher than anticipated and / or investment returns are less than anticipated, higher contributions would be required, all else equal. The opposite is also true.

Disclosures

Our work was performed under an engagement letter between PwC and Grand Rapids Area Chamber of Commerce, and it was not prepared for the benefit of or reliance by any third party. Our work is intended to illustrate the potential magnitude of retirement benefit liabilities in the selected municipalities as well as potential restructuring efforts that could be taken to address them.

The illustrative reforms presented herein should not be construed as a recommendation in favor of, or in opposition to, the particular reforms presented, or as a recommendation in favor of, or in opposition to, defined benefit, defined contribution, or other hybrid plan arrangements. The reforms presented are illustrative based on the reforms enacted by other, similar entities to achieve desired cost levels and competitive levels of overall compensation and benefits for employees.

There is no relationship between the PwC practitioners involved in this engagement and the municipalities included in our study that may impair the objectivity of our work.

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Pension Analysis - DRAFT

Grand Traverse County

February 6, 2017

Grand Traverse County
Pension Analysis - DRAFT



CONTACT:

Brian Whitworth, Director
brian.whitworth@hilltopsecurities.com

16000 Ventura Boulevard, Suite 1100
Encino, California 91436

Phone: 310.401.8057

Benjamin McGuire, Director
benjamin.mcguire@hilltopsecurities.com

333 Albert Avenue, Suite 430
East Lansing, Michigan 48823

Phone: 517.351.0211

February 12, 2016
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Pension Analysis - DRAFT

Executive Summary

The County closed its defined benefit program to new hires for most divisions in the year 2000. The remaining two divisions were closed to new hires in 2016. As of 12/31/15, 80 active employees were still in the DB plan. Per conversations with the County, the number of active employees has declined further since then as employees continue to retire. Per the MERS 2015 actuarial study, the plan is 45.2% funded on an actuarial basis. About 79% of the County's total pension liabilities are for retirees and former employees.

It takes a very long time for the last defined benefit pension participant to pass away. If some of the last employees hired into the system were about 20 years old at hire, there is a moderate chance the last retirement payment would be at least 80 years after they were hired. Understanding the cash flow needs of the pension plan is necessary for preparing a long term funding strategy.

It is difficult to make precise predictions, especially several decades into the future. However, this does not make planning irrelevant. Lack of planning, analysis, or a long term strategy could leave the County reacting to unexpected increases in pension contributions, perhaps during a recession or other time of great budget difficulty. We believe it is very useful to use Monte Carlo simulation to look at a broad range of choices regarding how to fund the remaining liabilities. Those simulations help assess the three basic questions Hilltop Securities was asked to assist in answering.

1. Should the County accept the 16 year amortization schedule which was approved by MERS prior to the new extension policy allowing requests for one-time extensions up to 25 years?
2. If the County should not accept the 16 year proposal, what length would offer the most protection from annual contribution volatility?
3. What use of the \$5.1 million committed by the Board towards the County's unfunded pension liability will have the greatest long term impact?

In order to perform the analysis necessary to facilitate responses to each of these questions certain assumptions were identified for specific simulations as described below:

1. What length of amortization to request from MERS – The choices analyzed include: A. Staying with the current amortization, which is currently 12 years for most divisions, and 21 years for two other divisions. B. 16 years for most divisions, with two divisions remaining at 21 years. C. 20 years for all divisions. D. 24 years for all divisions.
2. Whether to contribute additional discretionary amounts to MERS in the 2017 budget year. Simulations were performed to assess the impact of a lump sum contribution of \$5.1 million on annual payments and long term plan volatility.
3. Whether to create an irrevocable pension stabilization trust that is separate from MERS. If used, such a stabilization trust might have up to \$5.1 million contributed in 2017 as previously committed by the Board, with other contributions considered later should such a funding policy be established by the Board.
4. If a pension stabilization trust is used, what asset allocations might be used for investments, ranging from very short term, liquid, all fixed income portfolios similar to what is used for the County's general fund to an asset allocation similar to a pension system (including bonds, equity, REITs and perhaps other asset classes).
5. While not included in this preliminary draft, potential contribution and disbursement policies for a pension stabilization trust have also been discussed for further analysis at a later date.

In selecting a strategy for funding, the County stated budget stability is important, especially with respect to extreme stress that could result in cuts to essential County services. We have thus focused on budget volatility, rather than simply expected baseline costs.

After extensive analysis, we have found that:

- A. Longer amortization periods provide lower annual required contributions to MERS through at least 2028, and have lower peak contributions than the current amortizations. However, if paying only the minimum, selecting a longer amortization would likely result in higher contributions in 2029 and later.
- B. Large lump sum contributions to MERS reduce future expected contributions, but do not have a substantial effect on the volatility of contributions in later years. In contrast, making a large contribution to a separate pension stabilization trust could help reduce budget stress due to either lower County revenues (e.g., during a recession) or due to large increases in MERS contributions (e.g., due to poor investment returns).
- C. We have not found any existing pension stabilization trusts in Michigan. However, we found about 50 local governments using such trusts in other states. The number of such trusts is expanding quickly.
- D. If the County selects a longer amortization period, such as 20 years, it should consider making additional contributions above the minimum required amounts. Additional contributions might be made in “good” budget years where the County has more capacity. If those contributions are made to a stabilization trust, it would provide more capacity to assist with MERS contributions in later years.
- E. It is possible to select a longer amortization such as 20 years, and to target additional discretionary contributions so that the expected date of full funding is earlier, for example in 16 years. Such a policy would not only likely reduce the length of time required to reach 100% funding, but also cause less stress to County budgets than selecting a 16 year amortization and being forced to make at least the 16 year amortization payment each year.

Our analysis to date leads us to encourage the County to:

- I. Select a longer “extended amortization period” under MERS’ new policy. Selecting a 20 or 24 year extended amortization period may provide lower required contributions in more difficult budget years and allow the County to reach full funding with less budget stress than a shorter period (e.g., 12 or 16 years). However, the longest amortization periods have more uncertainty from numerous factors, including the County’s overall population, revenues, and financial status. Similar to personal credit card debt, unfunded pension liabilities can be prepaid in whole or part at any time whether directly to MERS, to an irrevocable trust, or some combination thereof. Also similar to credit card debt, the unfunded pension liabilities have a higher discount rate than the County’s other debts. Thus, it is in the County’s long term interest to make more than the minimum payment whenever practical. Especially if selecting a 20 or 24 year amortization period, the County should strongly consider adopting a policy of making additional contributions in “good” years.
- II. Take the necessary steps to verify structure and legal authority for investments for an irrevocable pension stabilization trust for the County, and pursue establishing such a trust.
- III. Contribute to such a trust at least at inception. Strongly consider implementing a policy to make additional contributions later, such as in “good” budget years, or if MERS contributions are lower than expected or decreasing.

During our analysis, we have had regular discussions with County staff, who have been very helpful. More detail is provided in the attached sections.

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Separate Appendixes for Data Sources

1. Municipal Employees' Retirement System of Michigan Annual Actuarial Valuation Report December 31, 2015, Grand Traverse County, Prepared By CBIZ Retirement Plan Services
2. Municipal Employees' Retirement System Of Michigan Summary Report Of The 70Th Annual Actuarial Valuations As Of December 31, 2015 For The 732 Defined Benefit Plan And Hybrid Plan Municipalities, Prepared By CBIZ Retirement Plan Services
3. Municipal Employees' Retirement System of Michigan, Appendix To The Annual Actuarial Valuation Report December 31, 2015 Summary Of Plan Provisions, Actuarial Assumptions And Actuarial Funding Method As Of December 31, 2015, Prepared By CBIZ Retirement Plan Services
4. Municipal Employees' Retirement System Of Michigan Experience Study Report For The Period January 1, 2009 – December 31, 2013, Prepared By CBIZ Retirement Plan Services July 6, 2015
5. September 16, 2016 letter from MERS to Tom Menzel, County Administrator, Grand Traverse County
6. CBIZ estimates for contributions at 12 and 16 year amortizations provided to Grand Traverse County 2016
7. Survey of Capital Market Assumptions, Horizon Actuarial Services LLC.

Section 1. MERS Amortization Choices and Forecasts

MERS has provided employers with divisions closed to new hires an opportunity to select different amortization periods than are currently used. Those employers, including the County, can choose periods up to 25 years. The County expressed concern that even under an extended amortization schedule, market volatility may negatively impact annual required contributions lessening the impact of a one-time voluntary contribution of \$5.1 million in 2017 on reducing annual contributions required in later years.

At the County's choice, we reviewed:

- A. Staying with the current amortizations, which are currently 12 years for most divisions, and 21 years for two other divisions.
- B. 16 years for most divisions, with two divisions remaining at 21 years.
- C. 20 years for all divisions.
- D. 24 years for all divisions.

Monte Carlo simulations are important to our analysis. This technique is used to understand the impact of risk and uncertainty. Outputs of the Monte Carlo model for the County include a simulated range of contributions made by the County each year, from 2017 through 2072. Different amortization periods (12, 16, and 20 years) were simulated, with and without upfront contributions of \$5.1 million.

Monte Carlo simulation uses probability distributions. For example, the expected return on large cap US equity is modeled as 7.98%, with an annual standard deviation of 16.92%. Long term high grade corporate bonds have an expected return of 4.37% and a standard deviation of 10.49% (source: Horizon Actuarial LLC, 2016 Survey of Capital Market Assumptions). There are correlations between different types of assets, and this is part of the model. While diversifying between different asset classes (e.g., equity, real estate, and bonds) reduces risk, it does not eliminate it. Thus, the overall portfolio of a pension plan has investment risk.

Figures 1A and 1B below show four scenarios 12, 16, 20, and 24 years with no upfront additional contributions, and 16 years with an additional \$5.1 million. The solid lines show the CBIZ expected contributions for 12 and 16 years, and 16 years with a \$5.1 million upfront contribution. The 20 and 24 year solid lines are estimated using similar methods to that used by MERS' actuary, CBIZ.

The dotted lines are the average of 1000 simulations for each of the scenarios. Those simulations incorporate the 12/31/2015 difference between market and actuarial value, how those will be recognized and amortized, and the new 5 year recognition of future investment gains and losses. Figure 1A is calculated in nominal dollars, with no adjustment for expected future inflation. Figure 1B uses the underlying data in Figure 1A and a 2.5% annual inflation expectation to display payments in 2017 dollars. If one assumes that the County's budget was to increase roughly in line with inflation, the same nominal dollar amount far into the future (e.g., \$8 million in 2037-2041) would likely be a source of less stress to the County than if it occurred around 2027-28.

Figure 1C repeats the approach of Figure 1B, but uses a considerably lower and more conservative 1.0% annual inflation expectation to display payments in 2017 dollars. 1.0% is approximately the average of the last 10 years for the County's revenues. This period includes the Great Recession.

There is a similar pattern for all of these amortization choices. The CBIZ numbers incorporate a phase-in of actuarial changes to rates, which is one reason why the solid lines have a higher slope for the first five years. Then, the amortization payments increase by 3.75% per year, per MERS current policy.

Different divisions at the County closed the defined benefit plan to new hires at different times. The two divisions which closed later had a 21 year amortization as of 12/31 15 (we used 19 years at 12/31/17; 17 years at 12/31/18; and 15 years at 12/31/19, per MERS' policy and discussions with the County; amortizations longer than 16 years drop by two years with each calendar year until they reach 15 or 16 years). Those two divisions are the primary reason why the 12 and 16 year amortization do not drop to zero the following year.

There is considerable variation in the simulated results, but it is helpful to start with the average of the simulations. Figures 1A, 1B, 1C, and 2 show that the averages for the simulations (dotted lines) have an even higher rate of contribution increase than the base contributions for the first five years. Then, the average simulated contribution starts to drop, but not all the way to zero. As the dotted lines for the average simulated contributions show, on average there are contributions of about \$1-2 million per year for about a decade after expected end of the amortization period (i.e., 12, 16, or 20 years). There is considerable volatility around that average, as is shown in Section 2.

Figure 2 shows that contributing \$5.1 million directly to MERS lowers future contributions for the 16 year amortization. However, the \$5.1 million upfront contribution does not substantially reduce volatility. Figure 3 shows a similar picture for the 20 year amortization.

Figures 1A, 1B, and 1C.

Figure 1A. Base and Average Simulated Contributions, 12, 16, 20, and 24 Years
Nominal Dollars

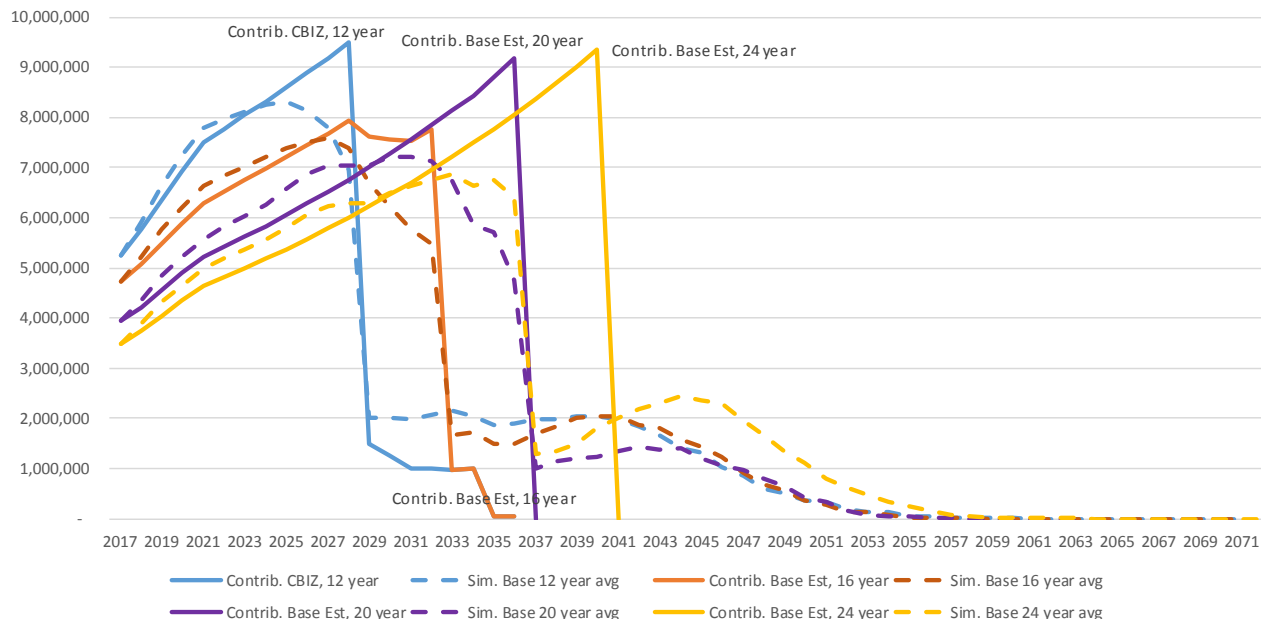


Figure 1B. Base and Average Simulated Contributions, 12, 16, 20, and 24 Years
2017 Dollars, Assuming 2.5% Annual Inflation

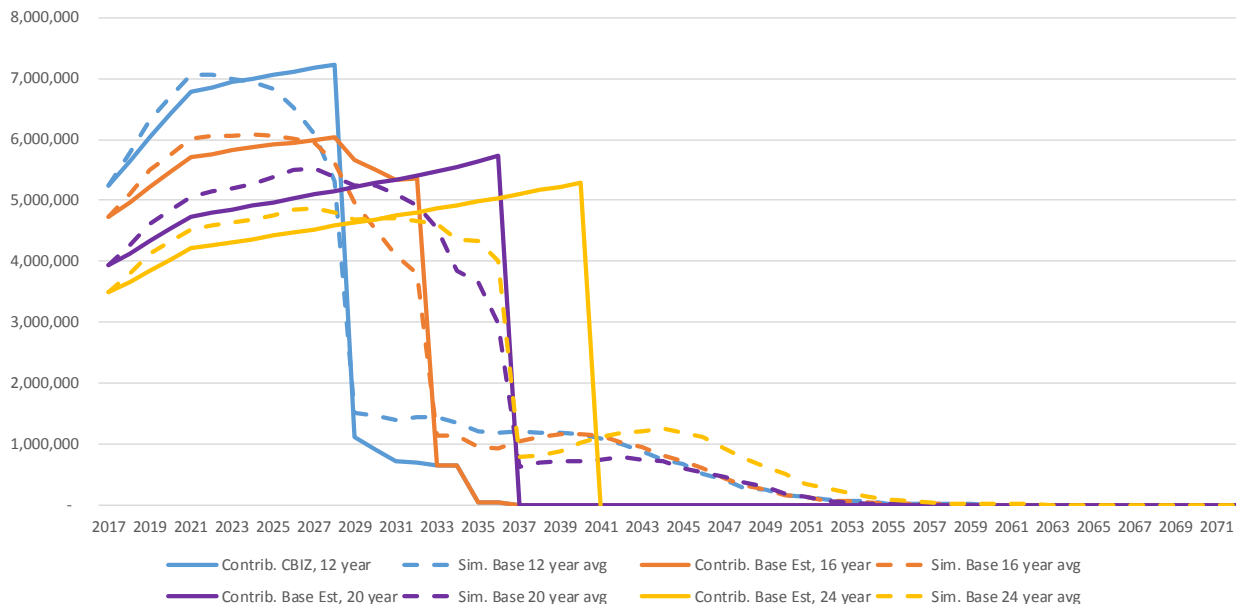


Figure 1C.

Figure 1C. Base and Average Simulated Contributions, 12, 16, 20, and 24 Years
2017 Dollars, Assuming 1% Annual Inflation

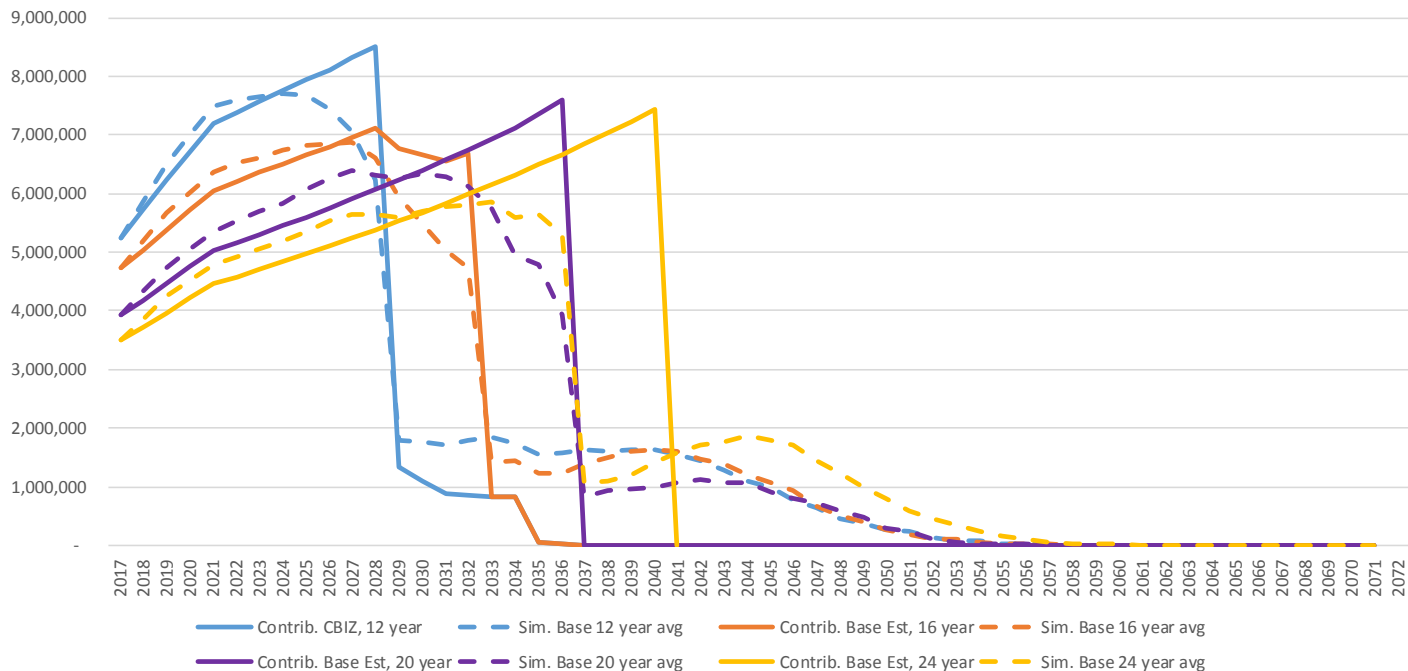


Figure 2.

Figure 2. Base & Average Simulated Contributions, 16 Years With & Without \$5.1 Million

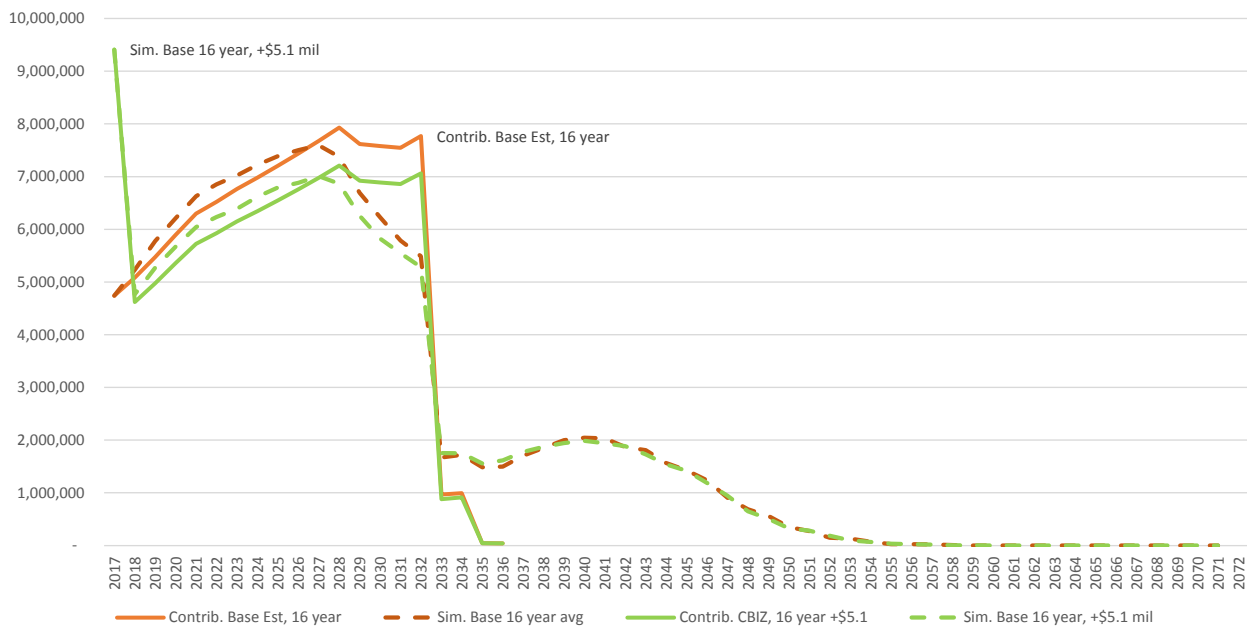
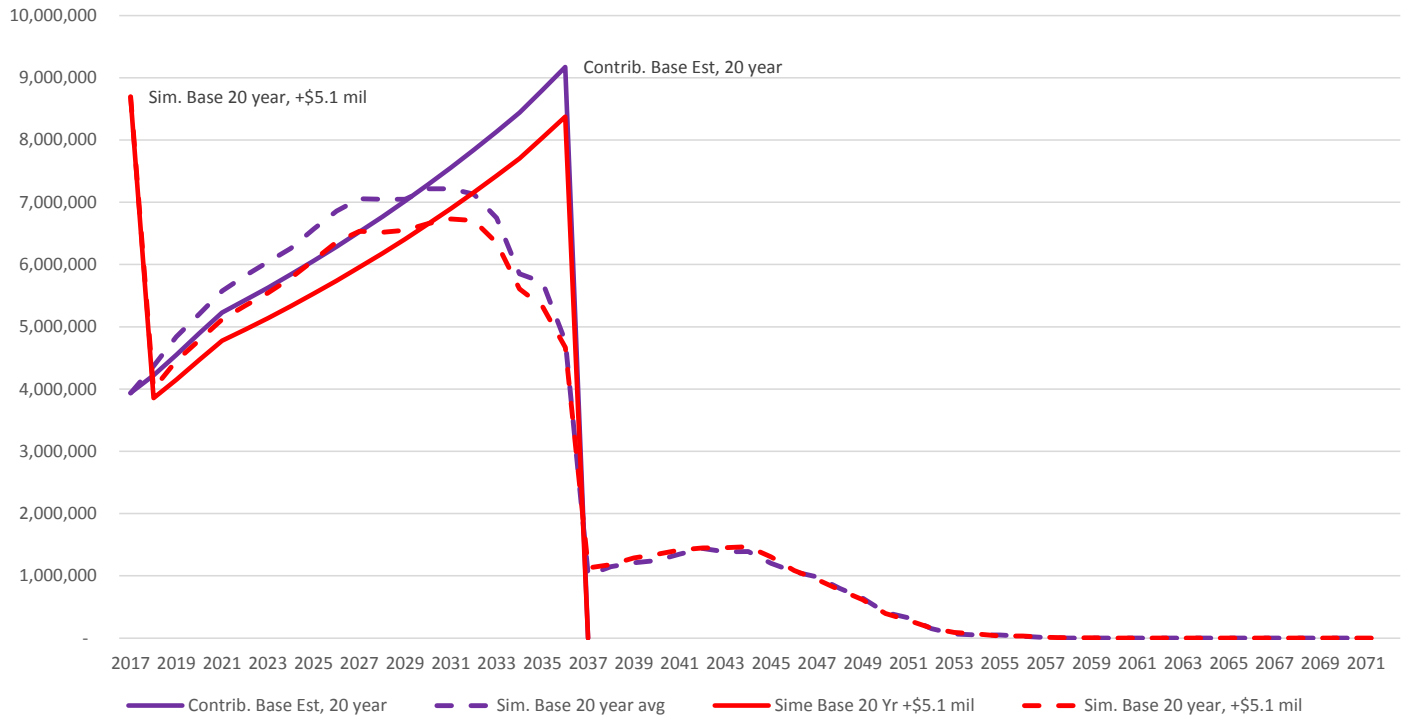


Figure 3.

Figure 3. Base & Average Simulated Contributions, 20 Years With and Without \$5.1 Million



Section 2. Contribution Volatility and Potential Additional Upfront Contributions to MERS

First, an overview of this section's results:

1. Regardless of the length of amortization period selected, actual future contributions will be volatile, and will not follow the baseline projections from MERS. This is true of virtually any retirement system, not just MERS.
2. Contributions will often occur after the expected end of amortization (e.g., 2036). Even if the funded ratio reaches 100% at any particular point in time, it might fall below 100% later, and additional contributions could become due.
3. There is a significant chance of reaching 100% funding before the scheduled end of amortization. That could mean that contributions drop to zero before the scheduled end of amortization. However, they could also resume later due to adverse investment returns, retirees living longer than expected, or other factors.
4. The range of possible contributions increases over time until the scheduled end of amortization (e.g., 2036). Then, the amounts decrease, but there is continued volatility for many years.
5. Eventually, usually by about 2055, contributions in the great majority of simulations are at or near zero.
6. Upfront contributions to MERS reduce expected contributions in subsequent years, but do not have a substantial effect on future volatility.
7. Contributions will often occur after the expected end of amortization (e.g., 2036).
8. The net present values of average simulated cashflows for the different amortizations are fairly close, within a range of 7% if discounted at 3.5% and within 10% if discounted at 7.75%.

Figure 4 shows the following for 16 year amortizations with and without a \$5.1 million upfront contribution:

- A. The comparison of baseline projections where returns each year are exactly 7.75% (solid lines. Per CBIZ). Contributing \$5.1 million more upfront leads to lower contributions later.
- B. The average simulated contribution (long dashed lines near the middle).
- C. The 90th percentile of contributions for each year (hollow dashed lines, the highest two lines on the chart).
- D. The 10th percentile contributions for each year (dotted lines, the lowest two lines on the charts, which go to zero in 2026).

For the 16 year amortizations, Figure 4 provides an indication of the potential volatility of contributions if the plan continues to run as expected (no changes to discount rate, expected retirement age, mortality, etc.), but investment returns vary. Thus, once an amortization period is chosen and any upfront contributions are made, the simulation volatility is primarily due to investment returns.

A bit of explanation is in order about the meaning of the 10th and 90th percentile lines. The County's actual contributions in the future could take an endless number of possible paths. With 1000 simulations, the 10th percentile means that 100 of those simulations have a lower contribution amount for that year. Thus, contributions at the 10th percentile are commonly far below the average. For the 90th percentile, 900 of the 1000 simulations for that particular year have a lower contribution amount. Contributions at the 90th percentile are usually far above the average. While the 10th and 90th percentiles are not the minimum and maximum, they are useful for understanding the range of potential contributions likely to be encountered.

Each simulation produces a series of simulated investment returns (e.g., 7.5% in 2017, -3.1% in 2018, 4.1% in 2019, 11.8% in 2020....) called a "path", based on the actual MERS asset allocation and distributions of expected returns from a survey of investment consultants who work with public sector pension plans (see also Section 4). Each path of the simulation is different. A particular path can easily result in contributions that are higher than the MERS baseline for some years, and lower than the MERS baseline for other years. Because of MERS smoothing and amortization of investment results, contributions have some correlation between years, even though the investment returns do not.

On Figure 5 below, we show three different paths from the simulation of the 16 year amortization (black lines). Path 1 is less expensive every year than the MERS projections. Path 2 rises above the MERS projections early on and then goes to zero before the “expected” end of the amortization. Path 3 is an example of simulated contributions going to zero at some point, and then reappearing.

Figures 6A shows the 10th and 90th percentile simulations of contributions for 12, 16, 20, and 24 years all on one chart. Thus, Figure 6A shows a range of contributions in nominal dollars. Figure 6B uses the underlying data in Figure 6A and a 2.5% annual inflation expectation to display payments in 2017 dollars. If one assumes that the County’s budget was to increase roughly in line with inflation, the same nominal dollar amount far into the future (e.g., \$13.5 million in 2037-2041) would likely be a source of less stress to the County than if a similar amount occurred around 2027-28.

Figure 4.

Figure 4. Base, Average, 10th, 90th Percentiles of Simulated Contributions, 16 Year Amortization Schedule

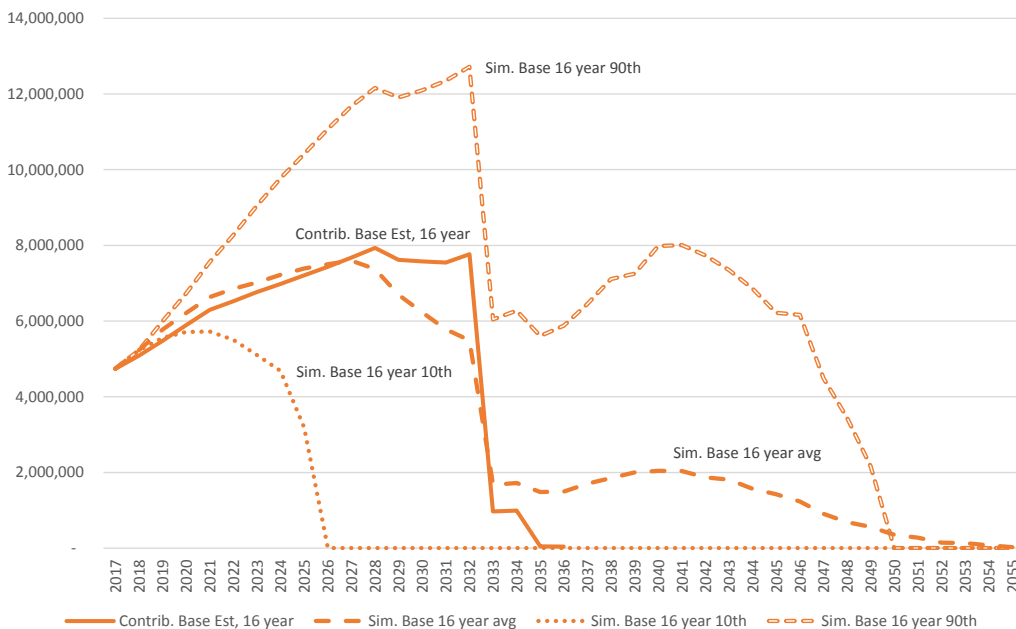


Figure 5.

Figure 5. Average, 10th, 90th Percentiles & Example Contribution Paths, 16 Year Amortization

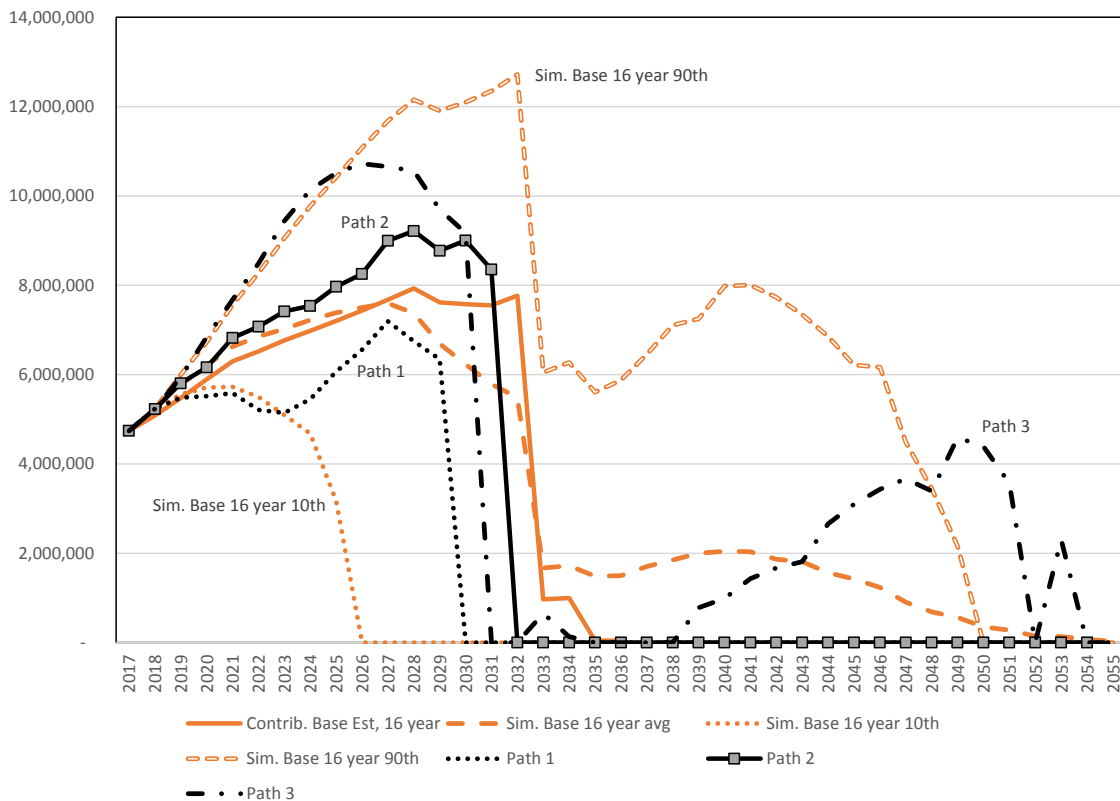


Figure 6A. 10th and 90th Percentiles of Simulated Contributions -
12, 16, 20, and 24 Year Amortizations Nominal Dollars

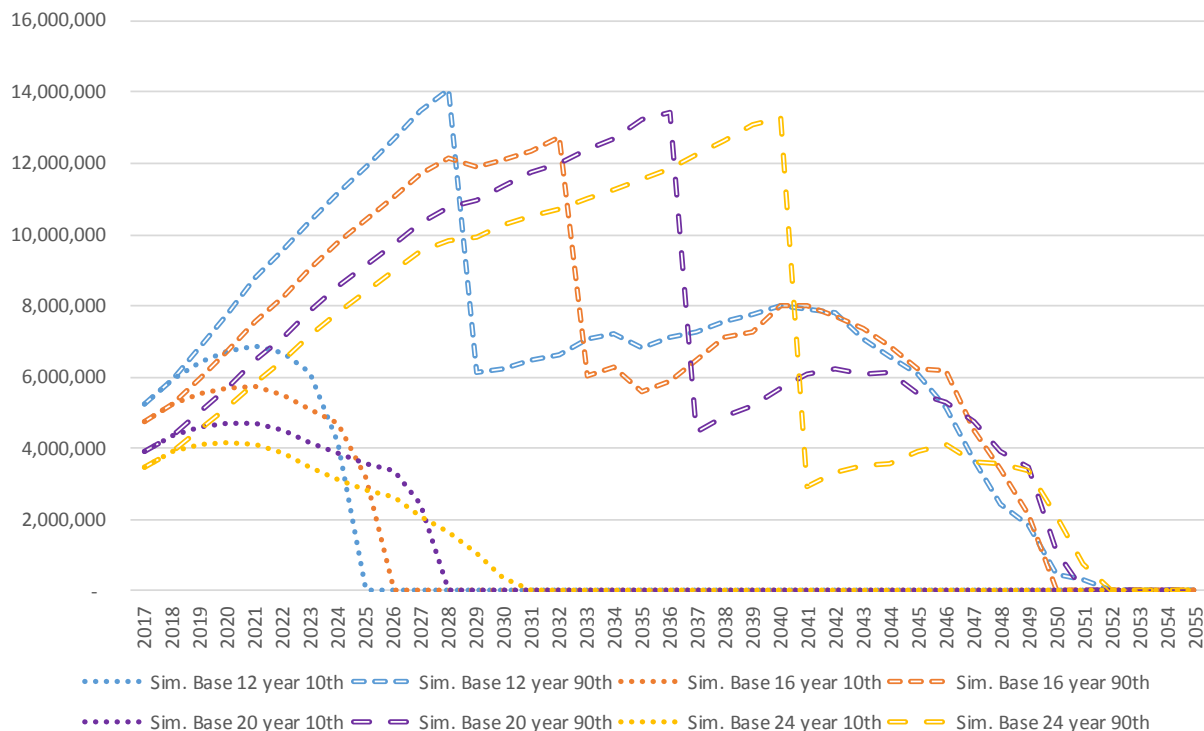
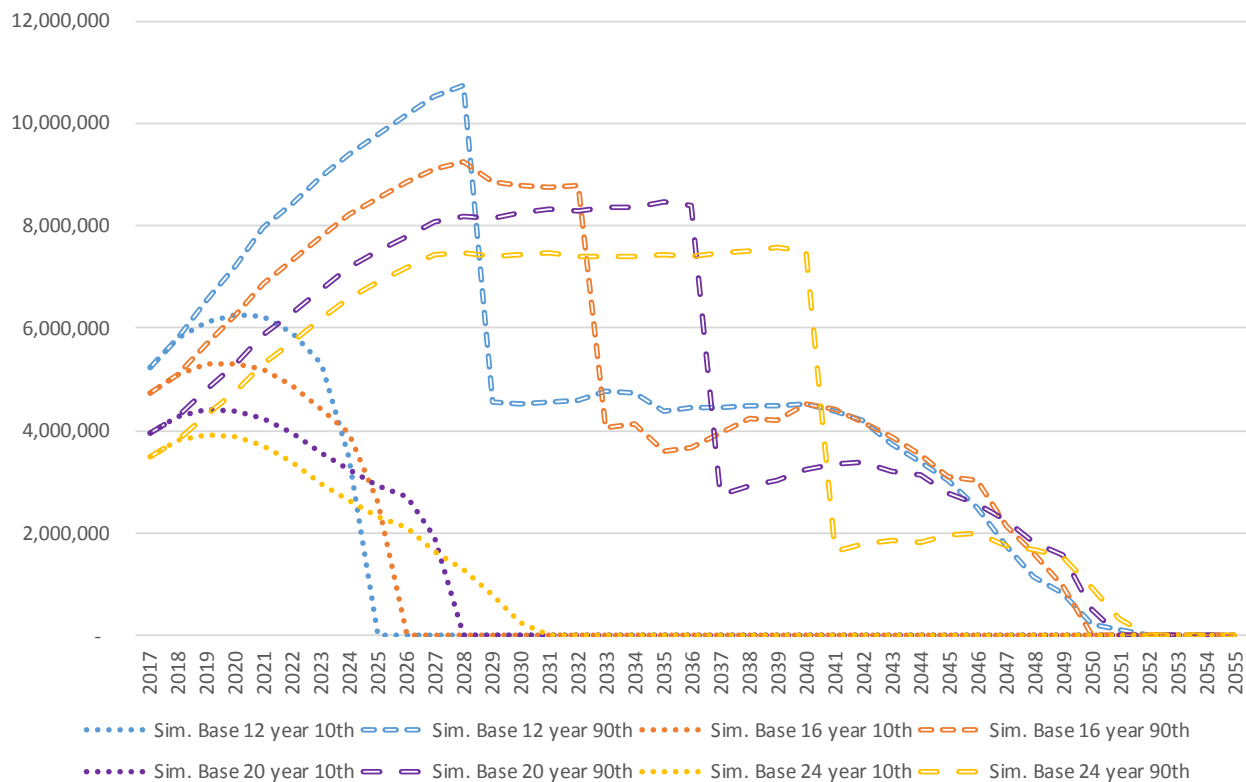


Figure 6B. 10th and 90th Percentiles of Simulated Contributions -
12, 16, 20, and 24 Year Amortizations, 2.5% Inflation



Section 3. Asset Allocation for an Irrevocable Pension Stabilization Trust

This section uses three very different examples of potential investment strategies. 1. Short term, mostly treasuries and similar cash equivalents. This would be the closest to the County's general fund investments. Long term expected returns are 2.2% from the survey of investment consultants we used (Horizon Actuaries LLC., 2016). 2. A fairly conservative indexed portfolio with a 6.12% expected return. This sample portfolio uses a conservative allocation available from CalPERS for its members who are prefunding for OPEB. It has 24% equity, 39% fixed income, 26% TIPS, 8% REITs, and 3% other. 3. A pensionlike portfolio with an expected return of 7.28%. It is composed of 57% equity, 27% fixed income, 5% TIPS, and 3% other.

The County could easily use a different strategy, or one which is expected to change over time. A very important consideration regarding the trust is whether the County would expect to make additional contributions over time to the trust. For example, the County might select a 20 year amortization from MERS, put \$5.1 million into a separate trust, and then make additional future contributions to the trust (for example in good budget years, or when pension contributions are declining).

There are several important observations in this section:

- A. The compounding effects of different rates of return mean that the longer the time horizon the larger the difference in the balance of the trust for different investment strategies.
- B. Even treasury returns have a correlation with overall inflation and the economy. Thus, some of the same factors which make MERS have a lower return and higher contributions would cause a short term treasury portfolio to have lower returns.
- C. If the County added money to the trust in years when pension contributions are lower than target/expected, the trust could get significantly larger and provide more cushion in difficult budget years. This would be especially useful in the shorter term.

Why an Irrevocable Trust?

There are numerous differences between having an earmarked fund and using an irrevocable trust for a pension stabilization trust:

1. Earmarked funds can be reallocated by future boards. Such earmarked funds might be used to pay expenses which are completely unrelated to pensions, such as capital construction, employee raises, or reducing property taxes. In contrast, money in an irrevocable trust can only be used for the intended purpose: paying for pension costs. As described below, money in an irrevocable trust could typically be returned to the County if all pension liabilities are paid off or transferred to another party (typically an annuity insurer).
2. For financial statement reporting purposes, earmarked funds cannot be counted as assets of the pension plan. Thus, for example, if the County's pension account at MERS had a \$50 million market value of assets, and an earmarked fund had \$7 million, the County would report \$50 million in assets for GASB reporting purposes. In contrast, if the \$7 million was in an irrevocable trust, the County would report \$57 million in assets under GASB. The difference could have an effect on information used to arrive at bond ratings, and might also affect analysis by institutional investors interested in the County's bonds.
3. In Michigan, an earmarked fund has a size limit. Statutorily, a budget stabilization fund is limited Under Michigan Public Act 30 of 1978, The stabilization fund(s) may not exceed the lesser of fifteen (15) percent of the current year's General Fund budget, or fifteen (15) percent of the average of the most recent five (5) General Fund budgets. Any amount in excess of this limit will be immediately deposited into unassigned General Fund balance. General Fund revenues in fiscal year 2015 were about \$36 million so with the 15% limit Grand Traverse County would be limited to a fund balance of about \$5,400,000, including both the County's regular budget stabilization fund and an earmarked fund for pensions. Thus, this would limit the size of any earmarked pension stabilization fund.
4. While further research is necessary regarding an irrevocable trust in Michigan, it is common elsewhere that irrevocable trusts can have broader investment authority than earmarked funds (e.g., an irrevocable trust might have authority to invest in equities and REITs and an earmarked County fund could not).

Potential Future Overfunding and a Stabilization Trust. Depending on future contributions, investment results, and other factors such as mortality, the County could find that its pension plan is more than 100% funded at some point. Being over 100% funded at MERS does not allow the County to return excess assets to the general fund. In order to do so, all liabilities for the County's DB plans would need to be eliminated. In practice, there are two common ways this occurs. 1. The last retiree/survivor passes away and the last benefit has been paid. 2. Annuities are purchased for the remaining retirees from highly rated insurers to make remaining benefit payments. This option is usually more expensive than using a pension plan. However, if the number of remaining retirees is small and/or the plan is very overfunded it may make sense to pay more than the actuarial value of remaining benefits to buy annuities. That could reduce or eliminate expenses of running the plan such as actuarial valuations and audits, and transfer remaining risks such as mortality to an insurer. If the plan was very overfunded, purchasing annuities for all remaining retirees and beneficiaries might result in returning money to the employer many years earlier.

Similarly, an irrevocable trust does not have the ability to directly return money to the County simply upon request. It will require further investigation, and perhaps an IRS Private Letter Ruling, to confirm whether a particular pension stabilization trust could return money under any additional circumstances to the employer. It may be possible to return money to the employer if the total of assets at MERS and a pension stabilization trust are substantially above 100% of estimated liabilities.

OPEB and an OPEB Trust. While not part of the scope of this analysis, the County is also considering at least some prefunding for OPEB, but has not yet determined an amount. An OPEB trust would likely need to be separate from a pension stabilization trust, and separation is the typical practice elsewhere. In order to be counted as pension assets, a stabilization trust needs to be irrevocable solely for pension purposes, per GASB 67 and 68 standards. In order to be counted as OPEB assets, an OPEB trust needs to be irrevocable solely for OPEB purposes, per GASB 74 and 75 standards.

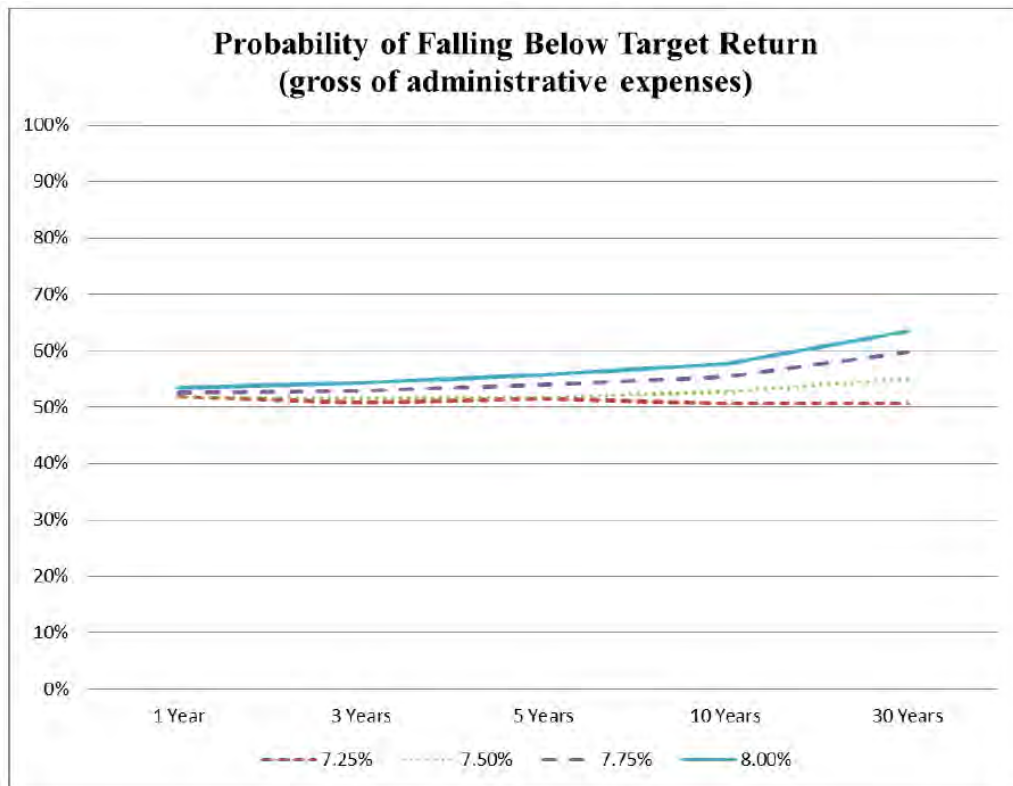
Even partial prefunding for OPEB would allow the County to reduce its expected long term cost of benefits, insulate it from swings in the actual cost of providing those benefits from year to year, and reduce booked liabilities under GASB standards. Unlike pension stabilization trusts, there are existing OPEB trusts in Michigan. The County could either join a multiemployer OPEB trust or establish its own.

Section 4. Expected Investment Returns at MERS

In order to perform Monte Carlo simulations of investment returns, an average expected return and volatility assumption are required. This can be accomplished with a mean and standard deviation for investment returns, or with a correlation matrix between different asset classes (e.g., large cap equity, cash equivalents, real estate).

While MERS has an expected 7.75% actuarial rate of return, the CBIZ experience study for MERS dated July 6, 2015 includes this chart on page D-7:

Figure 7 (Source: CBIZ experience study for MERS).



The dotted purple line from this chart in the MERS' experience study shows approximately a 60% chance of compound annual rates of return actually being below 7.75% over a 30 year horizon. It appears that MERS' assumed 7.75% actuarial rate of return is above the average long term compound annual growth rate from their experience study. This would result in any contributions projected using a 7.75% discount rate being too low if the average simulated investment return from MERS' experience study actually occurred.

Using survey data from pension investment consultants compiled by Horizon Actuarial LLC for 2016 and MERS' actual asset allocation, we found very similar numbers: a 65% chance that actual investment returns would be below the assumed 7.75% discount rate (on a compounded annual growth rate basis). This lower expected compound annual growth rate results in the present value of average contributions from our simulations being several million dollars above the baseline contributions provided by MERS.

Section 5. Next Steps

Next steps for the County may include:

1. Decide if the County would like to pursue an irrevocable pension stabilization trust. The decision to have an irrevocable trust requires County Board authority. This decision might also involve retaining outside counsel and/or obtaining an IRS private letter ruling.
2. Determine an initial asset allocation for the pension stabilization trust while a longer term investment policy is confirmed or defined.
3. If any portion of the \$5.1 million is to be allocated to an OPEB trust, determine how much of that would be allocated to any OPEB trust.
4. Within a few months of starting any trust, develop policies for additional contributions to the irrevocable trust(s) in future fiscal years.
5. Choose an alternate extended amortization period to request under MERS' new policy.
6. Later, assess the possible use of lump sum rollovers, buyouts, and/or annuity purchases to reduce risk, reduce the remaining liabilities of the pension plan, and potentially to allow return of some trust assets to the County earlier.

Section 6. Recommendations

Our analysis to date leads us to encourage the County to:

- I. Take the necessary steps to verify structure and legal authority for investments for an irrevocable pension stabilization trust for the County, and pursue establishing such a trust.
- II. Contribute to such a trust at least at inception. Strongly consider implementing a policy to make additional contributions later, such as in “good” budget years, or if MERS contributions are lower than expected or decreasing.
- III. Select a longer “extended amortization period” under MERS’ new policy. If implementing a policy of making additional contributions in good years, selecting a 20 year extended amortization period may provide lower required contributions in more difficult budget years and allow the County to reach full funding with less budget stress than a shorter period (e.g., 12 or 16 years).

Section 7. Data Sources

Underlying data sources include:

1. Municipal Employees' Retirement System of Michigan Annual Actuarial Valuation Report December 31, 2015, Grand Traverse County, Prepared By CBIZ Retirement Plan Services
2. Municipal Employees' Retirement System Of Michigan Summary Report Of The 70Th Annual Actuarial Valuations As Of December 31, 2015 For The 732 Defined Benefit Plan And Hybrid Plan Municipalities, Prepared By CBIZ Retirement Plan Services
3. Municipal Employees' Retirement System of Michigan, Appendix To The Annual Actuarial Valuation Report December 31, 2015 Summary Of Plan Provisions, Actuarial Assumptions And Actuarial Funding Method As Of December 31, 2015, Prepared By CBIZ Retirement Plan Services
4. Municipal Employees' Retirement System Of Michigan Experience Study Report For The Period January 1, 2009 – December 31, 2013, Prepared By CBIZ Retirement Plan Services July 6, 2015
5. September 16, 2016 letter from MERS to Tom Menzel, County Administrator, Grand Traverse County
6. CBIZ estimates for contributions at 12 and 16 year amortizations provided to Grand Traverse County
7. 2016 Survey of Capital Market Assumptions, Horizon Actuarial Services LLC. , <http://www.horizonactuarial.com/blog/2016-survey-of-capital-market-assumptions>

Each of these is attached as separate appendixes.

Economic Vitality Incentive Program / County Incentive Program

Category 3: Unfunded Accrued Liability Plan

EVIP (for eligible cities, villages or townships) and CIP (for eligible counties) are revenue sharing packages for municipalities. They include three categories of eligibility, each with its own set of requirements and deadlines, and offering 1/3 of the total available incentive revenue. By June 1, 2014, you need to submit a plan to address your unfunded liability to Treasury for Category 3 of EVIP. This sample template is meant to assist you in documenting your plan.

When your plan is complete, submit it along with certification form 5074 to the Department of Treasury, using the contact information on the form. The form can be found at http://www.michigan.gov/documents/treasury/5074_434975_7.pdf.

1. MUNICIPALITY INFORMATION

Municipality Name:

Fiscal Year:

Pension UAL as reported in the most recent actuarial valuation:

Pension Funded Ratio: No Pension UAL

OPEB UAL as reported in most recent valuation:

OPEB Funded Ratio: No OPEB UAL

2. PENSION UAL – ACTIONS TAKEN

You may have a pension UAL only if you offer a defined benefit and/or a hybrid plan.

PLAN DESIGN CHANGES (CHECK IF APPLICABLE)

STRATEGY

Adopted a Lower Tier of Benefits for New Hires (check all that apply):

- Lowered multiplier from _____ to _____
- Removed Cost of Living Increases
- Removed Early Retirement Riders (i.e. 55/25, 50/25)
- Increased Vesting from _____ to _____
- Increased Normal Retirement Age from _____ to _____
- Other:

IMPACT

The long term impact of implementing a lower tier of benefits for new hires is that it reduces the future liability accrual because future benefits will be lower, and therefore less expensive, than the previous benefits offered.

Effective Date:

Adopted a Defined Contribution Plan for New Hires

Effective Date:

The long term impact of implementing Defined Contribution for new hires is that it eliminates the future accrual of liabilities for those benefits, since Defined Contribution does not have liabilities associated with the benefits.

Adopted a Hybrid Plan for New Hires

Multiplier:

Vesting:

FAC:

Normal Retirement Age:

Once the benefit structure is established, the defined benefit portion may not be increased and is not subject to collective bargaining.

Yes (MERS only) No

Effective Date:

The long term impact of implementing a Hybrid Plan for new hires is that it reduces the future liability accrual because future benefits will be lower, and potentially less expensive, than the previous benefits.

Bridged the Multiplier for Active Employees

Bridged from: _____ multiplier

Bridged to: _____ multiplier

Final Average Compensation used: (check one)

Frozen (biggest impact) Termination

Effective Date:

The impact for bridging a multiplier for active employees is immediate and not only reduces future liabilities, but also may reduce existing liabilities. Past service remains at the previous multiplier and all future service accrues at the new, reduced multiplier. New hires would receive the new bridged multiplier.

FUNDING (CHECK ALL THAT APPLY)

STRATEGY

- Contributed the Annual Required Contribution to Fund the Plan**

IMPACT

The actuarial determined minimum contribution is comprised of two pieces: **Employer Normal Cost** (present value of benefits allocated to the current plan year less any employee contribution), and **Amortization Payment of Unfunded Accrued Liability** (payment to reduce any shortfall between liability for past service and assets). Making the required minimum payments into the plan contributes towards the unfunded accrued liability.

How will this action continue to be implemented and maintained?

- Contributed Above the Minimum Required Amount**

- Extra percentage above minimum:

- Lump sum payment into plan:

Additional payments made into the plan go toward funding the unfunded accrued liability. In addition, those extra dollars are invested and have the ability to recognize market returns.

How will this action continue to be implemented and maintained?

3. PENSION UAL – NO ACTIONS TAKEN

NO ACTIONS HAVE BEEN TAKEN IN THE PAST

PLEASE EXPLAIN WHY NO ACTIONS HAVE BEEN TAKEN

4. OPEB UAL – ACTIONS TAKEN

You may have an OPEB UAL only if you offer retiree health insurance, or other post-employment benefits.

PLAN DESIGN CHANGES (CHECK ALL THAT APPLY)

STRATEGY

Implemented Changes to Coverage Levels

Details:

Effective Date:

IMPACT

Implementing changes to coverage and benefit levels reduces the total liability of the plan.

Increased Co-Payments

Details:

Effective Date:

Reduces the total liability of the plan.

Modified Eligibility

Reduces the total liability of the plan.

Details:

Effective Date:

Implemented Defined Contribution Style Health Care

(i.e. MERS Health Care Savings Program)

Eliminates OPEB liability for new hires. If active employees opt out, it reduces the current liabilities.

Check all that apply:

- New hires
- Offered conversion/incentive for employees (actives or retirees) to opt out of retiree healthcare

Effective Date:

Eliminated Retiree Health Insurance Coverage for New Hires

Eliminates OPEB liability for new hires.

Details:

Effective Date:

FUNDING (CHECK ALL THAT APPLY)

STRATEGY

Established a qualified medical trust - OPEB Trust

(i.e. MERS Retiree Health Funding Vehicle)

Contributions made to the Trust this year:

Balance in the Trust: _____

Effective Date:

IMPACT

Assets in a qualified medical trust can be used to offset OPEB liability.

How will this action continue to be implemented and maintained?

5. OPEB UAL – NO ACTIONS TAKEN

NO ACTIONS HAVE BEEN TAKEN IN THE PAST

PLEASE EXPLAIN WHY NO ACTIONS HAVE BEEN TAKEN

6. OTHER ACTIONS THAT DO NOT QUALIFY FOR EVIP

STRATEGY

Closed the Defined Benefit Plan and Issued a Pension Obligation Bond to Fund the Plan

Issued the bond at: (check one)

Actuarial Value Market Value

Bond Amount: _____

IMPACT

The proceeds of the bond are deposited and potentially will fully fund the unfunded accrued liability of the Plan. There is no guarantee that future unfunded liabilities may not occur.

How will this action continue to be implemented and maintained?

POLICIES/BEST PRACTICES (CHECK ALL THAT APPLY)

STRATEGY

Limited Final Average Compensation

Base wages only or (check all that apply)

Excluded or limited overtime

Excluded or limited PTO payouts

Excluded or limited sick leave payouts

IMPACT

Limiting what is included in someone's final average compensation reduces the benefit amounts, therefore decreasing total liability. It also mitigates Final Average Compensation (FAC) padding/spiking, which could lead to the immediate development of UAL.

Amortization of UAL – open DB Plan

Decreasing the period in which UAL is spread over expedites the payoff.

Current Amortization Policy:
_____ years

Is this amortization shrinking?

Yes No *(MERS shrinks the amortization schedule by
1 year, every year)* **Regular Actuarial Experience Study**

Regularly performing an actuarial experience study provides Plan oversight, governance and due diligence to ensure experience is close to assumptions.

Last study performed: _____

Scheduled every _____ years

(MERS last Experience Study was performed in 2009) **Benefit Increases Policy**

By limiting when benefit increases can be done, this reduces the risk of developing UAL due to granting benefit enhancements that have not yet been paid for and/or prefunded.

Required to be _____% funded

7. ACTIONS THAT MAY BE TAKEN

To reduce Unfunded Accrued Liability in the future, plan design modifications may be made for new hires, including: retirement eligibility and vesting requirements, multipliers, cost-of-living increases, removal of early retirement riders, and increases to the retirement age. In addition, plan changes could be made for new hires, including adopting a hybrid or defined contribution plan. For active employees, bridging the current multiplier to a lower multiplier for future service could also be implemented.

Funding strategies may also be made, including: contributing the annual required contribution to the plan (required by the State Constitution), and contributing more than the minimum required contribution.

Best practice policies include: limiting what is included in the final average compensation calculation, reviewing/reducing the amortization period to pay off unfunded liabilities, performing a regular actuarial Experience Study, and creating a policy on when benefit increases can be made.

If retiree healthcare is offered, and there is OPEB unfunded liabilities, future actions that could be taken include: plan design modifications (i.e. changes to coverage levels, increased co-payments, eligibility modifications), plan type changes (i.e. implementing a defined contribution style health care), and funding strategies (i.e. establishing an OPEB trust and funding it).

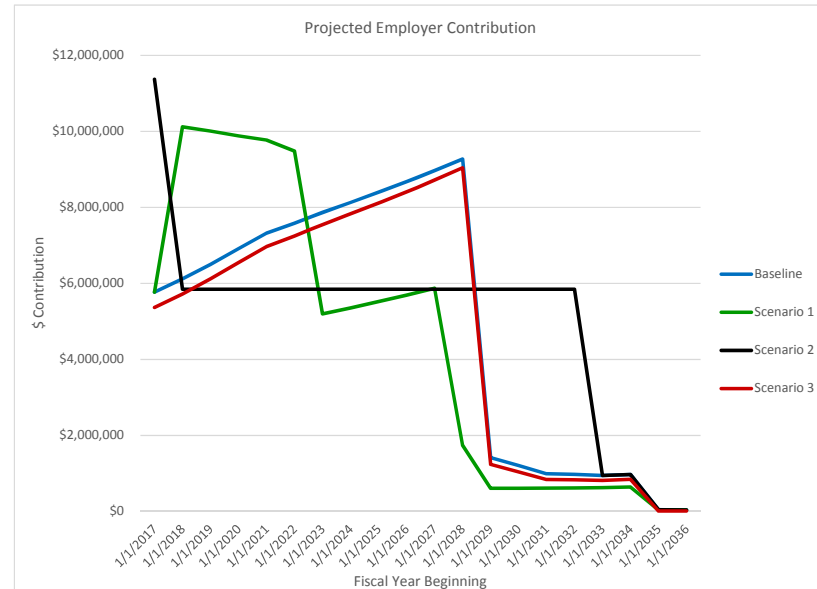
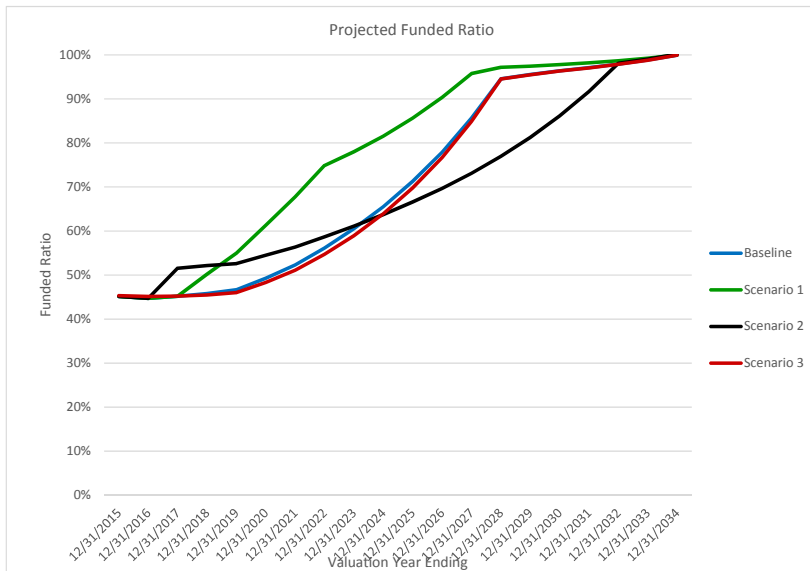
GRAND TRAVERSE CO (2803) - ESTIMATED PROJECTED EMPLOYER CONTRIBUTIONS AND FUNDED RATIOS (TOTAL OF ALL DIVISIONS)

Valuation Year Ending	Fiscal Year Beginning	Baseline (Reflects Bridged Benefits of Divisions 10, 11, and 18)			Scenario 1: Bridge Remaining Divisions to 1.5% Multiplier (Frozen FAC) and 6% Employee Rate			Scenario 2: \$5.6M Lump Sum with Level Payments; Extend 12-Year Amort to 16-Year (Div. 13 and 17 Remain on Same Schedule)			Scenario 3: Additional \$4 Million in Years 2018 - 2022		
		Actuarial Accrued Liability	Funded %	Required Annual Employer Contribution	Actuarial Accrued Liability	Funded %	Required Annual Employer Contribution	Actuarial Accrued Liability	Funded %	Required Annual Employer Contribution	Actuarial Accrued Liability	Funded %	Total/Required Annual Employer Contribution
12/31/2015	1/1/2017	95,953,788	45%	\$5,771,544	95,509,426	45%	\$5,366,856	95,953,788	45%	\$11,371,544	95,953,788	45%	\$5,771,544
12/31/2016	1/1/2018	97,049,968	45%	\$6,121,380	96,260,254	45%	\$5,723,292	97,049,968	45%	\$5,850,000	97,049,968	45%	\$10,121,380
12/31/2017	1/1/2019	97,873,181	45%	\$6,500,448	96,514,266	45%	\$6,120,852	97,873,181	52%	\$5,850,000	97,873,181	45%	\$10,010,044
12/31/2018	1/1/2020	98,442,222	46%	\$6,911,652	96,442,284	45%	\$6,546,540	98,442,222	52%	\$5,850,000	98,442,222	50%	\$9,884,200
12/31/2019	1/1/2021	98,776,535	47%	\$7,322,568	96,115,094	46%	\$6,968,256	98,776,535	53%	\$5,850,000	98,776,535	55%	\$9,774,604
12/31/2020	1/1/2022	98,914,314	49%	\$7,583,820	95,595,090	48%	\$7,246,116	98,914,314	54%	\$5,850,000	98,914,314	61%	\$9,482,500
12/31/2021	1/1/2023	98,855,402	52%	\$7,869,432	94,814,797	51%	\$7,550,124	98,855,402	56%	\$5,850,000	98,855,402	68%	\$5,198,544
12/31/2022	1/1/2024	98,544,693	56%	\$8,128,416	93,759,610	55%	\$7,827,912	98,544,693	59%	\$5,850,000	98,544,693	75%	\$5,357,544
12/31/2023	1/1/2025	97,967,806	61%	\$8,398,368	92,485,181	59%	\$8,115,624	97,967,806	61%	\$5,850,000	97,967,806	78%	\$5,523,720
12/31/2024	1/1/2026	97,139,005	66%	\$8,676,540	91,013,724	64%	\$8,410,536	97,139,005	64%	\$5,850,000	97,139,005	82%	\$5,694,276
12/31/2025	1/1/2027	96,086,432	71%	\$8,967,360	89,369,728	70%	\$8,718,840	96,086,432	67%	\$5,850,000	96,086,432	86%	\$5,873,436
12/31/2026	1/1/2028	94,766,225	78%	\$9,272,208	87,470,584	77%	\$9,041,556	94,766,225	70%	\$5,850,000	94,766,225	90%	\$1,740,720
12/31/2027	1/1/2029	93,186,759	86%	\$1,419,420	85,342,468	85%	\$1,239,456	93,186,759	73%	\$5,850,000	93,186,759	96%	\$610,536
12/31/2028	1/1/2030	91,351,891	95%	\$1,213,416	83,039,527	94%	\$1,045,536	91,351,891	77%	\$5,850,000	91,351,891	97%	\$610,284
12/31/2029	1/1/2031	89,273,030	96%	\$992,268	80,571,723	95%	\$840,228	89,273,030	81%	\$5,850,000	89,273,030	97%	\$612,672
12/31/2030	1/1/2032	86,970,303	96%	\$975,696	77,949,839	96%	\$834,300	86,970,303	86%	\$5,850,000	86,970,303	98%	\$618,684
12/31/2031	1/1/2033	84,434,393	97%	\$948,360	75,154,623	97%	\$816,612	84,434,393	92%	\$947,640	84,434,393	98%	\$628,752
12/31/2032	1/1/2034	81,646,621	98%	\$973,380	72,174,217	98%	\$846,624	81,646,621	98%	\$972,504	81,646,621	99%	\$642,132
12/31/2033	1/1/2035	78,667,528	99%	\$45,888	69,071,809	99%	\$12,312	78,667,528	99%	\$44,820	78,667,528	99%	\$43,224
12/31/2034	1/1/2036	75,554,783	100%	\$41,016	65,889,396	100%	\$12,096	75,554,783	100%	\$39,684	75,554,783	100%	\$38,484

Notes: Impacts of the new assumptions will be phased in over a five year period. The phase-in was excluded for ballpark estimate purposes.

The additional contributions in Scenario 1 were allocated to all divisions in proportion to UAL. The lump sum in Scenario 2 was allocated to all divisions, except divisions 13 and 17, in proportion to UAL.

The assumed annual market return is 7.75%. Immediate retirement when first eligible was assumed on any bridged divisions to better reflect anticipated experience.





MERS
 1134 Municipal Way
 Lansing, MI 48917
 www.mersofmich.com

Invoice	00067932-20
Date	229 3/31/2017
Customer	280301
Due Date	4/20/2017
Page	1 / 1

Bill To:

Cheryl Wolf
 Grand Traverse County
 400 Boardman Ave
 Traverse City, MI 49684

Billing Questions: email: finance@mersofmich.com

Phone: 1.800.767.6377

Fax: 517.703.9711

Invoice Details	Division Number	Billing Period	Division Name	MERS Wages		Contribution Amount		
				Reported Through Defined Benefit Reporting	Employer Contribution Percentage or Flat Amount	Employer	Employee	Employer Voluntary
00067932-01	28030123	2017-03	Srgts Tmstrs	\$27,851.00	1.00	\$27,851.00	\$0.00	\$0.00
00067932-02	28030118	2017-03	Exempt	\$2,274.06	1.00	\$0.00	\$2,274.06	\$0.00
00067932-03	28030118	2017-03	Exempt	\$78,675.00	1.00	\$78,675.00	\$0.00	\$0.00
00067932-04	28030112	2017-03	AFSCME	\$270.42	1.00	\$0.00	\$270.42	\$0.00
00067932-05	28030112	2017-03	AFSCME	\$11,994.00	1.00	\$11,994.00	\$0.00	\$0.00
00067932-06	28030102	2017-03	Deputies POAM	\$347.25	1.00	\$0.00	\$347.25	\$0.00
00067932-07	28030102	2017-03	Deputies POAM	\$62,179.00	1.00	\$62,179.00	\$0.00	\$0.00
00067932-08	28030110	2017-03	Elctd Empl	\$1,258.74	1.00	\$0.00	\$1,258.74	\$0.00
00067932-09	28030110	2017-03	Elctd Empl	\$32,639.00	1.00	\$32,639.00	\$0.00	\$0.00
00067932-10	28030117	2017-03	Circt Crt Spvs	\$7,078.00	1.00	\$7,078.00	\$0.00	\$0.00
00067932-11	28030111	2017-03	Gnrl NonCntrct	\$747.36	1.00	\$0.00	\$747.36	\$0.00
00067932-12	28030111	2017-03	Gnrl NonCntrct	\$13,792.00	1.00	\$13,792.00	\$0.00	\$0.00
00067932-13	28030116	2017-03	TPOAM	\$45.30	1.00	\$0.00	\$45.30	\$0.00
00067932-14	28030116	2017-03	TPOAM	\$6,977.00	1.00	\$6,977.00	\$0.00	\$0.00
00067932-15	28030114	2017-03	Hlth Dept Un	\$15,381.00	1.00	\$15,381.00	\$0.00	\$0.00
00067932-16	28030121	2017-03	Dispatch Unit	\$42.00	1.00	\$42.00	\$0.00	\$0.00
00067932-17	28030115	2017-03	Dist Crt Tmstr	\$21,408.00	1.00	\$21,408.00	\$0.00	\$0.00
00067932-18	28030101	2017-03	Gnrl Tmstr	\$57,802.00	1.00	\$57,802.00	\$0.00	\$0.00
00067932-19	28030120	2017-03	Sheriff POLC	\$54,459.00	1.00	\$54,459.00	\$0.00	\$0.00
00067932-20	28030113	2017-03	Circuit Ct	\$37,784.00	1.00	\$37,784.00	\$0.00	\$0.00
Subtotal:						\$428,061.00	\$4,943.13	\$0.00
						Total	\$433,004.13	

Log onto ePayment to pay your invoice.

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Prepared by the Michigan Department of Treasury
Last updated January 26, 2016

A. APPLICATION REQUIREMENTS (Section 518)

1. Application for State Treasurer's Approval to Issue Pension or Other Post-Employment Benefits (OPEB) Long-Term Securities (Form 5366). See page five for instructions. In addition, submit the following:
 - a. Municipalities that do not have "Qualified" status under Section 303(3) shall also submit a Deficiency Letter.
 - b. Submit resolution approving the issuance in accordance with Section 518(1) and/or (2). The resolution should also include compliance with (5), (6) if applicable, (7) if applicable, and (9).
 - c. Submit proof of notice of intent and certificate of no referendum in accordance with Section 518(3).
 - d. Submit a copy of the Comprehensive Financial Plan in accordance with Section 518(4). The municipality should indicate which page numbers of the Plan fulfill the requirements under each of the subsections (a), (b), (c), (d), and (e).
 - e. Submit documentation that the municipality has a credit rating within the category of AA or higher or the equivalent by at least one nationally recognized rating agency, in accordance with Section 518(10). (Moody's Aa3 or higher, S&P and Fitch AA- or higher)
 - f. Submit a copy of the covenant indicating compliance with Section 518(11).
2. Within 15 business days of completing the issuance, the municipality shall file Security Report (Form 3892), in accordance with Section 319(2).

B. MUNICIPAL SECURITIES

1. Municipal securities issued under Section 518 are not subject to the maturity and mandatory redemption requirements (5:1 Ratio) of Section 503(1). See Section 503(6).
2. The municipal security should not capitalize interest. Any issuance should provide for the immediate payment of principal and interest when due.
3. The municipal security shall mature by no later than the date the final pension/OPEB payment would have been made had the municipal security not been issued.

C. APPLICATION DOCUMENTATION, REVIEW AND CONSIDERATIONS

1. Financial Analyses:
 - a. Project Fund: The amount to fund the Unfunded Accrued Liability (UAL)
 - i. If the UAL is based on the market value of the assets, it must have been determined within 150 days prior to the expected date of issuance of the proposed municipal securities.

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- ii. If the UAL is based on the actuarial value of assets, it must have been determined on either the most recent actuarial report (either calendar or fiscal year end) or within 150 days prior to the expected date of issuance of the proposed municipal securities.
 - iii. If the municipality wishes to issue municipal securities based on the higher of the UAL values above, please provide an explanation as to why they desire to issue based on the larger amount.
- b. Debt Service Schedules:
- i. Using the Project Fund Amount utilized in 1.a. above and the same reporting period of the actuarial report (calendar or fiscal year end), provide principal and interest repayment schedules using:
 - a. Current interest rates
 - b. Current interest rates plus 50 basis points (0.5%)
 - c. Current interest rates minus 50 basis points (0.5%)
 - ii. Provide a net present value savings report for each of the debt service schedules provided in 1.b.i. above comparing the ARC of the pension or OPEB UAL to the annual principal and interest requirements of the proposed municipal security
 - a. Expected UAL rate of return
 - b. Expected UAL rate of return minus 100 basis points (1.0%)
 - c. Expected UAL rate of return minus 200 basis points (2.0%)
 - iii. Provide a matrix summary of the net present value savings scenarios from 1.b.i and 1.b.ii above. See example below.

NPV Savings	Current IR	Current IR+50 BPS	Current IR-50 BPS
Expected UAL ROR			
Expected UAL ROR-100 BPS			
Expected UAL ROR-200 BPS			

2. Should the municipality be issuing to fund a pension plan, or OPEB, but not both, please provide an update of the plan not being funded, such as whether or not it is a closed plan, the amount and percentage over/under funded, and any future strategies to fund the plan.

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REVISED MUNICIPAL FINANCE ACT (EXCERPT)
Act 34 of 2001

141.2518 Payment of unfunded pension liability or unfunded accrued health care liability; issuance of municipal security.

Sec. 518.

(1) Through December 31, 2018, in connection with the partial or complete cessation of accruals to a defined benefit plan or the closure of the defined benefit plan to new or existing employees, and the implementation of a defined contribution plan, or to fund costs of a county, city, village, or township that has already ceased accruals to a defined benefit plan, a county, city, village, or township may by ordinance or resolution of its governing body, and without a vote of its electors, issue a municipal security under this section to pay all or part of the costs of the unfunded pension liability for that retirement program provided that the amount of taxes necessary to pay the principal and interest on that municipal security, together with the taxes levied for the same year, shall not exceed the limit authorized by law.

(2) Through December 31, 2018, a county, city, village, or township may by ordinance or resolution of its governing body, and without a vote of its electors, issue a municipal security under this section to pay the costs of the unfunded accrued health care liability provided that the amount of taxes necessary to pay the principal and interest on that municipal security, together with the taxes levied for the same year, shall not exceed the limit authorized by law or to refund in whole or in part a contract obligation issued for the same purpose. Postemployment health care or benefits may be funded by the county, city, village, or township. The funding of postemployment health care benefits by a county, city, village, or township as provided in this act shall not constitute a contract to pay the postemployment health care benefits.

(3) Before a county, city, village, or township issues a municipal security under this section, the county, city, village, or township shall publish a notice of intent to issue the municipal security. The notice of intent and the rights of referendum shall meet the requirements of section 517(2).

(4) Before a county, city, village, or township issues a municipal security under this section, the county, city, village, or township shall prepare and make available to the public a comprehensive financial plan that includes all of the following:

(a) An analysis of the current and future obligations of the county, city, village, or township with respect to each retirement program and each postemployment health care benefit program of the county, city, village, or township.

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- (b) Evidence that the issuance of the municipal security together with other funds lawfully available will be sufficient to eliminate the unfunded pension liability or the unfunded accrued health care liability.
- (c) A debt service amortization schedule and a description of actions required to satisfy the debt service amortization schedule.
- (d) A certification by the person preparing the plan that the comprehensive financial plan is complete and accurate.
- (e) If the proceeds of the borrowing are to be deposited in a health care trust fund, a plan in place from the county, city, village, or township to mitigate the increase in health care costs and may include a wellness program that promotes the maintenance or improvement of healthy behaviors.
- (5) Municipal securities issued under this section by a county, city, village, or township and the interest on and income from the municipal securities are exempt from taxation by this state or a political subdivision of this state.
- (6) The proceeds of a municipal security issued under this section may be used to pay the costs of issuance of the municipal security. Except for a refunding, the proceeds of a municipal security issued under this section to cover unfunded health care liability shall be deposited in a health care trust fund, a trust created by the issuer which has as its beneficiary a health care trust fund, or, for a county, city, village, or township, a restricted fund within a trust that would only be used to retire the municipal securities issued under subsection (1) or (3). A county, city, village, or township shall have the power to create a trust to carry out the purposes of this subsection. The trust created under this subsection shall invest its funds in the same manner as funds invested by a health care trust fund. The trust created under this subsection shall comply with all of the following:
- (a) Report its financial condition according to generally accepted accounting principles.
- (b) Be tax-exempt under the internal revenue code.
- (7) A county, city, village, or township issuing municipal securities under this section may enter into indentures or other agreements with trustees and escrow agents for the issuance, administration, or payment of the municipal securities.
- (8) Before a county, city, village, or township issues a municipal security under this section, the county, city, village, or township shall obtain the approval of the department.
- (9) If a county, city, village, or township has issued a municipal security under this section, that county, city, village, or township shall not change the benefit structure of the defined benefit plan if the defined benefit plan is undergoing the partial cessation of accruals. However, a county, city, village, or township may reduce benefits of the defined benefit plan for years of service that accrue after the issuance of municipal securities under this section.

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(10) A county, city, village, or township shall not issue a municipal security under subsection (1) or (2) unless the county, city, village, or township has been assigned a credit rating within the category of AA or higher or the equivalent by at least 1 nationally recognized rating agency.

(11) A county, city, village, or township that issues a municipal security under subsection (1) shall covenant with the holders of the municipal security and this state that it will not, after the issuance of the municipal security and while the municipal security is outstanding, rescind whatever action it has taken to make a partial or complete cessation of accruals to a defined benefit plan or the closure of the defined benefit plan for new or existing employees.

(12) If a county, city, village, or township has issued a municipal security under subsection (1) or (2), the county, city, village, or township may issue a refunding security to refund that municipal security under this section after December 31, 2018 if that refunding security does not have a final maturity later than the final maturity of the municipal security being refunded and if the municipality that issued the municipal security has been assigned a credit rating within the category of AA or higher or the equivalent by at least 1 nationally recognized rating agency in connection with the refunding security.

History: Add. 2012, Act 329, Imd. Eff. Oct. 9, 2012 ;-- Am. 2014, Act 297, Imd. Eff. Sept. 30, 2014 ;--
- Am. 2015, Act 46, Imd. Eff. June 9, 2015



March 29, 2017

Grand Traverse Co

In care of:
Municipal Employees' Retirement System of Michigan
1134 Municipal Way
Lansing, Michigan 48917

Re: Grand Traverse Co (2803) – All Divisions – Projections of Amortization Payment of Unfunded Accrued Liability and Normal Cost

As requested by Grand Traverse Co (2803) – Divisions 01, 02, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, and 23, we have illustrated the series of amortization payments scheduled to fund the unfunded accrued liability (UAL) under the following two scenarios:

- Amortizing the UAL calculated as of December 31, 2015, using the data and benefit provisions from the December 31, 2015 annual actuarial valuation.
- Amortizing the UAL calculated as of December 31, 2015 assuming an additional \$5.1MM in market value of assets had been contributed, using the data and benefit provisions from the December 31, 2015 annual actuarial valuation except that divisions 01, 02, 10, 11, 12, 14, 15, 16, 18, 20, 21, and 23 have their amortization periods for the fiscal year beginning January 1, 2017 extended from 12 to 16 years. Please note that since this additional lump sum was not contributed as of December 31, 2015, a larger amount will need to be contributed to eliminate the same amount of UAL to account for the expected interest earned between December 31, 2015 and the actual contribution date.

The results are calculated using a 7.75% investment return assumption, as well as the 5.75% and 6.75% investment return assumptions, as requested by the Michigan Department of Treasury for their analysis of application requests to issue Long-Term Securities under PA 329 of 2012.

The purpose of this letter is to show the amortization payments of the UAL calculated using both the actuarial value and market value of assets.

The estimates from this study should not be used for short term budgeting purposes because the assumptions are designed to be a long term expectation of future events. These estimates illustrate the long term pattern of amortization payments under different funding policies. A projection of contribution rates for budgeting purposes would require additional analysis, which is beyond the scope of this study.

Please note this letter should be distributed to any interested parties only in its entirety.



Grand Traverse Co

We projected the annual amortization payments, starting with the amortization periods in effect for the calendar year beginning January 1, 2016, under the amortization policies available for each division. The 2016 and 2017 amortization payments shown in this analysis will not match the amortization portion of the projected employer contributions from the 2014 and 2015 annual valuations because the underlying actuarial assumptions differ between the 2014 and 2015 valuations. **Any normal cost payments are in addition to the amortization payment, and are not affected by the amortization policy used.**

These results are for illustration purposes only. Actual amortization payments will depend on the results of future annual actuarial valuations.

Comments on Pension Obligation Bonds

A discussion of pension obligation bonds is beyond the scope of this letter. It is important for the County to understand and acknowledge the following implications of funding the UAL using pension obligation bonds:

- 1. The County will continue to be responsible for funding the employer normal cost as long as there are active members in the plan, and**
- 2. If future financial or demographic experience is less favorable than assumed, additional UAL may emerge which would require additional County contributions.**
- 3. Fully funding the current UAL does not guarantee that there will be no employer contribution requirements in the future.**

Our calculations were based on the following:

- Demographic information, financial information, benefit provisions and Funding Methods provided by MERS for the December 31, 2015 annual actuarial valuation.
- The actuarial assumptions that were used in the December 31, 2015 annual actuarial valuation, except for any phase-in of the impact of assumption changes.

As always, the MERS actuaries will closely watch the funding progress of all closed divisions. While not currently anticipated, the actuaries may recommend changes to the amortization policy in the future if they deem it necessary for the financial security of benefits provided by the municipality, which could result in more accelerated employer contributions than those shown in this report

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 herein. Please see page 4 of this document for additional disclosures required by the Actuarial Standards of Practice.



If you have any questions or need additional information, please contact your MERS representative at (800) 767-6377.

Sincerely,

Handwritten signature of Cathy Nagy in black ink.

Cathy Nagy, FSA, MAAA
Actuary

Handwritten signature of W. James Koss in black ink.

W. James Koss, ASA, MAAA
Actuary



Additional Disclosures Required by Actuarial Standards of Practice No. 41

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

This report should not be relied on for any purpose other than the purpose described in the primary communication. Determination of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The calculation was based upon information furnished by the Employer and MERS staff, concerning Retirement System benefits and member information. CBIZ Retirement Plan Services is not responsible for the accuracy or completeness of the information provided to us for these calculations.

The developed findings included in this report consider data or other information through December 31, 2015. The findings are based on actuarial assumptions which were first used in the December 31, 2015 actuarial valuations.



Grand Traverse Co (2803) - All Divisions
Projected Amortization Payments Based on December 31, 2015 Actuarial Valuation Data
Closed Amortization Policy Option B - Using 7.75% Interest Rate

Calendar Year	Amortization Period for Divisions	Amortization Period for Divisions	Additional Lump Sum Contributions	Based on the Actuarial Value of Assets		Based on the Market Value of Assets	
				Beginning of Year UAL Balance	Amortization Payment	Beginning of Year UAL Balance	Amortization Payment
Beginning January 1	01, 02, 10, 11, 12, 14, 15, 16, 18, 20, 21, 23	13, 17	Beginning of Year				
2016	13	23	-	52,600,000	5,000,000	57,800,000	5,500,000
2017	12	21	-	51,400,000	5,200,000	56,500,000	5,800,000
2018	11	19	-	50,000,000	5,500,000	54,900,000	6,000,000
2019	10	17	-	48,200,000	5,700,000	52,900,000	6,200,000
2020	9	15	-	46,000,000	5,900,000	50,500,000	6,500,000
2021	8	14	-	43,400,000	6,100,000	47,700,000	6,700,000
2022	7	13	-	40,400,000	6,400,000	44,400,000	7,000,000
2023	6	12	-	36,900,000	6,600,000	40,600,000	7,200,000
2024	5	11	-	32,900,000	6,900,000	36,300,000	7,500,000
2025	4	10	-	28,400,000	7,100,000	31,300,000	7,800,000
2026	3	9	-	23,200,000	7,400,000	25,600,000	8,100,000
2027	2	8	-	17,300,000	7,700,000	19,200,000	8,400,000
2028	1	7	-	10,700,000	7,900,000	11,900,000	8,700,000
2029	-	6	-	3,300,000	600,000	3,800,000	700,000
2030	-	5	-	2,900,000	700,000	3,400,000	800,000
2031	-	4	-	2,500,000	700,000	2,800,000	800,000
2032	-	3	-	2,000,000	700,000	2,200,000	800,000
2033	-	2	-	1,400,000	700,000	1,600,000	800,000
2034	-	1	-	700,000	800,000	800,000	900,000
2035	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-



Grand Traverse Co (2803) - All Divisions
Projected Amortization Payments Based on December 31, 2015 Actuarial Valuation Data
Closed Amortization Policy Option B - Using 6.75% Interest Rate

Calendar Year	Amortization Period for Divisions	Amortization Period for Divisions	Additional Lump Sum Contributions	Based on the Actuarial Value of Assets		Based on the Market Value of Assets	
				Beginning of Year UAL Balance	Amortization Payment	Beginning of Year UAL Balance	Amortization Payment
Beginning January 1	01, 02, 10, 11, 12, 14, 15, 16, 18, 20, 21, 23	13, 17	Beginning of Year	Balance	Payment	Balance	Payment
2016	13	23	-	62,800,000	5,700,000	68,000,000	6,100,000
2017	12	21	-	61,200,000	5,900,000	66,200,000	6,400,000
2018	11	19	-	59,200,000	6,100,000	64,100,000	6,600,000
2019	10	17	-	56,900,000	6,400,000	61,600,000	6,900,000
2020	9	15	-	54,100,000	6,700,000	58,600,000	7,200,000
2021	8	14	-	50,900,000	6,900,000	55,100,000	7,500,000
2022	7	13	-	47,200,000	7,200,000	51,100,000	7,700,000
2023	6	12	-	43,000,000	7,400,000	46,600,000	8,000,000
2024	5	11	-	38,200,000	7,700,000	41,400,000	8,300,000
2025	4	10	-	32,800,000	8,000,000	35,600,000	8,700,000
2026	3	9	-	26,800,000	8,300,000	29,000,000	9,000,000
2027	2	8	-	20,000,000	8,600,000	21,700,000	9,300,000
2028	1	7	-	12,400,000	8,900,000	13,600,000	9,700,000
2029	-	6	-	4,000,000	700,000	4,500,000	800,000
2030	-	5	-	3,500,000	800,000	4,000,000	900,000
2031	-	4	-	3,000,000	800,000	3,300,000	900,000
2032	-	3	-	2,400,000	800,000	2,600,000	900,000
2033	-	2	-	1,600,000	900,000	1,800,000	1,000,000
2034	-	1	-	900,000	900,000	1,000,000	1,000,000
2035	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-



Grand Traverse Co (2803) - All Divisions
Projected Amortization Payments Based on December 31, 2015 Actuarial Valuation Data
Closed Amortization Policy Option B - Using 5.75% Interest Rate

Calendar Year	Amortization Period for Divisions	Amortization Period for Divisions	Additional Lump Sum Contributions	Based on the Actuarial Value of Assets		Based on the Market Value of Assets	
				Beginning of Year UAL Balance	Amortization Payment	Beginning of Year UAL Balance	Amortization Payment
Beginning January 1	01, 02, 10, 11, 12, 14, 15, 16, 18, 20, 21, 23	13, 17	Beginning of Year				
2016	13	23	-	75,000,000	6,400,000	80,100,000	6,800,000
2017	12	21	-	72,700,000	6,600,000	77,700,000	7,100,000
2018	11	19	-	70,100,000	6,900,000	75,000,000	7,300,000
2019	10	17	-	67,100,000	7,200,000	71,700,000	7,700,000
2020	9	15	-	63,600,000	7,500,000	68,000,000	8,000,000
2021	8	14	-	59,500,000	7,700,000	63,700,000	8,300,000
2022	7	13	-	55,000,000	8,000,000	58,800,000	8,600,000
2023	6	12	-	49,900,000	8,300,000	53,400,000	8,900,000
2024	5	11	-	44,200,000	8,700,000	47,300,000	9,200,000
2025	4	10	-	37,800,000	9,000,000	40,500,000	9,600,000
2026	3	9	-	30,700,000	9,300,000	32,900,000	9,900,000
2027	2	8	-	22,900,000	9,700,000	24,600,000	10,300,000
2028	1	7	-	14,300,000	10,000,000	15,400,000	10,700,000
2029	-	6	-	4,800,000	900,000	5,300,000	900,000
2030	-	5	-	4,200,000	900,000	4,600,000	1,000,000
2031	-	4	-	3,500,000	900,000	3,900,000	1,000,000
2032	-	3	-	2,800,000	1,000,000	3,000,000	1,100,000
2033	-	2	-	1,900,000	1,000,000	2,100,000	1,100,000
2034	-	1	-	1,000,000	1,000,000	1,100,000	1,100,000
2035	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-



Grand Traverse Co (2803) - All Divisions
Projected Amortization Payments Based on December 31, 2015 Actuarial Valuation Data
Closed Amortization Policy Option B - Using 7.75% Interest Rate

Calendar Year	Amortization Period for Divisions	Amortization Period for Divisions	Additional Lump Sum Contributions	Based on the Actuarial Value of Assets		Based on the Market Value of Assets	
				Beginning of Year UAL Balance	Amortization Payment	Beginning of Year UAL Balance	Amortization Payment
Beginning January 1	01, 02, 10, 11, 12, 14, 15, 16, 18, 20, 21, 23	13, 17	Beginning of Year				
2016	17	23	5,100,000	46,800,000	3,700,000	52,700,000	4,200,000
2017	16	21	-	46,600,000	3,900,000	52,400,000	4,400,000
2018	15	19	-	46,100,000	4,000,000	51,900,000	4,500,000
2019	14	17	-	45,500,000	4,200,000	51,200,000	4,700,000
2020	13	15	-	44,700,000	4,400,000	50,300,000	4,900,000
2021	12	14	-	43,600,000	4,500,000	49,100,000	5,100,000
2022	11	13	-	42,300,000	4,700,000	47,600,000	5,300,000
2023	10	12	-	40,600,000	4,900,000	45,700,000	5,500,000
2024	9	11	-	38,700,000	5,100,000	43,600,000	5,700,000
2025	8	10	-	36,500,000	5,300,000	41,000,000	5,900,000
2026	7	9	-	33,800,000	5,500,000	38,100,000	6,100,000
2027	6	8	-	30,800,000	5,700,000	34,600,000	6,400,000
2028	5	7	-	27,300,000	5,900,000	30,700,000	6,600,000
2029	4	6	-	23,300,000	6,100,000	26,200,000	6,900,000
2030	3	5	-	18,700,000	6,300,000	21,100,000	7,100,000
2031	2	4	-	13,600,000	6,600,000	15,300,000	7,400,000
2032	1	3	-	7,800,000	6,800,000	8,900,000	7,700,000
2033	-	2	-	1,400,000	700,000	1,600,000	800,000
2034	-	1	-	700,000	800,000	800,000	900,000
2035	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-



Grand Traverse Co (2803) - All Divisions
Projected Amortization Payments Based on December 31, 2015 Actuarial Valuation Data
Closed Amortization Policy Option B - Using 6.75% Interest Rate

Calendar Year	Amortization Period for Divisions	Amortization Period for Divisions	Additional Lump Sum Contributions	Based on the Actuarial Value of Assets		Based on the Market Value of Assets	
				Beginning of Year UAL Balance	Amortization Payment	Beginning of Year UAL Balance	Amortization Payment
Beginning January 1	01, 02, 10, 11, 12, 14, 15, 16, 18, 20, 21, 23	13, 17	Beginning of Year				
2016	17	23	5,100,000	57,000,000	4,200,000	62,900,000	4,600,000
2017	16	21	-	56,500,000	4,400,000	62,300,000	4,800,000
2018	15	19	-	55,800,000	4,600,000	61,500,000	5,000,000
2019	14	17	-	54,900,000	4,800,000	60,500,000	5,200,000
2020	13	15	-	53,600,000	5,000,000	59,200,000	5,500,000
2021	12	14	-	52,100,000	5,100,000	57,500,000	5,700,000
2022	11	13	-	50,300,000	5,300,000	55,500,000	5,900,000
2023	10	12	-	48,200,000	5,500,000	53,200,000	6,100,000
2024	9	11	-	45,700,000	5,700,000	50,400,000	6,300,000
2025	8	10	-	42,900,000	6,000,000	47,300,000	6,600,000
2026	7	9	-	39,600,000	6,200,000	43,700,000	6,800,000
2027	6	8	-	35,900,000	6,400,000	39,600,000	7,100,000
2028	5	7	-	31,700,000	6,700,000	34,900,000	7,300,000
2029	4	6	-	26,900,000	6,900,000	29,700,000	7,600,000
2030	3	5	-	21,600,000	7,200,000	23,800,000	7,900,000
2031	2	4	-	15,600,000	7,400,000	17,300,000	8,200,000
2032	1	3	-	9,000,000	7,700,000	10,000,000	8,500,000
2033	-	2	-	1,600,000	900,000	1,800,000	1,000,000
2034	-	1	-	900,000	900,000	1,000,000	1,000,000
2035	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-



Grand Traverse Co (2803) - All Divisions
Projected Amortization Payments Based on December 31, 2015 Actuarial Valuation Data
Closed Amortization Policy Option B - Using 5.75% Interest Rate

Calendar Year	Amortization Period for Divisions	Amortization Period for Divisions	Additional Lump Sum Contributions	Based on the Actuarial Value of Assets		Based on the Market Value of Assets	
				Beginning of Year UAL Balance	Amortization Payment	Beginning of Year UAL Balance	Amortization Payment
Beginning January 1	01, 02, 10, 11, 12, 14, 15, 16, 18, 20, 21, 23	13, 17	Beginning of Year				
2016	17	23	5,100,000	69,200,000	4,700,000	75,000,000	5,100,000
2017	16	21	-	68,300,000	4,900,000	74,100,000	5,300,000
2018	15	19	-	67,100,000	5,100,000	72,800,000	5,600,000
2019	14	17	-	65,700,000	5,300,000	71,300,000	5,800,000
2020	13	15	-	64,000,000	5,600,000	69,400,000	6,100,000
2021	12	14	-	62,000,000	5,800,000	67,200,000	6,300,000
2022	11	13	-	59,600,000	6,000,000	64,600,000	6,500,000
2023	10	12	-	56,800,000	6,200,000	61,600,000	6,800,000
2024	9	11	-	53,700,000	6,500,000	58,200,000	7,000,000
2025	8	10	-	50,100,000	6,700,000	54,300,000	7,300,000
2026	7	9	-	46,100,000	7,000,000	50,000,000	7,500,000
2027	6	8	-	41,600,000	7,200,000	45,100,000	7,800,000
2028	5	7	-	36,500,000	7,500,000	39,600,000	8,100,000
2029	4	6	-	30,900,000	7,800,000	33,600,000	8,400,000
2030	3	5	-	24,700,000	8,100,000	26,800,000	8,700,000
2031	2	4	-	17,900,000	8,400,000	19,400,000	9,100,000
2032	1	3	-	10,300,000	8,700,000	11,200,000	9,400,000
2033	-	2	-	1,900,000	1,000,000	2,100,000	1,100,000
2034	-	1	-	1,000,000	1,000,000	1,100,000	1,100,000
2035	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-



BEST PRACTICE

Sustainable Funding Practices for Defined Benefit Pensions and Other Postemployment Benefits (OPEB)

BACKGROUND:

The fundamental financial objective of government employers that offer defined benefit (DB) pensions and other postemployment benefits (OPEB) to their employees is to fund the long-term cost of the benefits promised to participants. It is widely acknowledged that the appropriate way to attain reasonable assurance that benefits will remain sustainable is for a government to accumulate resources for future benefit payments in a systematic and disciplined manner during the active service life of the benefitting employees.

Long-term funding is accomplished through contributions from the employer and employee, and from investment earnings, which typically provide the largest component of funding. Contributions often are expressed as a percentage of active member payroll, which should remain approximately level from one year to the next. A funding policy for benefits offered codifies the government's commitment to fund benefit promises based on regular actuarial valuations. Creating a funding policy that embodies this funding principle is a prudent governance practice and helps achieve intergenerational equity among those who are called on to financially support the benefits, thereby avoiding the transfer of costs into the future.

RECOMMENDATION:

GFOA recommends that government officials ensure that the costs of DB pensions and OPEB are properly measured and reported. Sustainability requires governments that sponsor or participate in DB pension plans, or that offer OPEB, to contribute the full amount of their actuarially determined contribution (ADC) each year. Failing to fund the ADC during recessionary periods impairs investment returns by providing inadequate funds to invest when stock prices are low. As a result, long-term investment performance will suffer and ultimately require higher contributions.

Public officials and associated trustees should, at a minimum, adhere to the following best practices for sustaining DB pension plans and OPEB, as applicable:

1. Adopt a funding policy with a target funded ratio of 100 percent or more (full funding). The funding policy should provide for a stable amortization period over time,¹ with parameters provided for making changes based on specific circumstances. The amortization period for the unfunded actuarial accrued liability should be consistent with the funding policy.
2. Discuss the funding and amortization methods with the government's actuary and select the one most closely aligned with the government's funding policy. The actuarial funding method selected is a key component of the funding policy for the offered benefits.² Some funding

methods may result in greater variation in the ADC (the portion of the present value of projected benefits that is attributable to the current period) than others. Governments should take measures to reduce the volatility in the ADC in order to create a more predictable operating budget and enhance their ability to meet their funding obligations.

3. The funding policy should stipulate that employer and employee contributions are to be made at regular intervals, with the contribution amount determined by the results of a recent actuarial valuation of the system. To ensure that this objective can be achieved, the funding policy should be integrated with investment and asset allocation policies. Reductions or postponements in collecting the ADC would typically be inconsistent with the assumptions made in computing the ADC. When contributions fall below the ADC, the board of trustees should prepare a report that analyzes the effect of the underfunding and distribute that report to all stakeholders.
4. Have a qualified actuary prepare an actuarial valuation³ at least biennially, in accordance with generally accepted actuarial principles. Each valuation should include a gain/loss analysis that identifies the magnitude of actuarial gains and losses, based on variations between actual and assumed experience for each major assumption.
5. Have an actuarial experience study⁴ performed at least once every five years and update actuarial assumptions as needed. Assumptions that should be carefully reviewed include the long-term return on assets, salary growth, inflation, mortality tables, age eligibility, and any anticipated changes in the covered population of plan participants. As part of this review, assess the overall risk of the assumptions to ensure that what may have been determined to be an acceptable level of risk in any one area has not been compounded.
6. Have an independent actuary perform a comprehensive actuarial audit of the actuarial valuations⁵ at least once every five to eight years. The purpose of such a review is to provide an independent assessment of the reasonableness of the actuarial methods and assumptions in use and the validity of the resulting actuarially computed contributions and liabilities. Actuarial assumptions should be carefully reviewed, discussed with outside experts (including investment advisors), and explicitly approved by the governing body.
7. Communicate plan status and activities by preparing and widely distributing a comprehensive annual financial report (CAFR) covering the retirement system, and distribute summary information to all plan participants. The CAFR should be prepared following GFOA's guidance for the preparation of a public-employee retirement system CAFR.

GFOA recommends the following options to reduce ADC volatility:

1. *Smoothing returns on assets.* Smoothing investment returns over several years recognizes that investment portfolio performance fluctuates, and only by coincidence will it exactly equal the assumed actuarial rate of return for any given year. This approach reduces the volatility within the calculation of the ADC. A smoothing period is used to balance the need for a longer-term investment horizon with the short-term market fluctuations in the value of assets. While the smoothing period is typically about five years, it can be longer, if controls are in place to assure that any variation between the market value and actuarial value of assets does not become too large. A common approach is to establish corridors around the market value of assets that stipulate the maximum percentage by which the actuarially smoothed value will be allowed to deviate from actual market value. Once a smoothing method is established, the governing board should adhere to it and avoid making arbitrary changes to the methodology.
2. *Diversifying the investment portfolio to reduce volatility in investment returns.* Diversifying assets across and within asset classes is a fundamental risk management tool that also has the effect of reducing the fluctuations in ADC volatility. Although annual changes in the ADC are affected by numerous factors, the most significant is usually investment return. Retirement systems should periodically conduct asset-liability studies for use in reviewing their asset allocation policies. The risk of investment strategies should also be assessed as

well as an evaluation of any management fees associated with investment strategies utilized. (See GFOA's Best Practice, "Asset Allocation for Defined Benefit Plans," 2009).

3. *Managing investment returns long term.* Because the investment return assumption is an average long-term expected rate of return, excess earnings in any one year will likely be offset by lower-than-expected rates of return in a future year. Thus, any program that is derived from an excess-earnings concept is detrimental to the funded status of the plan.
4. *Managing growth in liabilities.* All benefit increases for members and beneficiaries should be carefully considered, appropriately approved, and consistent with applicable Internal Revenue Service requirements. Whether cost of living adjustments (COLAs), benefit formula enhancements, or postretirement benefit increases, a clear strategy should be developed that integrates benefit enhancements with the funding policy. Further, all benefit enhancements and COLAs should be actuarially valued and presented to the appropriate governing bodies before they are adopted so the effect of the benefit enhancements on the fund's actuarial accrued liability, funded ratio, and contribution rates is fully understood. This step will help ensure that the goals of fully funding member benefits and financial sustainability are achieved. If a benefit enhancement is being considered, a source of funding should be identified that can support the enhancement over the long term.

To further ensure sustainable funding practices, design the plan to prevent calculation abuses of retirement benefit enhancements such as salary spiking, and any other ethical violations. These violations can create negative public perceptions that are harmful to all participants and can adversely affect the sustainability of the system. Policies to safeguard against ethical violations and benefit calculation abuses should be considered.

Notes:

1. GFOA recommends that a pension funding policy use a fixed (closed) amortization method so that the entire liability would be fully amortized at the end of a set duration, e.g., 25 years. See GFOA Best Practice, "Core Elements of a Funding Policy," 2013.
2. The use of projected unit credit method typically would not be consistent with the goal of level funding.
3. The purpose of an actuarial valuation is 1) to determine the amount of actuarially determined contributions (i.e., an amount that, if contributed consistently and combined with investment earnings, would be sufficient to pay promised benefits in full over the long-term) and 2) to measure the plan's funding progress.
4. An actuarial experience study reviews the differences between a plan's assumed and actual experience over multiple years (typically 3 to 5), with the goal of examining the trends related to actual experience and recommending changes to assumptions, if needed.
5. Because the reliability of an actuarial valuation depends on the use of reasonable methods and assumptions, a comprehensive audit of the actuarial valuations is conducted to review the appropriateness of the actuarial methods, assumptions, and their application.

References:

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- *Pension Accounting and Reporting, Second Edition*, William R. Schwartz, GFOA, 1995.
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- *A Guide for Selecting Pension Actuarial Consultants: Writing RFPs and Evaluating Proposals*, Robert Pam, GFOA, 1999.
- *Public Pension Systems – Operational Risks of Defined Benefit and Related Plans and Controls Investment Policy Checklist for Pension Fund Assets*, GFOA, May 2003.
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203 N. LaSalle Street - Suite 2700 | Chicago, IL 60601-1210 | Phone: (312) 977-9700 - Fax: (312) 977-4806